BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

UNITED STATES STEEL CORPORATION,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB No. 24-77
	)	(Permit Appeal-Air)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	)	
	)	
	)	
Respondent.	)	

NOTICE OF ELECTRONIC FILING

To: *See Attached Service List*

PLEASE TAKE NOTICE that on the 30th day of September, 2024, I caused to be filed with the Office of the Clerk of the Illinois Pollution Control Board by electronic filing: (1) the Respondent's Certificate of Record on Appeal with Index, a copy of which is attached hereto and (2) the Record on Appeal, a copy of which is provided through a File Transfer Protocol. The Certificate of Record on Appeal with Index and the Record on Appeal are hereby served upon you.

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ *Ellen F. O'Laughlin*

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CERTIFICATE OF SERVICE

I, Ellen O'Laughlin, an Assistant Attorney General, hereby certify that on the 30th day of September, 2024, I caused to be served the foregoing Notice of Electronic Filing and Respondent's Certificate of Record on Appeal with Index and Record on Appeal upon the parties named on the attached Service List, via e-mail and record by file transfer link.

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ *Ellen F. O'Laughlin*
Ellen F. O'Laughlin
Supervising Attorney
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

UNITED STATES STEEL CORPORATION, Petitioner, v. ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Respondent.	))))))))))	PCB No. 24-77 (Permit Appeal-Air)

INDEX OF THE RECORD

Respondent, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ("Illinois EPA"), in accordance with the procedural rules of the Illinois Pollution Control Board ("Board") as set forth in 35 Ill. Adm. Code 105.612, files in this cause the Illinois EPA's Administrative Record of Denial of United States Steel Corporation, Granite City Works, for Revisions to Construction Permit/PSD No. 95010001, which is attached and consists of the following documents:

1. 1992 Production Increase Permit - 92090104

Record No.	Date	Description
R 000001-000012	1/4/1994	Construction Permit U.S. Steel Granite City Works for Blast Furnace and Blast Oxygen Furnace Production Increase

2. 2018 Stack Test Information Less Appendices

R 000013-000040	12/3/2018	U.S. Steel, Granite City Works, MACT Compliance Test Report for Basic Oxygen Furnace ESP Exhaust Stack

3. 2021 Stack Test Information Less Appendices

R 000041-000074	6/8/2021	U.S. Steel, Granite City Works, BOF ESP Stack Test Results submitted to Illinois EPA

4. Air Pollution Control - Design Approach

R 000075-000077		C. Cooper, F.C. Alley, *Air Pollution Control, Fourth Edition,* excerpts of Carbon Monoxide and Air Quality Index

5. All Versions of Production Increase Permit - No. 95010001

R 000078-000112	1/5/1999	Revised Operating Permit issued to U.S. Steel, Granite City for Production Increase
R 000113-000145	1/25/1996	Construction Permit issued to U.S. Steel, Granite City for Production Increase
R 000146-000181	4/2/1997	Construction Permit issued to U.S. Steel, Granite City for Production Increase
R 000182-000213	6/6/1997	Operating Permit issued to U.S. Steel, Granite City Works, for Production Increase
R 000214-000254	6/25/2022	Operating Permit issued to U.S. Steel, Granite City for Renewal of Production Increase
R 000255-000287	7/25/1996	Construction Permit issued to U.S. Steel, Granite City, for Production Increase
R 000288-000320	10/18/1996	Construction Permit issued to U.S. Steel, Granite City, for Production Increase
R 000321-000349	12/17/2012	Construction Permit/PSD Approval Revised issued to U.S. Steel, Granite City, for Production Increase
R 000350	11/17/1998	Illinois EPA Acknowledgement of Withdrawal of U.S. Steel application

6. Ambient Monitoring for CO

R 000351-000353	10/3/2022	Excerpts from Missouri Department of Natural Resources Air Quality Analysis for Carbon Monoxide
R 000354-000356		Illinois Environmental Protection Agency, Illinois Air Quality Report, Air Quality Index 2016, Carbon Monoxide Tables 2012-2016, pgs. 74-75
R 000357-000358		Illinois Environmental Protection Agency, Illinois Air Quality Report, Air Quality Index 2017, Table B13 Carbon Monoxide Highs, pg 71
R 000359-000364		Illinois Environmental Protection Agency, Illinois Air Quality Report, Air Quality Index 2018, Table B13 Carbon Monoxide Highs
R 000365		Illinois Environmental Protection Agency, Illinois Air Quality Report 2020, Table A4 Monitoring Directory

7. Atmospheric Chemistry and Physics

R 000366-000380		Excerpts of *Atmospheric Chemistry and Physics, From Air Pollution to Climate Change,* 2nd Edition, Seinfield and Pandis, 2006

8. Background for Strube

R 000381-000402		Illinois Underground Storage Tank Fund Guide

9. Blast Furnace Modern Process

R 000403-000404		Reference material - Modern Blast Furnace process

10. Chemrex Opinion PCB 92-123

R 000405-000412		Chemrex v. Illinois EPA (PCB No.92-123) Opinion and Order, dated February 4, 1993

11. CO Air Dispersion Modeling, October 2022

R 000413-000457		RTP Environmental Associates, U.S. Steel Granite City, Carbon Monoxide Air Dispersion Modeling for Prevention of Significant Deterioration and Construction Permit, October 2022

12. Cogen Boiler Project - 06070023

R 000458-000485	1/30/2008	Construction Permit issued to U.S. Steel, Granite City Cogeneration Boiler Project
R 000486-000515	3/25/2021	Construction Permit Revised NSPS/NESHAP Source issued to U.S. Steel, Granite City Cogeneration Boiler Project
R 000516-000549	11/30/2012	Construction Permit Revised NSPS issued to U.S. Steel, Granite City Cogeneration Boiler Project
R 000550-000585		Responsive Summary for Public Comments and Questions on Cogeneration Boiler Project at U.S. Steel Granite City Works January 2008

13. Coke Battery Shutdown Application - 15030001

R 000586-000620	3/2/2015	U.S. Steel Granite City Works Application for Increase in Natural Gas usage due to shut down of Coke Oven Plant
R 000621-000662	3/27/2015	U.S. Steel Granite City Works Supplemental Submittal of Coke Battery Shutdown Application

14. Counterfactual

R 000663-000666		Dictionary Counterfactual definition

15. Draft Denial - Calculation Sheet and Accompanying Information

R 000667	7/20/2023	Calculation Sheet: Application for Revision of Construction Permit for the 1996 Production Increase written by Chris Romaine
R 000668-000716	7/2023	July 2023 Draft Denial of Application for Revisions to Construction Permit/PSD Approval submitted by U.S. Steel Granite City Works
R 000717-000767		July 2023 Project Summary for Proposed Denial of U.S.

		Steel Granite City Works Application for Revisions to Construction Permit/PSD Approval

16. Eco Cat

R 000768-000770	7/27/2020	Illinois DNR EcoCat Natural Resources Review of U.S. Steel Granite City Works PSD Permit Application

17. EJ

R 000771-001128	10/3/2022	U.S. Steel Granite City Works Application re Revisions to Permit Application 95010001

18. EJ Outreach Letter

R 001129-001131		Illinois EPA Environmental Justice Notice of U.S. Steel Granite City Works Permit Application to revise 1996 Production Increase Permit

19. Emails

Record No.	Date	Description
R 001132	1/7/2015	Meeting Invite to Discuss US Steel
R 001133-001172	1/8/2015	Email chain between Hacker, Carter and Patel with attached Comments of US Steel to Notice of Intent to Deny
R 001173	1/10/2023	Email: D. Ogulei to C. Romaine re US Steel Relaxation Question
R 001174	1/15/2023	Email: C. Romaine to S. Carter re Accepted
R 001175		Email: J. Spague accepted S. Carter Invite
R 001176-001214	1/17/2024	Email: S. Brubaker to S. Carter with attached US Steel Comment - RTP Environmental to US Steel Notice of Intent to Deny
R 001215	1/22/2020	Sally Carter Invite to US Steel Meeting
R 001216	1/22/2022	Chris Romaine accepted conference call with Driver
R 001217	2/1/2022	Email: Chris Romaine to M. Patel re US Steel Telephonic Call
R 001218	2/2/2022	Sally Carter Cancellation of Call sent to C. Romaine and M. Patel
R 001219-001220	2/2/2022	L. Driver Invitation re US Steel Zoom conference call
R 001221-001225	2/2/2022	Email: D. Hacker to L. Driver, C. Hardin, C. Romaine, S. Carter and M. Patel attached to Slag Skimming document
R 001226-001227	2/3/2020	Email: J. Spague to D. Keen with attached US Steel CO Modeling Protocol
R 001228-001255	2/3/2020	Email: D. Keen to D. Hacker, L. Driver, C. Hardin with attached US. Steel Granite City Works Carbon Monoxide Modeling and Analysis Protocol
R 001256-001258	2/4/2020	Email chain between D. Keen and J. Spague re US Steel

Record No.	Date	Description
		Carbon Monoxide Modeling Protocol
R 001259-001261	1-27-2020-2-7-2020	Email chain between C. Romaine and D. Hacker re US Steel Conference Call
R 001262	2/8/2023	C. Romaine acceptance of S. Carter US Steel Telephonic Conference Call invitation
R 001263	2/8/2023	C. Romaine forward to M. Patel, S. Carter US Steel Telephonic Conference Call invitation
R 001264	2/8/2023	M. Patel acceptance of S. Carter February 12, 2023 US Steel Call
R 001265	2/9/2022	C. Romaine acceptance of S. Carter US Steel Call
R 001266	2/17/2020	C. Romaine acceptance of S. Carter US Steel Call Invitation
R 001267	2/22/2020	C. Romaine acceptance of S. Carter US Steel Call Invitation
R 001268	2/22/2020	C. Romaine acceptance of S. Carter US Steel Call Invitation
R 001269	2/22/2023	Sally Carter invitation to U.S. Steel Call to C. Romaine, M. Patel, J. Armitage, and J. Schnep
R 001270	2/24/2020	LaDonna Driver Invitation to US Steel Conference Call
R 001271-001852	2/24/2020	Email: Sally Carter to C. Romaine forwarding email February 3, 2020, attaching US Steel Carbon Monoxide Modeling Protocol
R 001853-001855	2/24/2020	Email: C. Romaine to S. Carter forwarding February 3, 2020, email attaching Carbon Monoxide Protocol
R 001856	3/1/2022	C. Romaine acceptance of S. Carter US Steel Call invitation
R 001857	3/1/2022	S. Carter invitation to US Steel call to C. Romaine and M. Patel
R 001858-002146	3/2/2020	Email: G. Sani to M. Patel attaching US Steel Granite City Works Application for Revisions to Construction Permit PSD Approval
R 002147-002435	3/2/2020	Email: M. Patel to S. Carter forwarding G. Sani email attaching US Steel Granite City Works Application for Revisions to Construction Permit and PSD Approval
R 002436	3/2/2022	Email: C. Romaine to apiscitelli@uss.com requesting call with US Steel
R 002437	3/2/2022	Email: A. Pistcelli (US Steel) to C. Romaine response to call request
R 002438	3/3/2016	S. Carter Invitation to US Steel Permitting Discussion
R 002439-002442	3/9/2020	Request for EJ Review of US Steel Permit
R 002443	3/9/2020	S. Carter Invitation to US Steel Conference Call
R 002444	3/9/2022	S. Carter Invitation to US Steel Meeting
R 002445	3/10/2015	C. Romaine acceptance of S. Carter invitation US Steel Meeting
R 002446	3/10/2022	S. Carter Invitation for US Steel Meeting
R 002447	3/16/2022	C. Romaine acceptance of S. Carter Invitation for US Steel Meeting

Record No.	Date	Description
R 002448	3/18/2019	Email: S. Carter to C. Romaine and M. Patel forwarding email to K. Hodge re US Steel PSD Discussion
R 002449	3/18/2019	M. Patel response to S. Carter email re US Steel PSD Discussion
R 002450-002451	3/18/2019	Email: S. Carter to C. Romaine and M. Patel re US Steel PSD Meeting Dates
R 002452-002453	3/18/2019	Email: C. Romaine response to S. Carter US Steel PSDP Meeting Dates
R 002454-002455	3/18/2019	Email: C. Romaine response to S. Carter US Steel PSD Meeting Dates
R 002456-002457	3/19/2019	Email chain between S. Carter, C. Romaine and M. Patel re US Steel PSD Discussion
R 002458	3/21/2019	Email Katherine Hodge to M. Patel re Out of Office
R 002459	3/24/2015	S. Carter acceptance of invitation for pre submittal discussion sent to M. Patel
R 002460-002464	3/24/2020	Email: G. Sani to D. Ogulei attached Letter re US Steel Granite City background information on PSD Permit, ESA and NHPA Consultation
R 002465-002466	3/25/2020	Email: D. Ogulei forwarded to C. Romaine and M. Patel of email re US Steel Granite City PSD Permit, ESA and NHPA Consultation
R 002467-002469	3/25/2020	Email: M. Patel response to D. Ogulei re US Steel Granite City PSD Permit, ESA And NHPA Consultation
R 002470-002472	3/25/2020	Email: C. Romaine to S. Carter re US Steel Granite City PSD Permit, ESA and NHPA Consultation
R 002473	3/30/2022	C. Romaine acceptance of S. Carter US Steel Meeting Invite
R 002474	4/6/2022	S. Carter invite to US Steel Granite City Meeting
R 002475	4/8/2019	Email: C. Romaine to M. Patel re U.S Steel BFs and BOFs Production Increase (92090104)
R 002476	4/9/2017	C. Romaine to S. Carter invite re US Steel Meeting
R 002477	4/12/2022	C. Romaine acceptance of S. Carter invite US Steel Meeting
R 002478-002484	4/13/2020	Email: D. Ogulei to C. Romaine and M. Patel re US Steel Response to State HPA
R 002485	4/15/2015	C. Romaine acceptance of S. Carter invitation for US Steel meeting
R 002486	4/15/2015	C. Romaine acceptance of S. Carter US Steel Meeting invitation
R 002487-002775	4/27/2021	Email: M. Patel to J. Schnepp with attached US Steel Granite City Works Revised Permit Application
R 002776	4/29/2019	Sally Carter Invite to C. Romaine re US Steel Meeting
R 002777	5/4/2017	Email chain between C. Romaine and S. Carter re PSD Draft
R 002778-002779	5/5/2021	Email chain between C. Romaine and S. Carter re Discussion on US Steel

Record No.	Date	Description
R 002780-002781	5/5/2021	Email chain between C. Romaine and S. Carter re US Steel Discussion
R 002782-003448	5/6/2021	Email: M. Patel to C. Romaine with attached US Steel Revised CAAPP Permit issued on March 4, 2013
R 003449-003450	5/6/2021	Email chain between C. Romaine and S. Carter re US Steel Discussion
R 003451-003453	5/6/2024	Email: C. Romaine to S. Carter with attached Draft Notification of Denial of Application
R 003454-003455	5/7/2024	Email chain between C. Romaine, S. Carter and S. Brubaker re Draft Notification of Denial of Application
R 003456	5/11/2021	Email chain between S. Carter and C. Romaine re US Steel new requirements
R 003457	5/12/2021	Email chain between S. Carter and C. Romaine re US Steel Memorandum of Understanding
R 003458	5/12/2021	Email: C. Romaine to S. Carter re US Steel Memorandum of Understanding
R 003459	5/13/2021	S. Carter Calendar Invite to C. Romaine and M. Patel re US Steel Meeting
R 003460	5/18/2021	C. Romaine acceptance of S. Carter Calendar Invite re US Steel Meeting
R 003461-003462	5/22/2018	Email chain between S. Carter, M. Patel and D. Hacker re US Steel restart
R 003463-003467	5/22/2018	Email: S. Carter to C. Romaine and M. Patel with attached US Steel Letter notification of restart of operations
R 003468	5/25/2018	Email: C. Romaine to K. Mattison and M. Patel re Proposed US Steel Conference Call Time
R 003469	5/25/2018	Email: C. Hardin to C. Romaine and M. Patel re Proposed Call re Construction Permit
R 003470	5/26/2022	C. Romaine acceptance of S. Carter Calendar invite re US Steel Meeting
R 003471-003472	5/29/2018	Email chain between C. Romaine, K. Mattison, and M. Patel re US Steel Permit
R 003473-003474	5/29/2018	Email chain between M. Patel, K. Mattison, and C. Romaine re Construction Permit
R 003475	5/29/2018	Email chain between C. Hardin, M. Patel, J. Hanning, C. Romaine and G. Lawrence re conference call regarding US Steel Construction Permit
R 003476-003477	5/29/2018	Email chain between C. Hardin, M. Patel, and C. Romaine re US Steel Construction Permit
R 003478	5/29/2019	M. Patel acceptance of S. Carter invitation to US Steel Conference Call
R 003479	5/29/2019	C. Romaine acceptance of S. Carter US Steel Conference Call invitation

Record No.	Date	Description
R 003480-003484	5/20/2020	Email chain between G. Saini, Y. Lim, C. Campbell, G. Demico re U.S Steel Granite City Works PSD Permit, NHPA Consultation
R 003485-003486	6/1/2018	Email chain between C. Hardin, C. Romaine and M. Patel re conference call regarding US Steel Construction Permit
R 003487-003502	6/1/2020	Email: G. Saini to C. Romaine and M. Patel re US Steel Granite City Works PSD Permit, ESA and NHPA Consultation
R 003503	6/1/2020	Email: M. Patel to G. Saini re US Steel Granite City PSD Permit , ESA and NHPA Consultation
R 003504	6/1/2023	L. Driver calendar invitation re US Steel Meeting
R 003505	6/1/2023	C. Romaine acceptance of S. Carter Invitation re US Steel Meeting
R 003506	6/2/2021	C. Romaine acceptance of S. Carter Invitation re US Steel Meeting
R 003507-3549	6/2/2023	Email: C. Romaine to J. Schnepp with attached Draft US Steel Denial Letter
R 003550-003592	6/2/2023	Email: C. Romaine to D. Ogulei, D. Marcus, D. Wolski, M. Patel with attached Draft US Steel Denial Letter
R 003593	6/4/2015	M. Patel acceptance of S. Carter calendar Invite
R 003594	6/4/2015	C. Romaine acceptance of S. Carter calendar Invite US Steel Meeting
R 003595-003610	6/8/2020	Email: C. Romaine to S. Carter forwarding email exchange between USEPA and US Steel regarding ESA and NHPA Consultations
R 003611	6/9/2015	EPA Conference acceptance of M. Patel calendar invite US Steel Conference Call
R 003612	6/9/2015	S. Carter acceptance of M. Patel calendar invite re US Steel Meeting
R 003613	6/9/2015	M. Patel forwarding calendar invitation to D. Hacker re US Steel Conference Call
R 003614	6/9/2015	C. Romaine acceptance of S. Carter calendar invitation re US Steel Conference Call
R 003615	7/7/2016	S. Carter Calendar Invitation re US Steel Permitting and Enforcement
R 003616-03659	6/13/2023	Email exchange between C. Romaine, D. Ogueli, M. Patel, J. Schnepp re US Steel Denial Letter Draft
R 003660	6/14/2016	M. Patel acceptance of S. Carter calendar invite re US Steel Permitting and Enforcement Meeting
R 003661-003662	7/21/2023	Email: F. McCurdy to K. Hart, J. Morse and B. Frost re US Steel Public Notice Denial
R 003663	6/23/2020	Email: J. Sprague to S. Ray and C. Rutherford, S. Carter re US Steel Granite Works Revised PSD Application
R 003664	6/23/2020	Email: S. Ray to J. Sprague and C. Rutherford re US Steel Granite Works Revised PSD Application

Record No.	Date	Description
R 003665-003666	6/23/2020	Email: C. Rutherford to S. Ray and J. Schepp re US Steel Granite Works Revised PSD Permit Application
R 003667	6/23/2020	Email: S. Carter to C. Romaine and M. Patel re US Steel Granite Works Revised PSD Permit Application
R 003668-003669	6/23/2020	Email: S. Ray to C. Rutherford and J. Sprague re US Steel Granite Works Revised PSD Permit Application
R 003670-003671	6/23/2020	Email: C. Rutherford to S. Ray re U.S Steel Granite Works Revised PSD Permit Application
R 003672-003676	6/24/2020	Email chain between C. Rutherford,S. Ray and J. Sprague re US Steel Granite Works Revised PSD Application
R 003677-003681	6/24/2020	Email chain between J. Sprague, S. Ray and C. Rutherford re US Steel Granite Works Revised PSD Application
R 003682	6/24/2020	Email chain between S. Ray and M. Patel forwarding email from G. Saini re US Steel Granite Works Revised PSD Application
R 003683-003684	6/24/2020	Email chain between S. Ray and M. Patel re US Steel Granite Works Revised PSD Application
R 003685	6/24/2020	Email S. Ray to M. Patel re US Steel Granite City Works PSD Permit Application Request
R 003686-003974	6/24/2020	Email: M. Patel to S. Ray forwarding email from G. Saini and attached US Steel Granite City Works PSD Permit Application
R 003975-003977	6/24/2020	Email exchange between S. Ray, J. Sprague and C. Rutherford re US Steel Granite City Works PSD Permit Application
R 003978-003980	6/24/2020	Email exchange between S. Ray, J. Sprague and C. Rutherford re US Steel Granite City Works PSD Permit Application
R 003981	6/24/2020	Email: S. Ray to M. Patel forwarding email from G. Saini re Construction Permit Revision Application for US Steel Granite Works
R 003982-003985	6/24/2020	Email exchange between J. Sprague, S. Ray, and C. Rutherford re US Steel Granite City Works Revised PSD Permit Application
R 003986-003987	6/28/2016	K. Hodge Calendar invitation US Steel Illinois EPA Meeting
R 003988	6/29/2016	C. Romaine acceptance of S. Carter calendar invite re US Steel
R 003989	6/30/2022	C. Romaine acceptance of S. Carter calendar invite to US Steel
R 003990	6/30/2022	C. Romaine acceptance of S. Carter calendar invite to US Steel
R 003991	7/1/2022	C. Romaine acceptance of S. Carter calendar invite to US Steel

Record No.	Date	Description
R 003992-004022	7/1/2021	Email: M. Patel to C. Romaine with attached to US Steel Cogeneration Boiler Project Construction Permit - Revised NSPS/NESHAP Source issued March 25, 2021
R 004023	7/1/2021	C. Romaine acceptance of S. Carter calendar invite re US Steel
R 004024	9/7/2022	S. Carter calendar invite re US Steel
R 004025	7/7/2016	S. Carter calendar invite re US Steel
R 004026	7/7/2016	S. Carter calendar invite re US Steel Permitting and Enforcement
R 004027-004028	7/8/2021	Email chain between D. Keen, S. Ray and J. Sprague re Modeling for US Steel Granite Works
R 004029-004030	7/8/2021	Email chain between D. Keen, S. Ray and J. Sprague re US Steel Modeling
R 004031-004032	7/8/2021	Email chain between D. Keen and S. Ray re Modeling for U S Steel Granite Works
R 004033	7/7/2016	S. Carter calendar invitation re US Steel Granite City Works Permitting and Enforcement
R 004034	7/16/2020	Email: S. Ray to J. Sprague re US Granite City Update
R 004035	7/16/2020	Ermail: S. Ray to M. Patel re US Steel Granite City Application Question
R 004036	7/16/2020	Email chain between M. Patel and S. Ray re US Steel Granite City Application Question
R 004037	7/16/2020	Email chain between M. Patel and S. Ray re US Steel Granite City Application Questions
R 004038	7/17/2017	C. Romaine acceptance of S. Carter calendar invitation re US Steel
R 004039	7/19/2019	C. Romaine acceptance of S. Carter calendar invitation re US Steel
R 004040-004041	7/20/2020	Email chain between J. Sprague and S. Ray re: US Steel Granite City Update
R 004042-004047	7/20/2020	Email chain between S. Ray and J. Sprague re US Steel Update with attached Additional Impacts Analyses for CO
R 004048-004050	7/20/2020	Email chain between J. Sprague, S. Ray, and D. Keen re US Steel Granite City CO Modeling Protocol
R 004051-004053	7/20/2020	Email chain between J. Sprague and S. Ray re US Steel Granite City CO Modeling Protocol
R 004054-004057	7/20/2020	Email chain between J. Sprague and S. Ray re US Steel Granite City CO Modeling Protocol
R 004058-004061	7/20/2020	Email chain between S. Ray and J. Sprague re US Steel Granite City CO Modeling Protocol
R 004062	7/20/2020	Email: S. Ray to K. Deen and J. Sprague re US Steel Granite City Additional Impacts
R 004063	7/21/2019	C. Romaine acceptance of S. Carter calendar invite re US Steel

Record No.	Date	Description
R 004064-004066	7/21/2023	Email: C. Romaine to L. Driver forwarding email re US Steel Revised Permit for Production Increase Project with attached public notice of intent to deny permit
R 004067	7/23/2019	S. Carter calendar invite to K. Kras, M. Patel and C. Romaine re US Steel Meeting
R 004068-004070	7/23/2020	Email chain between S. Ray and G. Saini re US Steel Granite City Impacts Analysis
R 004071-004072	7/23/2020	Email chain between G. Saini and S. Ray re US Steel Granite City Impacts Analysis
R 004073-004074	7/23/2020	Email chain between G. Saini and S. Ray re US Steel Granite City Impacts Analysis
R 004075-004086	7/28/2020	Email exchange betweenG. Saini and S. Ray regarding US Steel Granite City Works Impacts Analysis
R 004087-004097	7/28/2020	Email from D. Ogulei to C. Romaine forwarding exchanges involving National Historic Preservation Act consultations
R 004098-004102	7/29/2020	Email chain between J. Sprague, S. Ray and G. Saini re US Steel Granite City Impact Analysis
R 004103-004115	7/29/2020	Email chain between S. Ray, J. Sprauge and G. Saini re US Steel Granite City Impact Analysis
R 004116-004117	7/28/2020	Email chain between D. Ogulei, B. Frost and C. Romaine re Draft Denial Letter
R 004118-004119	8/3/2020	Email chain between C. Rutherford and S. Ray re Question about U S Steel Granite City
R 004120	8/3/2020	Email S. Ray to C Rutherford re Question about US Steel Granite City
R 004121	8/3/2020	Email chain between C. Rutherford and S. Ray re US Steel Granite City Question
R 004122-004123	8/3/2020	Email chain between S. Ray and C. Rutherford re US Steel Granite City Question
R 004124-004125	8/3/2020	Email chain between S. Ray and C. Rutherford re Question about US Steel Granite City
R 004126	8/4/2015	S. Carter Calendar invite to C. Romaine, J. Morgan, K. Mattison, C. Pressnall re US Steel Meeting
R 004127	8/7/2019	Email: D. Keen to J. Sprague re Modeling for US Steel Granite City Works
R 004128-004129	8/8/2019	Email: J. Sprague to S. Ray and D. Keen re Modeling for US Steel Granite City Works
R 004130-004156	8/12/2021	Email: M. Patel to C. Romaine with attached Construction Permit/PSD Approval Coke Conveyance System issued March 13, 2008
R 004157	8/17/2021	Email: C. Romaine to M. Patel regarding 06070088
R 004158-004160	8/17/2023	Email exchange between B. Frost to S. Carter and D. Hacker re US Steel Request to Extend Public Comment Period

Record No.	Date	Description
R 004161-004163	8/17/2023	Email exchange between B. Frost, S. Carter and D. Hacker re US Steel Request to Extend Public Comment Period
R 004164	8/18/2021	C. Romaine acceptance of S. Carter calendar invite for US Steel Meeting
R 004165-004167	8/18/2023	Email exchange between D. Hacker and B. Frost re US Steel Request to Extend Public Comment Period
R 004168-004170	8/18/2023	Email exchange between B. Frost and D. Hacker re US Steel Request to Extend Public Comment Period
R 004171	10/19/2015	S. Carter calendar invite to J. Schnepp and C. Romaine re US Steel Conference Call
R 004172-004186	8/19/2019	Email: S. Ray to D. Keen and J. Sprague re Modeling for US Steel Granite City Works with attached emissions inventory
R 004187	8/19/2019	Email chain between D. Keen, S. Ray and J. Sprague re Modeling for US Granite City Works
R 004188-004189	8/21/2023	Email B. Frost to S. Carter forwarding J. Lee email re US Steel Granite City Works Extension of Public Comment Period
R 004190	8/26/2013	C. Romaine acceptance of S. Carter calendar invitation re US Steel Pre Meeting
R 004191	8/29/2023	Email: B. Frost to S. Carter and C. Romaine re US Steel Notification Public Comment period
R 004192-004193	8/30/2021	S. Carter calendar invitation to C. Romaine and L. Driver re US Steel Meeting
R 004194	9/3/2013	S. Carter calendar invitation to C. Romaine, M. Reed and J. Sprague re US Steel Pre meeting
R 004195	9/5/2019	S. Carter calendar invitation to C. Romaine, K. Kras, M. Patel and L. Driver re US Steel Meeting
R 004196	9/5/2019	C. Romaine acceptance of L Driver calendar invitation re US Steel Conference Call
R 004197	9/6/2018	C. Romaine acceptance of S. Carter calendar invitation re US Steel Meeting
R 004198	9/7/2021	C. Romaine acceptance of L. Driver calendar invitation re US Steel and Illinois EPA Conference Call
R 004199	9/7/2022	S. Carter calendar invitation US Steel Meeting
R 004200	9/7/2022	L. Driver calendar invitation Illinois EPA Joint Meeting
R 004201	9/7/2022	S. Carter calendar invitation US Steel Meeting to C. Romaine, M. Patel
R 004202	9/8/2022	L. Driver calendar invitation Illinois EPA Joint Meeting
R 004203	9/9/2016	C. Romaine calendar acceptance of S. Carter calendar invitation re US Steel
R 004204-004209	9/9/2019	Email: D. Froning to D. Keen re Modeling for US Steel Granite City Works and attached screening results for CO and SO_2

Record No.	Date	Description
R 004210-004251	9/12/2023	Email chain between B. Frost, J. Schnepp, S. Carter and M. Patel with attached comments of US Steel
R 004279-004339	9/17/2018	Email: S. Carter to C. Romaine with attached correspondence from US Steel
R 004340-004400	9/17/2018	Email: S. Carter to M. Patel with attachments to correspondence of September 17, 2008
R 004401-004403	10/28/2021	L Driver Calendar Invitation re US Steel and Illinois EPA Conference Call
R 004404-004445	9/18/2018	Email: S. Carter to M. Patel and C. Romaine- note to redact email from Becky below re Yuheng Chemical Order
R 004446-004449	9/20/2018	Email: S. Carter to J. Houser, K. Hodge, R. Burlingham with attached C. Romaine email of January 5, 2015 re NOx and VOM Emissions of the BOF Furnaces
R 004450	10/2/2014	C. Romaine acceptance of S. Carter calendar invitation U S Steel
R 004451-004809	10/6/2022	Email: C. Campbell to M. Patel with attached US Steel Granite City Works Revised Construction Permit Application Approval for 1996 Expansion No. 9501001
R 004810	10/7/2019	Email: S. Carter to L. Driver re New Time for US Steel Meeting
R 004811-004856	10/10/2022	Email: D. Keen to S. Ray, C. Campbell, and G. Saini with attached US Steel Granite City Works CO Modeling Report
R 004857	10/11/2022	Email: M. Patel to J. Schnepp forwarding C. Campbell email re Updated US Steel Granite City Permit Application
R 004858-005216	10/11/2022	Email: M. Patel to S. Carter and C. Romaine forwarding email from C. Campbell with attached US Steel Granite City Revised Permit Application
R 005217-005218	10/11/2022	Email chain between S. Ray, D. Keen, C. Campbell and G. Saini re US Steel Granite City Modeling
R 005219-005265	10/11/2022	Email: S. Ray to T. Stewart and C. Rutherford forwarding email from D. Keen re Updated US Steel Granite City Modeling with attached US Steel Granite Works CO Modeling Report
R 005266	10/12/2022	Email: T. Stewart to S. Ray re US Steel Granite City Modeling
R 005267	1012/2022	Email chain between S. Ray and T. Stewart re US Steel Granite City Modeling
R 005268	10/15/2014	C. Romaine acceptance of S. Carter calendar invitation US Steel Quarterly Call
R 005269	10/19/2015	S. Carter calendar invitation to C. Romaine and J. Schnepp re US Steel Quarterly Call
R 005270	10/19/2021	C. Romaine acceptance of L.Driver calendar invitation US Steel and Illinois EPA Conference Call

Record No.	Date	Description
R 005271	10/19/2021	C. Romaine forwarded calendar invitation re US Steel and Illinois EPA Conference Call
R 005272	10/21/2019	L. Driver calendar invitation re US Steel Meeting
R 005273	10/21/2019	S. Carter calendar invitation to C. Romaine, M. Patel and K. Kras re US Steel Conference Call
R 005274-005384	10/22/2018	Email: S. Carter to C. Romaine and M. Patel forwarding K. Ginest email with attached October 19, 2018 correspondence of US Steel
R 005385	10/23/2017	Canceled Meeting sent by S. Carter
R 005386	10/26/2021	Canceled Meeting sent by S. Carter
R 005387	10/26/2021	Canceled Conference Call sent by L. Driver
R 005388-005389	10/26/2022	Email chain between S. Ray and T. Stewart re US Steel Granite City Modeling
R 005390-005391	10/26/2022	Email chain between S. Ray and T. Stewart re US Steel Granite City Modeling
R 005392-005393	10/27/2022	Email chain between T. Stewart and S. Ray re US Steel Granite City Modeling
R 005394-005396	10/27/2022	Email chain between S. Ray to T. Stewart and S. King re US Steel Granite City Modeling
R 005397-005398	10/28/2021	L. Driver calendar invitation US Steel and Illinois EPA Conference Call
R 005399-005401	10/28/2021	L. Driver email re US Steel and Illinois EPA Conference Call
R 005402	11/1/2017	S. Carter calendar invitation to M. Patel, C. Romaine and K. Kras re US Steel Meeting
R 005403-005407	11/1/2022	Email chain between S. Ray, T. Stewart and S. King re US Steel Modeling Results
R 005408-005411	11/1/2022	Email chain between S. Ray, T. Stewart and S. King re US Steel Modeling
R 005412-005413	11/2/2022	Email chain between T. Stewart and D. Keen re US Steel Granite City Modeling
R 005414-005459	11/4/2022	Email: S. Ray to J. Schnepp forwarding email of D. Keen, October 10, 2022 and attached US Steel Granite City Woks CO Modeling Report
R 005460-005506	11/4/2022	Email chain between J. Schnepp, D. Keen, S. Ray, C. Romaine and M. Patel re US Steel Granite City Modeling Report
R 005507	11/9/2021	L. Driver cancellation of US Steel Meeting
R 005508	11/9/2021	C. Romaine acceptance of S. Carter calendar invitation US Steel Conference Call
R 005509	11/9/2021	C. Romaine acceptance of L. Driver calendar invitation US Steel Conference Call
R 005510	11/9/2021	C. Romaine acceptance of L. Driver calendar invitation US Steel Conference Call

Record No.	Date	Description
R 005511-005557	11/9/2022	Email chain between D. Keen, J. Schnepp, S. Ray, M. Patel re US Steel Granite City Modeling Report and attached US Steel Granite City Works CO Modeling Report
R 005558-005561	11/15/2022	Email chain between T. Stewart and S. Ray re US Steel Granite City Modeling
R 005562-005578	11/17/2018	Email S. Carter to C. Romaine and M. Patel forwarding email re Second Deliverable to State and attached November 16, 2018 correspondence of US Steel
R 005579	11/19/2019	C. Romaine acceptance of L. Driver calendar invitation re US Steel Conference Call
R 005580	11/20/2019	C. Romaine acceptance of S. Carter calendar invite re US Steel Conference Call
R 005581	11/23/2021	Email S. Carter to C. Romaine and M. Patel with calendar invitation to US Steel Meeting
R 005582	12/14/2021	S. Carter calendar invite to C. Romaine and M. Patel re US Steel Meeting
R 005583	11/23/2021	C. Romaine acceptance of S. Carter calendar invitation re US Steel Meeting
R 005584	11/23/2021	C. Romaine acceptance of S. Carter calendar invitation re US Steel Meeting
R 005585	11/23/2021	C. Romaine acceptance of L. Driver calendar invitation re US Steel Meeting
R 005586	11/26/2014	M. Patel acceptance of S. Carter calendar invitation for US Steel Meeting
R 005587	11/28/2018	C. Romaine acceptance of S. Carter calendar invitation for US Steel Meeting
R 005588	11/30/2021	C. Romaine acceptance of L. Driver calendar invitation for US Steel Conference Call
R 005589	11/30/2021	C. Romaine acceptance of S. Carter calendar invitation for US Steel
R 005590	12/5/2015	C. Romaine acceptance of S. Carter calendar invitation for US Steel Meeting
R 005591-005607	12/3/2018	Email: S. Carter to M. Patel and C. Romaine forwarding email from US Steel enclosing Second Deliverable to State
R 005608	12/4/2014	C. Romaine acceptance of S. Carter calendar invitation re US Steel Quarterly Meeting
R 005609	12/6/2023	Email: C. Romaine to L. Driver, D. Hacker, C. Campbell, C. Hardin and M. Patel re US Steel Public Comment Period
R 005610	12/8/2015	C. Romaine acceptance of S. Carter calendar invitation to US Steel Meeting
R 005611	12/14/2015	S. Carter calendar invitation to C. Romaine and M. Patel re US Steel Conference Call
R 005612	12/14/2021	S. Carter calendar invitation to C. Romaine and M. Patel re US Steel Meeting

Record No.	Date	Description
R 005613-005614	12/14/2021	S. Carter calendar invitation to C. Romaine and M. Patel re US Steel Meeting
R 005615	12/14/2021	C. Romaine calendar invitation to Bureau of Air Meeting
R 005616	12/14/2021	C. Romaine calendar invitation to US Steel Meeting
R 005617	12/18/2019	C. Romaine acceptance of S. Carter calendar invitation re US Steel Meeting
R 005618	12/20/2022	C. Romaine acceptance of L. Driver calendar invitation re US Steel Conference Call
R 005619	12/22/2015	C. Romaine acceptance of S. Carter calendar invitation re US Steel Permitting discussion

20. Emission Reduction Project - 06070022

Record No.	Date	Description
R 005620-005776	1/17/2008	US Steel Granite City Works application materials for Construction Permit No. 6070022
R 005777-005885	1/17/2008	US Steel Granite City Works figures for Construction Permit No 6070022 Figures
R 005886-005895	1/16/2008	Emission Reduction Project Permit No. 6070022
R 005896-005903	1/18/2007	Emission Reduction Project Permit No. 607022

21. Emission Reduction Project - 11050006

R 005904-005964	4/1/2013	Emission Reduction Project Construction Permit No. 11050006 (subject to integrated processing)
R 005965-005987	4/1/2013	Illinois EPA Responsiveness Summary for Public Comments on Emission Reduction Project US Steel Granite City Works Construction Permit No. 11050006

22. Excerpt from 2013 CAAPP Renewal Application

Record No.	Date	Description
R 005988-006073	11/2013	US Steel Granite City Works CAAPP Renewal Application No. 96030056 Appendix D: Process Descriptions
R 006074-006205	11/2013	US Steel Granite City Works CAAPP Renewal Application No. 96030056 Appendix E: Emissions Units & PTE Calculations
R 006206-006227	11/2013	US Steel Granite City Works CAAPP Renewal Application No. 96030056 Appendix F: Proposed Permit Changes
R 006228-006253	12/3/2013	US Steel Granite City Works CAAPP Renewal Application No. 96030056 to the Illinois EPA

23. February 2008 Application - 95010001

R 006254-006388	1/29/2008	US Steel Granite City Works Application to Modify Permit No. 95010001 Production Increase Permit

R 006389	10/26/2010	Illinois EPA letter to US EPA re Proposed Changes to PSD Approval US Steel Request to Initiate Consultation Under the Endangered Species

24. February 2013 Statement of Basis

R 006390-006437	2/4/2013	US Steel Granite City Works Permit No. 96030056 Statement of Basis for the Planned Issuance of Revised Clean Air Act Program Permit

25. February 2020 Application - 95010001

R 006438-006744	2/26/2020	US Steel Granite City Works Application for Revisions to Construction Permit/Prevention of Significant Deterioration Approval for Permit No. 95010001

26. Federal Register - NESHAP - Integrated Iron and Steel Mfg Facilities

R 006745-006878	7/17/2023	Federal Register Final Rule: NESHAP – Integrated Iron and Steel Manufacturing Facilities

27. FGR on Boilers 11 and 12 - 10080022

R 006879-006881	2/9/2011	US Steel Granite City Works Construction Permit FGR Installation of Boilers 11 and 12

28. Fourth ESP - BOF - 94090026

R 006882-006883	12/1/1994	US Steel Granite City Works Construction Permit Fourth Electrostatic Precipitator

29. Fugitive Dust Plan

R 006884-006902	2/22/2021	US Steel Granite City Works Fugitive Particulate Matter Operating Program Revision Notification

30. Gateway's Visibility and Sensitive Area Impact Analysis - July 2006

R 006903	7/2006	8.3 Local Visibility and Sensitive Area Impacts

31. Homer City

R 006904-006929	4/16/2024	U.S. v. EME Holder City Generation, 727 F. 3d 274(2013)

32. In the Matter of USS, Petition V - 2001-03

R 006930-006975	1/31/2011	In Matter of US Steel Granite City Works, CAAPP Permit 96030056, Petition V 2009-03, Order Granting in Part and Denying in Part Petition for Objection of Permit

33. In the Matter of USS, Petition V - 2011-2

R 006976-007002	12/3/2012	In Matter of US Steel Granite City Works, CAAPP Permit No. 96030056, Petition V 2011-2, Order Granting in Part and Denying in Part Petition of Objection to Permit

34. July 24, 2023 CO Modeling Memo

R 007003-007011	7/24/2023	Modeling Memorandum US Steel Granite City Works Permit No. 95010001

35. Material Cited in Current Application on Furnace Capture

R 007012-007051	5/1/2019	USEPA Memorandum re: Development of Emission Estimates for Fugitive Dust or Intermittent HAP Emission Sources Risk Assessment

36. May 2011 Statement of Basis

R 007052-007131	5/2011	Statement of the Basis for Planned Revisions of Clean Air Act Permit Program (CAAPP) for US Steel Granite City Works, Permit No. 95030056

37. Meeting Notes

Record No.	Date	Description
R 007132-007134		Handwritten Notes
R 007135-007139		Handwritten Meeting Notes
R 007140-007143		Handwritten Notes
R 007144-007145	6/28	Handwritten Meeting Notes
R 007146		Handwritten Notes
R 007147-007150		Handwritten Notes
R 007151		Handwritten Notes
R 007152-007161		Handwritten Meeting Notes
R 007162-007165	4/3/2019	Handwritten Meeting Notes
R 007166-007167	1/24/2017	Handwritten Meeting Notes
R 007168-007169	5/4/2018	Handwritten Meeting Notes
R 007170	12/14/2015	Handwritten Meeting Notes
R 007171-007174	2/24/2020	Handwritten Meeting Notes US Steel/Illinois EPA with attached email chain between D. Keen, J. Schnepp, S. Carter, C. Romaine re Proposed US Steel Granite City Works CO Modeling Protocol
R 007175-007180	2/5/2018	Handwritten Meeting Notes

Record No.	Date	Description
R 007181-007194		Handwritten Notes with attached Proposed Compliance Commitment Agreement January 7, 2016, and Violation Notice
R 007195		Handwritten Notes
R 007196-007197		Handwritten Notes
R 007198-007199		Handwritten Notes
R 007200		Handwritten Notes
R 007201-007203		Handwritten Notes
R 007204		Handwritten Notes
R 007205		Handwritten Notes
R 007206-007207		Handwritten Notes
R 007208-007210		Handwritten Notes
R 007211		Handwritten Notes
R 007212		Handwritten Notes
R 007213	4/30/2015	Handwritten Meeting Notes
R 007214	5/12/2015	Handwritten Meeting Notes
R 007215-007217	4/14/2015	Handwritten Meeting Notes
R 007218	3/25/2015	Handwritten Meeting Notes
R 007219-007220	2/25/2015	Handwritten Meeting Notes
R 007221	2/19/2015	Handwritten Meeting Notes
R 007222-007223	2/17/2015	Handwritten Meeting Notes
R 007224	2/19/2015	Handwritten Meeting Notes
R 007225-007226	1/14/2015	Handwritten Meeting Notes US Steel Quarterly Call with Environmental Groups
R 007227-007229	1/7/2015	Handwritten Meeting Notes
R 007230-007233	11/19/2014	Handwritten Meeting Notes
R 007234-007235	10/14/2014	Handwritten Meeting Notes US Steel Quarterly Call with Environmental Groups
R 007236-007237	10/8/2014	Handwritten Meeting Notes Internal US Steel Meeting on Upcoming Quarterly Call
R 007238-007239	7/15/2014	Handwritten Meeting Notes
R 007240	6/12/2015	Handwritten Meeting Notes
R 007241-007243	7/21/2015	Handwritten Meeting Notes US Steel Quarterly Meeting
R 007244	8/27/2015	Handwritten Meeting Notes US Steel Gateway Conference Call
R 007245	10/7/2015	Handwritten Meeting Notes
R 007246		Handwritten Notes
R 007247-007249	10/21/2015	Handwritten Meeting Notes
R 007250	11/18/2015	Handwritten Meeting Notes
R 007251-007253	12/14/2015	Handwritten Meeting Notes with US Steel
R 007254-007258	3/3/2016	Handwritten Meeting Notes with US Steel
R 007259-007260	6/30/2016	Handwritten Meeting Notes
R 007261-007263	7/7/2016	Handwritten Meeting Notes with US Steel
R 007264-007266	10/25/2016	Handwritten Meeting Notes US Steel Quarterly Meeting

Record No.	Date	Description
R 007267-007269	1/24/2017	Handwritten Meeting Notes US Steel Meeting
R 007270	2/1/2017	Handwritten Meeting Notes US Steel Meeting
R 007271-007272	5/4/2017	Handwritten Meeting Notes US Steel Quarterly Meeting
R 007273	11/1/2017	Handwritten Meeting Notes US Steel Meeting
R 007274	4/4/2018	Handwritten Meeting Notes US Steel Meeting
R 007275	6/20/2018	Handwritten Meeting Notes US Steel Internal Meeting
R 007276	8/20/2018	Handwritten Meeting Notes US Steel Conference Call
R 007277	8/28/2018	Handwritten Meeting Notes US Steel Meeting
R 007278	12/3/2018	Handwritten Meeting Notes US Steel Conference Call with Attorney General (redact notes)
R 007279-007280	2/5/2019	Handwritten Meeting Notes with US Steel
R 007281-007282	4/4/2019	Handwritten Meeting Notes with US Steel
R 007283-007285	7/23/2019	Handwritten Meeting Notes with US Steel
R 007286	10/21/2019	Handwritten Meeting Notes US Steel
R 007287	11/19/2019	Handwritten Meeting Notes with US Steel
R 007288	12/18/2019	Handwritten Meeting Notes with US Steel
R 007289-007290	1/22/2020	Handwritten Meeting Notes with US Steel
R 007291		Handwritten Notes
R 007292-007293	2/24/2020	Handwritten Notes US Steel Meeting
R 007294	3/9/2020	Handwritten Notes
R 007295	4/20/2021	Handwritten Meeting Notes
R 007296-007299	5/13/2021	Handwritten Meeting Notes Internal
R 007300-007302	5/27/2021	Handwritten Meeting Notes US Steel Meeting
R 007303-007306	7/21/2021	Handwritten Meeting Notes US Steel
R 007307-007308	9/14/2021	Handwritten Meeting Notes
R 007309-007311	10/28/2021	Handwritten Meeting Notes US Steel Meeting
R 007312-007313	11/23/2022	Handwritten Meeting Notes US Steel Meeting
R 007314-007315	12/14/2021	Handwritten Meeting Notes
R 007316-007320	3/9/2022	Handwritten Meeting Notes US Steel Meeting
R 007321-007322	4/9/2022	Handwritten Meeting Notes US Steel Meeting
R 007323	6/28/2022	Handwritten Meeting Notes US Steel Meeting
R 007324-007326	9/7/2022	Handwritten Meeting Notes
R 007327	12/12/2022	Handwritten Meeting Notes with USEPA
R 007328	2/14/2023	Handwritten Meeting Notes US Steel Internal Meeting
R 007329	4/19/2022	Handwritten Meeting Notes US Steel Internal Meeting
R 007330-007331	6/1/2023	Handwritten Meeting Notes US Steel Meeting
R 007332-007333	4/6/2022	Handwritten Meeting Notes

38. Meyers Memo - Circa May 1983 (Undated)

Record No.	Date	Description
R 007334-007335		USEPA Memo: S. Meyers to D. Howekamp re Net Emission Increase Under PSD

39. Midwest Generation Material

R 007336-007351	1/24/2024	U.S. v. Midwest Generation, 781 F Supp. 2d 677 (2011)
R 007352-007363	1/24/2024	U.S. v. Midwest Generation, 694 F. Supp. 2d 999 (2010)
R 007364-007369	1/24/2024	U.S. v. Midwest Generation, 720 F. 3d 644 (2013)
R 007370-007428	5/9/2017	Midwest Generation Joliet Generating Station Revised Construction Permit 15030051
R 007429-007486	7/9/2020	Midwest Generation Joliet Generating Station Revised Construction Permit 15030051
R 007487-007532	7/15/2016	Midwest Generation Joliet Generating Station Revised Construction Permit 15030051
R 007533-007539	3/16/2011	United States v. Midwest Generation LLC, 09-cv-5277, N.D. IL, Memorandum Opinion and Order
R 007540-007633	8/3/2015	Midwest Generation LLC, Joliet Generating StationNatural Gas Conversion Project Construction Permit Application Revision & Supplement
R 007634-007671	7/9/2020	Midwest Generation Joliet Generating Station Revised Construction Permit Application No. 15030051

40. Ministerial Act

Record No.	Date	Description
R 007672-007673		Law Insider Definition of Ministerial Act

41. Miscellaneous Modeling Material

R 007674		Annual Air Emissions for IL461999-2019
R 007675-007682	10/26/2022	USEPA Air Quality Quick Look Report Illinois
R 007683		Illinois EPA 2016-2020 RTP NAAQS 8-Hour Evaluation
R 007684-007707		CO Hourly Emissions Inventory
R 007708-007716		Auer's Analysis
R 007717-007718		Distance between PSD Project and Monitors
R 007719-007721		Emission Inventory
R 007722-007724		Emission Inventory
R 007725-007726		SO_2 Annual Emissions Inventory
R 007727-007730		Miscellaneous Modeling Information
R 007731		Annual Air Emissions for IL46 1999-2019
R 007732		Eight Hour Emission Data
R 007733		Eight Hour Emission Data
R 007734		Eight Hour Emission Data
R 007735		Modeling Results
R 007736		Modeling Results
R 007737		Modeling Results
R 007738		Miscellaneous Modeling Information
R 007739		Study Area Auer Analysis

R 007740		Study Area Auer Analysis NLCD 2016
R 007741		Study Area Auer Analysis NLCD 2019
R 007742-007743		Carbon Monoxide Point Sources & Emissions
R 007744		Modeling Results
R 007745-007760		Modeling Results
R 007761-007762		Distance Between PSD and Class I Areas
R 007763-007764		CO Point Sources & Emissions
R 007765-007766		Distance Between PSD Project and Met Stations

42. Miscellaneous Guidance

Record No.	Date	Description
R 007767-007768	8/23/2005	USEPA Letter to IDEQ re Permit Modification Becomes Major Solely by Virtue of a Relaxation

43. Missouri CO Ambient Air Monitoring

R 007769-007770	9/1/2023	Missouri Department of Natural Resources Air Pollution Control Program 2023 Monitoring Network Plan

44. MOU Between USS and IEPA

Record No.	Date	Description
R 007771-007776	7/1/2010	US Steel Granite City Works and Illinois EPA Memorandum of Understanding re Reductions in Emissions of PM

45. Natural Gas Usage Increase Project - 98110038

R 007777-007780	11/12/1998	US Steel Granite City Works Application Requesting Natural Gas Increase
R 007781-007782	11/13/1998	US Steel Granite City Works Calculation Sheet for Construction Permit Allowing for Increase in Natural Gas Usage
R 007783-007788	12/9/1998	US Steel Granite City Works Construction Permit Natural Gas Usage Increase

46. November 14 Test Information Less Appendices

R 007789-007839	1/9/2015	US Steel Granite City Works Stack Test of November 11 - 13, 2014
R 007840-007862	8/11/2015	Review of US Steel Granite City Works Stack Tests of November 11-13, 2014

47. October 7, 2020 Modeling Memo

R 007863-007871	10/7/2020	Memorandum: C. Ruthford and S. Ray to M. Patel re US Steel Granite City Works Application for Revisions to Permit 95010001, Air Quality Analysis for Carbon Monoxide

48. Operating Permits 72080034, 72080036 - Blast Furnaces

R 007872-007881	1/25/2008	US Steel Granite City Works Operating Permit Blast Furnace A No. 72080034
R 007882-007889	1/25/2008	US Steel Granite City Works Operating Permit Blast Furnace B No. 72080036

49. Options Federal Register - June 28, 1989

R 007890-007917	6/28/1989	Federal Register 40 CFR Parts 51-52 Submittal of Implementation Plans

50. Orange Recycling & Ethanol

R 007918-007931	4/8/2002	USEPA Administrative Order Denying Petitions for Objection to Permit, Orange Recycling & Ethanol Production Facility
R 007932-007968	5/2/2001	USEPA Administrative Order Partial Granting and Denying Petition for Objection to Permit, Orange Recycling & Ethanol Production Facility
R 007969-007997	7/31/2002	USEPA v. Pencor Masada Oxonoyl, 300 F.3d 256 (2nd Cir. 2002)

51. Part A - Initial Application

Record No.	Date	Description
R 007998-008405	12/1994	National Steel Permit Application Production Increase Permit 95010001 prepared by Woodward Clyde

52. Part B - Agency's Permit

R 008406-008726	1/25/1996	US Steel Granite City Construction Permit 95010001 & Miscellaneous Documents

53. Part C - 2008 Revision

R 008727-008871	1/31/2008	US Steel Granite City Request for Modification of Production Increase Permit
R 008872-008880	8/19/2010	Memorandum: P. Brooks to J. Schnepp re US Steel Granite City Works Review of Air Quality Impact Analysis

R 008881-008926	2/2008-12/2012	Miscellaneous Correspondence
R 008927-009118	1/2010-7/2013	Miscellaneous Emails and Attachments
R 009119-009169	3/2007-6/2010	US Steel Granite City Works Cogeneration and Blast Furnace Stack Test Results and Miscellaneous Documents relevant to 2008 Revision

54. Part D - 2012 Revision

R 009170-009934	5/30/2012	US Steel Granite City Works Construction Permit Revised PSD Approval Revised 9501001 & Supporting Documentation

55. Past AP 42's Iron Pellet Screen

Record No.	Date	Description
R 009935-009944	9/1985	Compilation of Air Pollutant Emission Factors Volume I Stationary Point and Area Sources Fourth Edition
R 009945-009954	5/1983	Draft Supplement 14 for Compilation of Air Pollutant Emission Factors, Third Edition, Including Supplements 1-7

56. PCB 2013-053

Record No.	Date	Description
R 009955-010379	4/8/2013	US Steel Petition for Review (PCB No. 2013-053)

57. PCB 2013-062

R 010380-010480	5/6/2013	US Steel Petition for Review filed (PCB No. 2013-062)

58. People v. USS Madison County 05-CH-750 (December 18, 2007)

Record No.	Date	Description
R 010481-010509	12/18/2007	People v. US Steel (05-CH-750) Madison County Circuit Court, Consent Order

59. Permit 95010001

Record No.	Date	Description
R 010510-010608	5/8/2024	Denial of US Steel Granite City Works Application for Revisions to Construction Permit/PSD Approval Permit No. 95001010001

R 010609-010833	5/8/2024	Illinois EPA Responsive Summary for Comments on Proposed Denial of Application of US Steel Granite City Works Revisions to Construction Permit/PSD Approval Permit No. 950100001
R 010834	5/8/2024	Permit Review Traveler Sheet US Steel Granite City Works Application Denial Permit No. 95010001

60. Project Summary for Original - 95010001 - November 1995

R 010835-010877	11/3/1995	Project Summary for Proposed Issuance of US Steel Granite City Works Construction Permit 95010001

61. Proposed Revisions to 35 IAC 212 - October 30, 1995

R 010878-010879	10/30/1995	Proposed Revisions to 35 Ill. Adm. Code 212: USEPA Concerns in Conditional SIP Approval

62. Public Comments

Record No.	Date	Description
R 010880-010919	9/11/2023	US Steel Granite City Works Comments to Notice of Intent to Deny Application for Revisions to Construction Permit No. 95010001
R 010920-010923	8/21/2023	American Bottom Conservancy Public Comments on Draft Denial of US Steel Granite City Works Application for Revisions to Construction Permit No. 95010001
R 010924-010928	8/22/2023	Email B. Frost to C. Romaine and S. Carter with attached Sierra Club August 17, 2023 Public Comments to Notice of Intent to Deny Application for Revisions to Construction Permit No. 95010001
R 010929-010966	1/8/2024	US Steel Granite City Works Comments to Notice of Intent to Deny US Steel Application for Revisions to Construction Permit No. 95010001
R 010967	8/17/2023	US Steel Granite City Works Request for Extension of Comment Period to Notice of Intent to Deny Application for Revisions to Construction Permit No. 95010001

63. Public Notice

R 010968-011016	7/2023	Draft Denial of US Steel Granite City Works Application for Revisions to Construction Permit 95010001
R 011017	8/18/2023	Illinois EPA Notice of Extension of Public Comment Period on Intent to Deny US Steel Granite City Works Application for Revisions to Construction Permit 95010001
R 011018-011019		Illinois EPA Notice of Intent to Deny and Public Comment Period Application for Revisions to US Steel Granite City Works Construction Permit/PSD Approval

R 011020-011047	7/2023	Illinois EPA Project Summary for the Proposed Denial of US Steel Granite City Works Application for Revisions to Construction Permit/PSD Approval
R 011048-011166		Illinois EPA Notice of Intent to Deny Revised Draft Letter and New Public Comment Period for US Steel Granite City Works Application for Revisions to Construction Permit/ PSD Approval

64. Revised Application October 2022 (95010001)

Record No.	Date	Description
R 011167-011524	10/3/2022	US Steel Granite City Works Application for Revision to Construction Permit /PSD Approval 1996 Expansion Permit No. 95010001

65. Revised Draft Denial - Calculation Sheet and Accompanying Information

R 011525	12/6/2023	Calculation Sheet for US Steel Granite City Works Application for Revision to Construction Permit for 1996 Production Increase Project
R 011526-011553	12/6/2023	Illinois EPA Project Summary for the Proposed Denial of US Steel Granite City Works Application for Revisions to Construction Permit/PSD Approval
R 011554-011644	12/2023	Draft Denial of Application for Revision to Construction Permit/PSD Approval for US Steel Granite City Works

66. Scrivener's Error

Record No.	Date	Description
R 011645	2016	Ryan D. Doerfler, *The Scrivener's Error,* 110 Northwestern University Law Review, 811 (2016) Abstract

67. Section 165(c) of the CAA

R 011646-011647	2013	42 U.S.C. Section 7475 Preconstruction Requirements for Major Emitting Facilities

68. Shell Offshore

R 011648-011722	3/30/2012	*In re Shell Offshore, Inc.,* 15 Environmental Administrative Decisions, OSC Appeal Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review
R 011723-011766	10/21/2011	*In re Shell Offshore, Inc.*, USEPA Permit to Construct and Title V Air Quality Operating Permit
R 011767-011847		*In re Shell Offshore, Inc.*, USEPA Response to Comments for Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk for Shell Offshore Inc.

R 011848-011901	12/21/2011	*In re Shell Offshore, Inc.,* OCS Appeal Nos. 11-05, 11-06 & 11-07, Response to Petitions for Review

69. SO2 FESOP - 94120017

Record No.	Date	Description
R 011902-011917	3/7/1995	Federally Enforceable State Operating Permit issued to U.S. Steel Granite City Works Sulfur Dioxide Emission Limits

70. Supplemental Emails

Record No.	Date	Description
R 011918	5/7/2024	Email chain between S. Brubaker and C. Romaine re US Steel Granite City Works Denial
R 011919	5/8/2024	Email C. Romaine to S. Brubaker re US Steel Granite City Denial Letter
R 011920	5/8/2024	Email C. Romaine to S. Brubaker re US Steel Granite City Works Responsive Summary
R 011921	5/8/2024	Email S. Brubaker to C. Romaine re US Steel Granite City Works Denial Letter and Responsive Summary

71. Title V Issued 03-04-23 - 96030056

Record No.	Date	Description
R 011922-012253	3/4/2013	US Steel Granite City Works Title V Revised CAAPP Permit for Integrated Steel Mill

72. Tucson Electric

Record No.	Date	Description
R 012254-012269	8/8/2018	Pima County, AZ Outreach for Tucson Electric Power PSD Permit, Appendix A Summary of Public Notification Process
R 012270-012315	8/8/2018	Pima County Department of Environmental Quality PSD Permit issued to Tucson Electric Power Irvington Generating Station
R 012316-012337	12/3/2018	*In re Tucson Electric*, 17 E.A.D. 675, PSD Appeal 18-02
R 012338-012347	8/8/2018	Tucson Electric Power Technical Support Document

73. USEPA - NOx Emissions from Iron Steel Mills

R 012348-012395	9/1994	Alternative Control Techniques Document – Nitrogen Oxide Emissions from Iron and Steel Mills, EPA-453/R-94-065

74. USEPA Order- BP Amoco Chemical

R 012396-012438	7/20/2021	*In the Matter of BP Amoco Chemical Company*, Texas City Chemical Plant Galveston County, Texas, Petition No. VI-2017-6, Order Granting in Part and Denying in Part a Petition for Objection to Permit

75. USEPA Rulemaking for the Meaning of Project

R 012439-012446	1/15/2009	74 Fed. Reg. 2376, Rules and Regulations for 40 CFR Parts 51& 52 Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Aggregation and Project Netting
R 012447-012456	11/15/2018	83 Fed. Reg. 57824, Rules and Regulations for 40 CFR Parts 51 and 52 Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Aggregation; Reconsideration
R 012457-012531	10/22/2020	Final Rule for CFR Parts 51 and 52 Prevention of Significant Deterioration and Nonattainment of New Source Review: Project Emissions
R 012532-012551	11/24/2020	85 Fed. Reg. 74890, Rules and Regulations for 40 CFR Parts 51 & 52 Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR): Project Emissions Accounting
R 012552-012564	3/13/2018	US EPA Archive Document Memorandum re: Project Emissions Accounting Under New Source Review Preconstruction Permitting Program

76. USEPA WebFIRE

R 012565-012574		Emission Factors Search

77. USS - Indefinitely Idling

R 012575-012576	11/28/2023	News Article: Layoffs expected after US Steel indefinity idles primary operations at Granite City facility

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ Ellen F. O'Laughlin
Ellen F. O'Laughlin
Supervising Attorney
Environmental Bureau
69 W. Washington Street, 18th Floor
Chicago, IL 60602
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Ellen.Olaughlin@ilag.gov

Electronic Filing: Received, Clerk's Office 09/30/2024

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

UNITED STATES STEEL CORPORATION,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB No. 24-77
	)	(Permit Appeal-Air)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	)	
	)	
	)	
Respondent.	)	

CERTIFICATE OF RECORD ON APPEAL

I, Jason Schnepp, of the Illinois Environmental Protection Agency hereby certify that the Record on Appeal filed in the above-referenced matter and summarized in the attached Index of the Record on Appeal pursuant to 35 Ill. Adm. Code 105.116 and 105.612 (the "Index"), is true and complete to the best of my knowledge, information and belief.

Jason Schnepp
Clean Air Act Program Permit (CAAPP)
Construction Unit Manager
Illinois Environmental Protection Agency

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-2113

2200 Churchill Road, Springfield, IL 62794-9276

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division of National Steel Corporation
Attn: Joseph S. Kocot
Route 203 (Edwardsville Road)
Granite City, IL 62040

Application No.: 92090104
I.D. No.: 119813AAI
Applicant's Designation:
Date Received: December 22, 1993
Subject: BFs and BOFs Production Increase
Date Issued: January 4, 1994
Location: Route 203 (Edwardsville Road), Granite City

Permit is hereby granted to the above-designated Permittee to CONSTRUCT/MODIFY operations consisting of an increase in the permitted production rate of Blast Furnaces A & B to 6500 Net Tons Per Day (NTPD) and Basic Oxygen Furnaces 1 & 2 to 7600 NTPD (previous permitted production rates were 5600 NTPD and 6900 NTPD, respectively), however, no increase in the production rate of Continuous Casters 1 & 2 is permitted over the current allowable of 6900 NTPD. This permit is subject to standard conditions attached hereto and the following special conditions:

1a. Blast Furnaces (BFs) A & B are permitted to increase production to a combined total of 6500 Net Tons Per Day (NTPD), as averaged over a month. The previous permitted level was 5600 NTPD.

b. Basic Oxygen Furnaces (BOFs) 1 & 2 are permitted to increase production to a combined total of 7600 NTPD, as averaged over a month. The previous permitted level was 6900 NTPD.

2. This permit is issued based upon the above permitted production increase not constituting a modification under either 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - PSD. The permitted production increase does not constitute a modification because it does not entail a physical change and a change in the method of operation is not occurring because the previous levels of production of the BFs and the BOFS were not set by a federally enforceable permit condition(s).

3. The BFs and BOFs may operate under this construction permit at the increased production rates allowed under this permituntil February 1, 1994.

JAN 12 1994
ENVIRONMENTAL

4a. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

i. total production of hot metal at the BFs (daily, monthly, and annual production in tons)
ii. total production of molten steel at the BOFs (daily, monthly, and annual production in tons)

b. These records shall be retained for three years and shall be made available for inspection and copying by the Agency upon request.

5. A summary of the records required by above condition 4 shall be submitted every 6 months beginning with the initial month that the BFs and BOFs are operated at the increased production rates. This report shall be submitted to both the Regional Office and Permit Section.

6a. The conditions of this permit supersede the conditions of the operating permits for the BFs and BOFs where a conflict exists.

b. In the event that the stack testing requirements of the existing operating permit for the BOFs (#72080043) would require that more than one stack test be performed on the BOFs by June 1, 1994, then the testing required by the BOFs operating permit is not required to be performed providing that the testing required by this permit is performed as required.

Please note that this permit does not revise the existing federally enforceable permit condition limit of 6900 NTPD total production from Continuous Casters 1 & 2, as averaged over a month. This permit condition is contained in Joint Construction and Operating Permit application number 87110097 and in addition to constraining operation of the Casters it directly constrains operations of the BOFs and indirectly constrains operations of the BFs. Under current regulations a request for the relaxation of this production limit would constitute a modification under both 35 Ill. Code Part 203 and 40 CFR 52.21 - PSD and therefore would require review under these regulations. A construction permit needs to be obtained from the Agency before any revision to the Continuous Casters production limit can be made.

It should be noted that a construction permit is required for this production increase as a result of the production increase constituting a modification under 35 Ill. Adm. Code Part 201.

Also note that Condition 3 has been revised to allow operation at the increased production rates while review of compliance testing results is conducted.

If you have any questions on this, please call Jim Ross at 217/782-2113.

Donald E Sutton P.E.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:mab/667N/sp/4-6

cc: Region 3

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

R000004

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

DEC 29 1992

Granite City Division of National Steel Corporation
Attn: Joseph S. Kocot
Route 203 (Edwardsville Road)
Granite City, IL 62040

Application No.: 92090104 I.D. No.: 119813AAI
Applicant's Designation: Date Received: September 28, 1992
Subject: BFs and BOFs Production Increase
Date Issued: December 22, 1992
Location: Route 203 (Edwardsville Road), Granite City

Permit is hereby granted to the above-designated Permittee to CONSTRUCT/MODIFY operations consisting of an increase in the permitted production rate of Blast Furnaces A & B to 6500 Net Tons Per Day (NTPD) and Basic Oxygen Furnaces 1 & 2 to 7600 NTPD (previous permitted production rates were 5600 NTPD and 6900 NTPD, respectively), however, no increase in the production rate of Continuous Casters 1 & 2 is permitted over the current allowable of 6900 NTPD. This permit is subject to standard conditions attached hereto and the following special conditions:

1a. Blast Furnaces (BFs) A & B are permitted to increase production to a combined total of 6500 Net Tons Per Day (NTPD), as averaged over a month. The previous permitted level was 5600 NTPD.

b. Basic Oxygen Furnaces (BOFs) 1 & 2 are permitted to increase production to a combined total of 7600 NTPD, as averaged over a month. The previous permitted level was 6900 NTPD.

2. This permit is issued based upon the above permitted production increase not constituting a modification under either 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - PSD. The permitted production increase does not constitute a modification because it does not entail a physical change and a change in the method of operation is not occurring because the previous levels of production of the BFs and the BOFS were not set by a federally enforceable permit condition(s).

3. The BFs and BOFs may operate under this construction permit at the increased production rates allowed under this permit for a period not to exceed 6 months after initial operation of either the BFs or the BOFs at a production rate greater than 5600 or 6900 NTPD, as averaged over a month, respectively. This period is being allowed to provide for compliance testing, compilation of results and their submittal, and subsequent review by the Agency.

4. REQUIRED TESTING

a. Within 3 months after initial operation of the BFs at a production rate greater than 5600 NTPD, as averaged over a month, the following tests shall be performed:

i. the emissions of Particulate Matter, Nitrogen Oxides, Volatile Organic Material, and Sulfur Dioxide from the BF Casthouse Baghouse shall be measured,

ii. tests which demonstrate compliance with 35 Ill. Adm. Code 212.445, and

iii. the emissions of Sulfur Dioxide from the BF Iron Spout Baghouse shall be measured.

b. Within 3 months after initial operation of the BOFs at a production rate greater than 6900 NTPD, as averaged over a month, the following tests shall be performed:

i. the emissions of Particulate Matter, Carbon Monoxide, and Nitrogen Oxides from the BOF-ESP stack shall be measured.

ii. tests which demonstrate compliance with 35 Ill. Adm. Code 212.123, 212.446(a) and 212.321.

c. The BOF tests shall be performed during operation of the ESP with one of the six passageways dampered off.

d. These tests shall be performed by an approved independent testing service at a production rate which is representative of the maximum permitted production level of the process being tested.

e. The following methods and procedures shall be used for testing of emissions, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Opacity	USEPA Method 9
Sulfur Dioxide	35 Ill. Adm. Code 214.101(a) (USEPA Method 6)
Volatile Organic Material	35 Ill. Adm. Code 215.102 (USEPA Method 18 or 25)
Carbon Monoxide	USEPA Method 10
Nitrogen Oxides	35 Ill. Adm. Code 217.101 (USEPA Method 7)

f. The Agency shall be notified in writing a minimum of thirty (30) days prior to the expected date of these tests and further notified a minimum of five (5) working days prior to the exact date, time and place of these tests, to enable the Agency to witness these tests.

g. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:
-process/mode tested
-pollutant measured
-process weight rate (ton/hr)
-allowable emission limit (lb/hr, and for the BF casthouse baghouse provide gr/dscf)
-measured emission rate (lb/hr and for the BF casthouse baghouse provide gr/dscf)
-compliance demonstrated - Yes/No
-emission factor, calculated using the average test results and in units of lbs pollutant emitted per ton of metal produced or processed

and for the BOF, only, provide

- stack gas pulpit set point
- actual measured stack gas flow rate

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule.

iii. Detailed description of test conditions, including

-pertinent process information (e.g., fuel or raw material consumption)
-control equipment information, i.e., equipment condition and operating parameters during testing
-a discussion of any preparatory actions taken, i.e., inspections maintenance and repair.

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.

v. An explanation of any discrepancies among individual tests or anomalous data.

h. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

i. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.
ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19276
Springfield, Illinois 62794-9276

5a. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

i. total production of hot metal at the BFs (daily, monthly, and annual production in tons)
ii. total production of molten steel at the BOFs (daily, monthly, and annual production in tons)

b. These records shall be retained for three years and shall be made available for inspection and copying by the Agency upon request.

6. A summary of the records required by above condition 5 shall be submitted every 6 months beginning with the initial month that the BFs and BOFs are operated at the increased production rates. This report shall be submitted to both the Regional Office and Permit Section.

7a. The conditions of this permit supersede the conditions of the operating permits for the BFs and BOFs where a conflict exists.

b. In the event that the stack testing requirements of the existing operating permit for the BOFs (#72080043) would require that more than one stack test be performed on the BOFs by June 1, 1994, then the testing required by the BOFs operating permit is not required to be performed providing that the testing required by this permit is performed as required.

Please note that this permit does not revise the existing federally enforceable permit condition limit of 6900 NTPD total production from Continuous Casters 1 & 2, as averaged over a month. This permit condition is contained in Joint Construction and Operating Permit application number 87110097 and in addition to constraining operation of the Casters it directly constrains operations of the BOFs and indirectly constrains operations of the BFs. Under current regulations a request for the relaxation of this production limit would constitute a modification under both 35 Ill. Code Part 203 and 40 CFR 52.21 - PSD and therefore would require review under these regulations. A construction permit needs to be obtained from the Agency before any revision to the Continuous Casters production limit can be made.

It should be noted that a construction permit is required for this production increase as a result of the production increase constituting a modification under 35 Ill. Adm. Code Part 201.

If you have any questions on this, please call Jim Ross at 217/782-2113.

Donald E. Sutton

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:mab/667N/sp/4-8

cc: Region 3
Jim O'Donnell

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

R000011

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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10-17-2018
10-I

Initial Review – Rejected
Kevin Mattison
December 20, 2018

Failed VOM and NOx Limits
Historical issues, I believe its already at the AGO

MACT COMPLIANCE TEST REPORT
BASIC OXYGEN FURNACE (BOF) ESP EXHAUST STACK

GRANITE CITY WORKS
GRANITE CITY, ILLINOIS

Prepared For:

UNITED STATES STEEL CORPORATION
GRANITE CITY, ILLINOIS

Prepared By:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
HAZELWOOD, MISSOURI

CEC Project 183-636

DECEMBER 3, 2018

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TEST REPORT CERTIFICATION

This report, testing details and approach have been developed under the supervision (including review) of the persons named below. Results contained in this report relate only to the sources tested and the parameters included in the test program.

Civil & Environmental Consultants, Inc. (CEC) operates as an accredited air emission testing body (AETB) under a quality management system in conformance with ASTM D7036-04 (Reapproved 2011) "Standard Practice for Competence of Air Emission Testing Bodies". CEC has been issued accreditation certificate number 3913.01, expiration November 30, 2019, by the joint American Association for Laboratory Accreditation (A2LA) and the Stack Testing Accreditation Council (STAC).

Date: 12/03/2018 Signature _____

Franklin M. Stevens, QSTI
Vice President
Civil & Environmental Consultants, Inc.

Date: 12/03/2018 Signature _____

Nicholas A. Pichee, QSTI
Project Manager
Civil & Environmental Consultants, Inc.

1.0 INTRODUCTION

Civil & Environmental Consultants, Inc. (CEC) was contracted to perform a compliance emissions test on the Basic Oxygen Furnace (BOF) electrostatic precipitator (ESP) exhaust stack located at the United States Steel (USS) Granite City Works (GCW) facility located in Granite City, Illinois to demonstrate compliance with Operating Permit #96030056, revision issued March 4, 2013. The purpose of this test was to determine the concentration and mass emission rate of oxides of nitrogen (NO_X), carbon monoxide (CO), volatile organic material (VOM) as carbon, particulate matter (PM) and lead (Pb) at the ESP exhaust. Visible Emissions (VE) observations were also be performed during each test period.

The compliance test was conducted by CEC, whose main office for emission measurements is located at 4848 Park 370 Blvd., Suite F, Hazelwood, Missouri, 63042. Sampling was performed in accordance with the United States Environmental Protection Agency (USEPA) Reference Methods 1, 2/2F, 3A, 4, 5, 7E, 9, 10, 25A, and 29 as published in the Title 40, *Code of Federal Regulations* (CFR), Part 60, Appendix A for sampling point determination, volumetric flow and velocity, molecular weight, moisture content, PM, NO_X, VE, CO, VOM and Pb, respectively. The compliance tests consisted of three, 120-minute test runs designed to collect the minimum sample volume required in Title 40, *Code of Federal Regulations* (CFR), Part 63, Subpart FFFFF (60 dscf).

Three (3) emission test runs were conducted with the BOF ESP in operation on October 16-17, 2018. Mr. Nicholas Pichee of CEC was on-site and responsible for coordinating with the plant representative, Mr. Terry Tecklenburg. Messrs. Chris Gray, Ezra Boyd and Tony Weiss of CEC were responsible for the collection of the pollutant samples. Ms. Susan Lawless of USS performed the VE observations on the ESP stack.

This report contains the results of the emission tests conducted during this test program. Copies of reference method field data sheets, electronic data sheets, sample analysis data, example calculations, equipment calibration records, facility operational data, and personnel certifications are included as appendices to this report.

2.0 SUMMARY OF TEST RESULTS

USEPA Methods 1, 2/2F, 3A, 4, 5, 7E, 9, 10, 25A and 29 were used to determine the sample points, volumetric flow and velocity, molecular weight, moisture content, PM, NO_X, VE, CO, VOM and Pb emissions from the BOF ESP exhaust stack. Table 1 of this report presents a summary of the results for the tests performed at the BOF ESP exhaust stack. The emission rates presented in Table 1 were calculated based upon stack conditions measured during the test periods. The calculations were conducted in accordance with the appropriate test methods.

Table 1 – Compliance Test Results

Pollutant	Parameter	Run 1	Run 2	Run 3	Average	Limit
VOM	tons/year	39.560	11.909	2.041	17.837	10.74
VOM	lbs/ton of steel	0.02169	0.00734	0.00191	0.01031	0.0060
NO_X	tons/year	71.832	111.690	89.790	91.104	69.63
NO_X	lbs/ton of steel	0.03939	0.06888	0.08390	0.06406	0.0389
CO	tons/year	2,660.719	8,218.851	6,615.202	5,831.591	16,097.47
CO	lbs/ton of steel	1.4591	5.0684	6.1811	4.2362	8.993
PM	tons/year	28.69	23.39	20.37	24.15	262.8
PM	lbs/ton of steel	0.016	0.014	0.019	0.016	0.16
Pb	tons/year	0.186	0.219	0.175	0.193	1.26
Pb	lb/hr	0.04239	0.05007	0.03991	0.04412	0.1934
VE	Highest 6-min Avg, %	4.4	1.9	1.3	2.5	20
VE	Overall Avg, %	0.4	0.1	0.1	0.2	20
VE	Highest Reading, %	20	10	10	13.3	20

Appendix A of this report presents the flow demonstration data. Appendix B presents the reference method test data. Appendix C presents the analytical reports. Appendix D presents example calculations used to determine the emissions. Appendix E presents copies of the calibration records for the reference method equipment. Appendix F contains the plant operating data and Appendix G contains all of the QSTI certifications for the test personnel.

3.0 FACILITY DESCRIPTION AND PROCESS MONITORING

Molten iron from the blast furnaces is transported to the BOF by torpedo cars. The iron is then transferred to the charging ladles at the re-ladling station where a combination of lime and magnesium is injected into the molten iron to remove the sulfur. The sulfur reacts with the lime and magnesium and forms a layer of slag on the surface of the iron. The iron is then sent to a slag skimming station where a mechanical arm is used to scrape slag from the surface of the iron and sent into slag pots.

After these two processes, a fresh BOF charge into one of two furnaces usually begins with scrap metal. The scrap is charged into the BOF vessel. Molten iron is then charged into the vessel on top of the scrap. A secondary hood is utilized to capture emissions during charging and emissions from this process are controlled by the BOF secondary baghouse. The BOF is then closed off and an oxygen lance is inserted to begin the melting and refining process. The oxygen lance openings on each BOF are equipped with steam rings. The steam rings are control measures for emissions of particulate matter from the BOF during the oxygen blow or refining phase when oxygen is being fed into the furnaces. The steam rings inject steam in the area between the oxygen lance and the lance hole in the lid of the furnaces, acting to suppress the emissions of particulate through this area during the refining phase. In the BOF, the injected oxygen reacts exothermically with the carbon in the iron generating heat which melts the scrap and reducing the amount of carbon in the bath, thus converting the iron to steel. Emissions from this part of the process are controlled by an electrostatic precipitator (ESP). When the refining process (a.k.a. blow cycle) is completed, molten steel from the furnace is poured into a steel transfer ladle. The tapping process where steel exits the furnace is also controlled by the BOF secondary baghouse.

Damper positions to the ESP from Furnace 1 (if in use during the test) and from Furnace 2 (if in use during the test) were measured continuously and recorded during each blow cycle. A "1" means the damper is open and a "2" means the damper is closed. This data is maintained through the Plant's electronic data collection system (PI). The ESP damper(s) are normally opened during the refining/blow cycle, as described above, and closed during the charging and tapping phases. ESP damper position from PI was downloaded into an excel spreadsheet and provided in the appendices of this report. The reason this data was recorded to ensure the damper(s) are open during the refining/blow cycles.

The precipitator has a total of 34 fields which "capture" PM emissions from the refining/blow cycle of steel making. During each test run, the number of "active fields" was read from a computer screen in the maintenance office or pulpit and recorded on a piece of paper. The normal

number of ESP fields operating is between 28 and 34. This data was recorded to ensure the correct number of fields were active during each test run.

ESP stack gas flow rate in cubic feet per minute (cfm) is measured continuously and recorded through the Plant's electronic data collection system (PI). During the refining/blow cycle, the minimum flow rate is 650,000 cfm. The typical range of flow rate is 690,000 cfm – 760,000 cfm. ESP stack gas flow rate from PI was downloaded during the refining/blow cycle, inputted into an excel spreadsheet, and provided in the appendices of this report. The reason ESP stack gas flow rate was recorded was to ensure that the flow rate is above the minimum flow rate of 650,000 cfm during the refining/blow cycle.

The amount of steel produced during each heat (tons) was recorded. The weight of the steel from each heat is measured on a scale and that weight appears on a screen in the pulpit. The weights were recorded on a piece of paper and reported in tabular format (Excel or Word) in the appendices of this report. The reason the production data was collected is to have a comparison of production tons versus emission rates for each stack test going forward and to verify normal production rates were run during the stack test.

4.0 SUMMARY OF THE REFERENCE TEST METHODS

This section describes the sampling strategy, sampling and analytical methods, and quality assurance/quality control procedures that were implemented during this project. The project involved performing test runs for the parameters listed in Section 1 of this document at the BOF ESP Exhaust Stack.

4.1 SAMPLING STRATEGY

The USEPA methods that were utilized in this sampling program are:

- Method 1 for the location of sampling ports and points, and determination of cyclonic flow;
- Method 2 for velocity and volumetric flow rate determination;
- Method 3A for the determination of dry molecular weight of the stack gas;
- Method 4 for the determination of moisture in the stack gas;
- Method 5 for the determination of particulate matter (PM) emissions;
- Method 7E for the determination of oxides of nitrogen (NO_X) emissions;
- Method 9 for the determination of visible emissions (VE);
- Method 10 for the determination of carbon monoxide (CO) emissions;
- Method 25A for the determination of volatile organic material (VOM) as carbon emissions;
- Method 29 for the determination of lead (Pb) emissions.

These test methods are available in Title 40, *Code of Federal Regulations*, Part 60, USEPA's web site www.epa.gov/ttn/emc/, and SW-846 or by request from CEC.

4.2 SAMPLING AND ANALYTICAL PROCEDURES

A sampling and analysis synopsis for these methods are discussed briefly in the following subsections.

4.2.1 USEPA Method 1

The sampling ports for the stack associated with the BOF ESP exhaust stack are in place. For this test program, USEPA Method 1 was used to determine the appropriateness of the existing ports at the sampling location and to verify the number of sampling points to be used when sampling at this location.

For particulate and flow traverses, Method 1 specifies that a minimum number of 12 traverse points can be used for stacks greater than 24 inches in diameter if the ports are located >8 stack diameters downstream and >2 stack diameters upstream from any flow disturbances and 24 traverse points when located >2 diameters downstream and >0.5 diameters upstream.

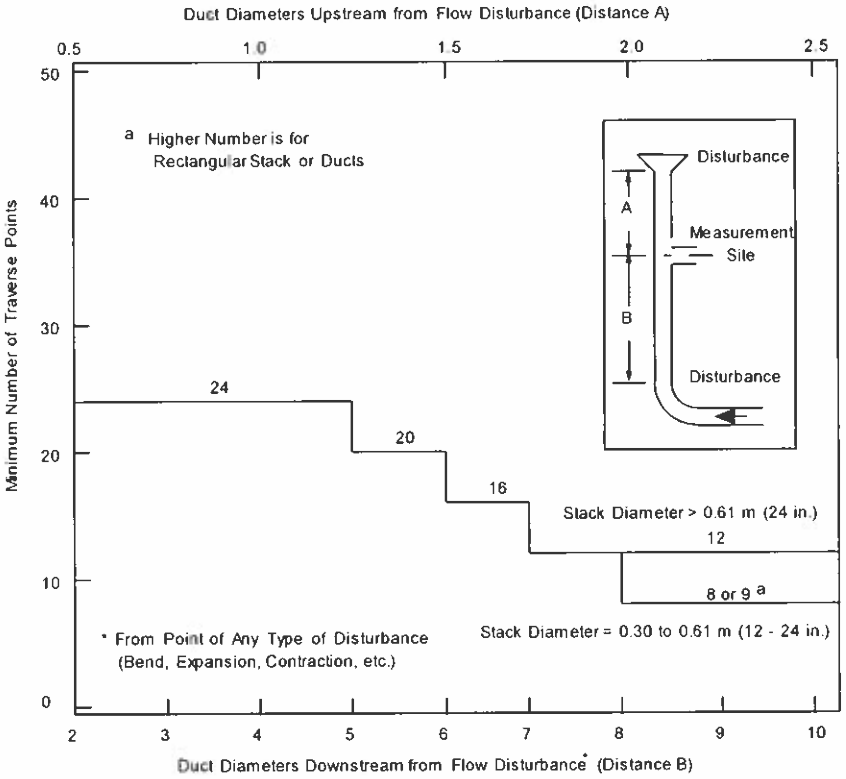

Figure 1 – Sampling Point Determination

The sampling ports at the BOF ESP exhaust stack do not meet the criteria in USEPA Method 1 for sample port location. The dimension of the BOF ESP Exhaust Stack are presented in Table 2.

Table 2 – BOF ESP Stack Dimensions

Sampling Location	Duct Diameter (in.)	Downstream Disturbance (in.)	Upstream Disturbance (in.)	Downstream Diameters	Upstream Diameters	# of Ports
BOF ESP	148	96	48	0.6	0.3	4

CEC chose to demonstrate that the sampling location is suitable for sampling in accordance with the procedures outlined in USEPA Method 1 using the alternative procedure for determining the

acceptability of a sampling location not meeting the Method 1 criteria. Section 11.5 of Method 1 outlines an alternative procedure for determining the acceptability of a sampling location using a directional probe. The procedure involves measuring both the pitch and yaw angles at a minimum of 40 traverse points in ducts larger than 24 inches in diameter where blockage and wall effects are minimal. After measuring the pitch and yaw angles, the resultant angle is calculated using the following formula:

$$Ri = \text{arc cosine } [(\text{cosine } Yi)(\text{cosine } Pi)]$$

Where: Ri = resultant angle at traverse point, degree
Yi = yaw angle at traverse point, degree
Pi = pitch angle at traverse point, degree

The resultant angle is considered acceptable if the resultant angle is $\leq 20°$ and the standard deviation is $\leq 10\%$. If considered acceptable based on this alternative procedure, the maximum number of traverse points and locations as specified in Figure 1-1 for particulate sampling are utilized to conduct the PM and Pb emissions sampling. This criteria was met (average resultant angle = 10.0 and standard deviation = 5.1). Documentation of this flow demonstration is located in Appendix A of this report.

If testing for multiple pollutants or diluents at the same site, a stratification test using only one pollutant and the diluent satisfies the requirement. To test for stratification, a probe of appropriate length to measure the concentration at twelve traverse points located according to Table 1-1 or Table 1-2 of Method 1 must be used. Alternatively, the tester may measure at three points on a line passing through the centroidal area of the source. The three points must be spaced at 16.7, 50.0, and 83.3 percent of the measurement line. The source is considered to be un-stratified if the flue gas concentration varies by less than 5 percent or 0.5 ppm from the mean concentration at each traverse point and testing may be performed at a single location most closely matching the mean concentration and at least 1 meter from the stack wall. The source is considered to be minimally stratified if the flue gas concentration varies less than 10 percent or 1.0 ppm from the mean concentration at each traverse point and sampling may be performed at three sampling points spaced at 16.7, 50.0, and 83.3 percent of the measurement line from a single port. If the gas stream is found to be stratified because the 10 percent or 1.0 ppm criterion for a 3-point test is not met, then 12 traverse points located according to Table 1-1 or Table 1-2 of USEPA Method 1 must be used for the sampling. The results of the stratification test are located in Appendix B of this test report.

The VOM sampling probe was centrally located within the stack in accordance with USEPA Method 25A procedures.

4.2.2 USEPA Method 2

After determining the number of sampling points to use, USEPA Method 2/2F was used to perform preliminary velocity measurements of the flue gas in the stack while checking the system for flow conditions. Preliminary velocity measurements were made to determine the appropriate nozzle size to use to maintain isokinetic sampling rates during the sampling. Velocity measurements were also made while collecting the samples to ensure the samples were collected isokinetically and to determine the pollutant concentrations and mass emission rates.

The stack gas velocity was determined from the measurement of the velocity head at each traverse point with a calibrated Type "S" pitot tube connected to an inclined manometer (Figure 2). Measurement of the stack gas temperature was made with a calibrated Type "K" thermocouple and determination of the stack gas composition was made using USEPA Method 3A.

CEC made measurements of the face opening alignments, external tubing diameter, and base-to-opening plane distances of the pitot tubes. These measurements meet the design criteria in USEPA Method 2 for a Type "S" pitot tube and therefore a baseline coefficient value of 0.84 was assigned to the pitot tube. Verification of these measurements was recorded onto a pitot tube calibration worksheet and presented as part of the final report. Once the measurements of the pitot tube were completed, the system was assembled and leak checked, prior to making any measurements.

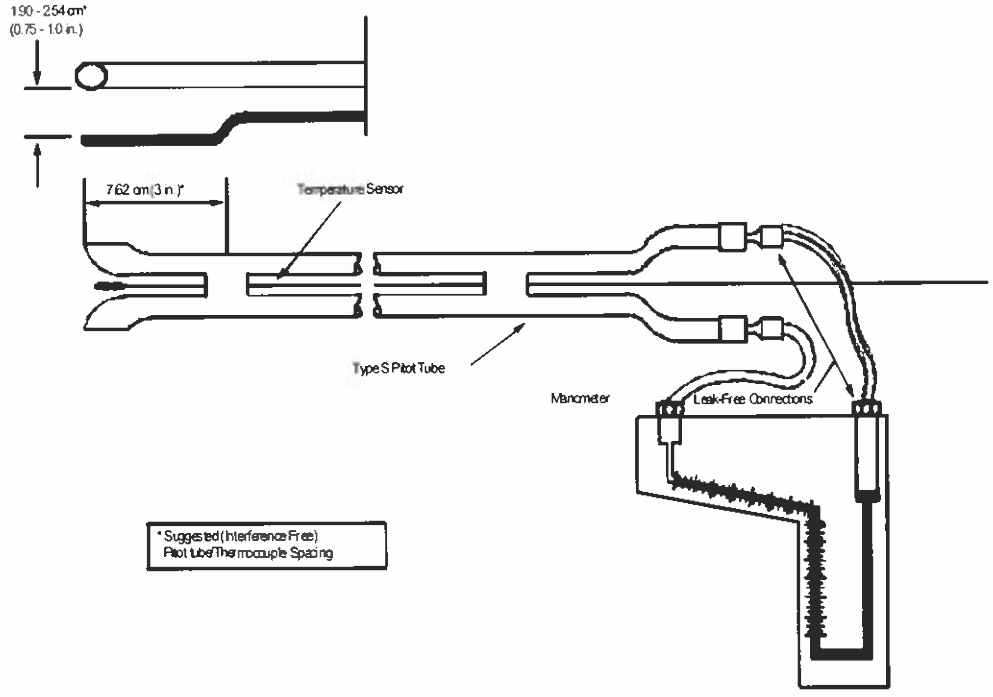

Figure 2 – Velocity Measurement System

4.2.3 USEPA Method 3A

The oxygen (O_2) sampling was conducted in accordance with 40 CFR 60, Appendix A, Method 3A. A Thermo Scientific Model 410i paramagnetic oxygen analyzer with a range of 0-25 percent was used for the diluent measurements. The Model 410i paramagnetic oxygen analyzer operates on the principle that oxygen is attracted into a strong magnetic field while most other gases are not. This paramagnetism is used to obtain fast, accurate oxygen measurements. The sample is drawn into the Model 410i through the sample bulkhead and flows through a focused magnetic field and any oxygen that is present will be attracted into the strongest part of the magnetic field. Two nitrogen filled glass spheres are mounted on a rotating suspension within the magnetic field. A mirror is mounted centrally on the suspension. Light is focused onto the mirror. The reflected light is directed onto a pair of photocells. Oxygen attracted into the magnetic field will displace the nitrogen filled spheres, causing the suspension to rotate. The photocells will detect the movement generating a signal. The signal generated by the photocells is passed to a feedback system. The feedback system will pass a current around a wire mounted on the suspension. This causes a motor effect, which will keep the suspension in its original position. The current measured flowing around the wire is directly proportional to the concentration of oxygen within the gas mixture. The Model 410i outputs the O_2 concentration to the front panel display, the analog outputs and also makes the data available over a serial or Ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a STRATA Version 3.2.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee instruments.

Figure 3 presents a schematic of the USEPA Method 3A/7E/10 CEMS:

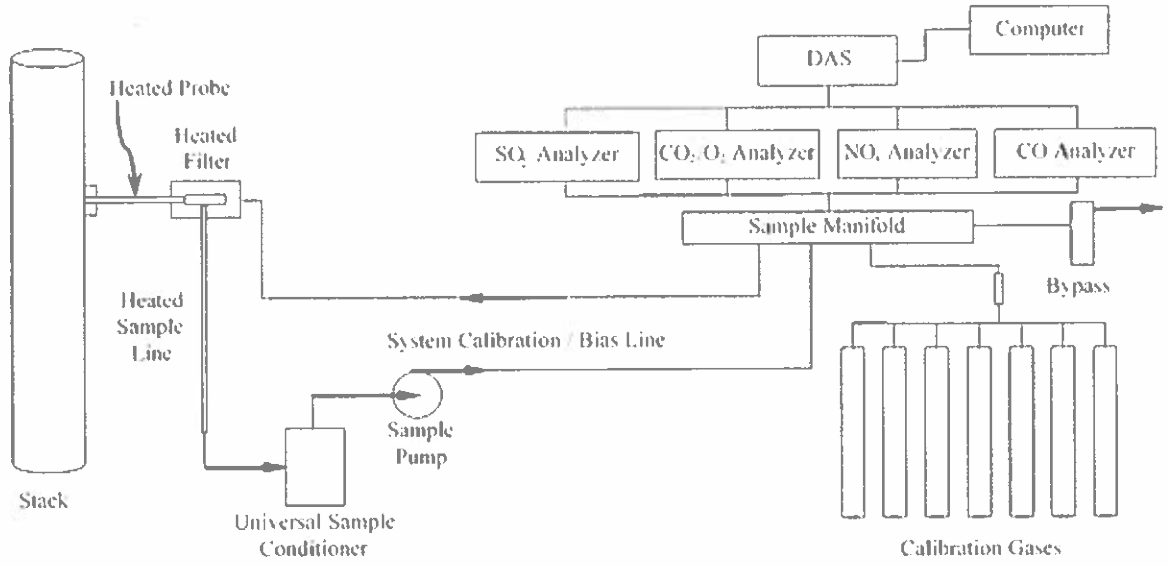

Figure 3 – USEPA Method 3A/7E/10 CEMS System

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the O_2 analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (nitrogen) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gas were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and after each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high level gases.

The O_2 analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of O_2 was measured in percentage of oxygen (%O_2) by volume on a dry basis.

The carbon dioxide (CO_2) sampling was conducted in accordance with 40 CFR 60, Appendix A, Method 3A. A Thermo Scientific Model 410i non-dispersive infrared (NDIR) analyzer with a range of 0-25 percent was used for the diluent measurements. The Model 410i NDIR analyzer operates on the principle that carbon dioxide (CO_2) absorbs infrared radiation at a wavelength of 4.6 microns. The sample is drawn into the Model 410i through the sample bulkhead and flows through the optical bench. Radiation from an infrared source is chopped and then passed through a rotating optical wheel alternating between sample and reference filters. The radiation then enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The chopped detector signal is modulated by the alternation between the filters with an amplitude related to the concentration of CO_2 in the sample cell. Since infrared absorption is a non-linear measurement, it is necessary to transform the basic analyzer signal into a linear output. The Model 410i uses an internally stored calibration curve to accurately linearize the instrument output over any range up to a concentration of 25 percent. The Model 410i outputs the CO_2 concentration to the front panel display, the analog outputs and also makes the data available over a serial or Ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a STRATA Version 3.2.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee instruments.

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the CO_2 analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (nitrogen) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gases were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and at the conclusion of each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high level calibration gases.

- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high level gases.

The CO_2 analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of CO_2 was measured in percentage of carbon dioxide ($\%CO_2$) by volume on a dry basis.

An interference check must be conducted on each gas analyzer prior to its initial use in the field. This requirement may be met if the instrument manufacturer performs the interference check on an analyzer of the same make and model used and provides the customer with documentation of the test results. The results of the interference check are documented in Appendix B.

4.2.4 USEPA Method 4

For this testing, the Method 4 sampling train was incorporated into the Method 5/29 sampling trains. Detailed descriptions of the sampling train configurations are presented later in the report. The moisture content of the sample gas stream was determined by extracting the gas sample at a known and regulated rate through the glass condenser train maintained below 68 degrees Fahrenheit (°F) in an ice bath with a vacuum pump. The volume of gas sampled was measured with a calibrated dry gas meter. The volume of moisture collected was measured gravimetrically with an analytical balance with a tolerance of 0.1 gram(s).

4.2.5 USEPA Method 5

The sampling and analytical procedures used during the emission testing for PM were conducted in accordance with the procedures outlined in USEPA Method 5, of 40 CFR 60. The probe and filter exit temperature were maintained at 248 ± 25 °F in accordance with the requirements of USEPA Method 5. The sampling equipment consisted of the following equipment and components:

1. Pitot Tube Assembly
   a. Nozzle - Borosilicate glass with a sharp, tapered leading edge.
   b. Probe - Stainless steel sheath with a 5/8-inch diameter glass insert wrapped with nichrome wire; electronically controlled and capable of maintaining 248 ± 25 °F with a calibrated Type "K" thermocouple.

c. Pitot - Calibrated Stainless-steel Type "S" pitot tube constructed and attached to the probe according to the specifications outlined in USEPA Method 2, 40 CFR 60.
d. Thermocouple - Calibrated Type "K" thermocouple attached to the sample probe such that the tip has no contact with any metal and does not interfere with the pitot tube face openings and the sample nozzle.

2. Filter Box Assembly
   a. Filter Holder - Borosilicate glass, with a Teflon frit filter support and a silicone rubber gasket. The holder is designed to provide a positive seal against leakage from the outside or around the filter.
   b. Filter Heating System - The heating system is capable of monitoring and maintaining the temperature around the filter to ensure the sample gas temperature exiting the filter is 248 ± 25 °F during sampling.
   c. Filter Temperature Sensor - A thermocouple capable of measuring temperature to within ±3 °C (5.4 °F) is installed so that the sensing tip of the temperature sensor is in direct contact with the sample gas exiting the filter. The sensing tip of the sensor protrudes at least 1/2 in. into the sample gas exiting the filter. The filter temperature sensor was monitored and recorded during sampling to ensure a sample gas temperature exiting the filter of 248 ± 25 °F.

3. Impingers
   a. The back-half Method 5 impingers were replaced with a Method 29 configuration consisting of four sequential impingers. Impingers one and two contained 100 ml each of an absorbing solution consisting of 5% nitric acid (HNO_3) / 10% hydrogen peroxide (H_2O_2). Impinger three was left empty to prevent liquid carry over. The final impinger contained 300 grams of silica gel. Normally there would be two additional impingers containing an acidified solution of $KMnO_4$ for the capture of mercury (Hg). However, since Pb is the only metal of interest in this test program, these impingers were removed from the Method 29 sampling train configuration as described above.
   b. The first and third impingers were of the Modified Greenburg-Smith design. The second impinger was of the Greenburg-Smith design with a standard orifice tip. Final gas exit temperature was measured with a calibrated Type "K" thermocouple immersed in the gas stream.

4. Control Box

   The control box is a module containing a vacuum gauge, external leak-free pump, thermocouples capable of measuring temperature within ± 5°F, dry gas meter with a

minimum of 2 percent accuracy, valves and related equipment to determine sample gas volume.

The control box was leak-checked from pump to orifice at a minimum of 10 inches of mercury (in. of Hg) vacuum. The selected nozzle was calibrated with a micrometer and attached to the sample probe. The moisture sample train was prepared per Method 29 as indicated previously. The cold box portion was packed with cubed ice and assembled to the sampling train.

A pre-weighed quartz fiber filter was placed inside the filter holder onto a Teflon® support frit. The filter holder was positioned into the filter assembly unit and connected to the sample probe and impinger train with interconnecting glassware. The entire assembled sample system was leak-checked by plugging the inlet to the probe nozzle and pulling a vacuum of at least 10 inches of Hg. A leak rate less than 0.02 cubic feet per minute (cfm) was required and considered acceptable as outlined in 40 CFR 60. The negative side of the pitot tube system was vacuum leak-checked at greater than 3 inches of water column and the positive side of the pitot tube system was pressure leak-checked at greater than 3 inches of water column. If the 3 inches of water column is maintained on each side of the pitot for greater than 15 seconds, it is considered acceptable. The traverse sampling points were marked on the probe for easy visibility.

Temperature controllers for the probe were set to maintain a temperature of 248 ± 25 °F. The nozzle was placed at the first traverse point and positioned directly facing the stack gas stream. At the conclusion of each test run, the sample pump was turned off, the probe was removed from the stack, and the final sample train measurements were recorded. A final leak-check of the system was performed at the conclusion of every test run as previously described at the highest vacuum encountered during testing. A leak check of the pitot system was performed as previously described. All velocity measurements, sample train measurements, moisture data, and leak-check measurements were recorded onto the field data worksheets.

The PM filter holder and the interconnecting hardware were removed from the sample probe and the openings sealed. Likewise, the sample probe was disconnected. The impinger train, sample probe, PM filter holder, and interconnecting glassware were relocated to the sample collection area.

Figure 4 presents a schematic of the USEPA Method 5 measurement system:

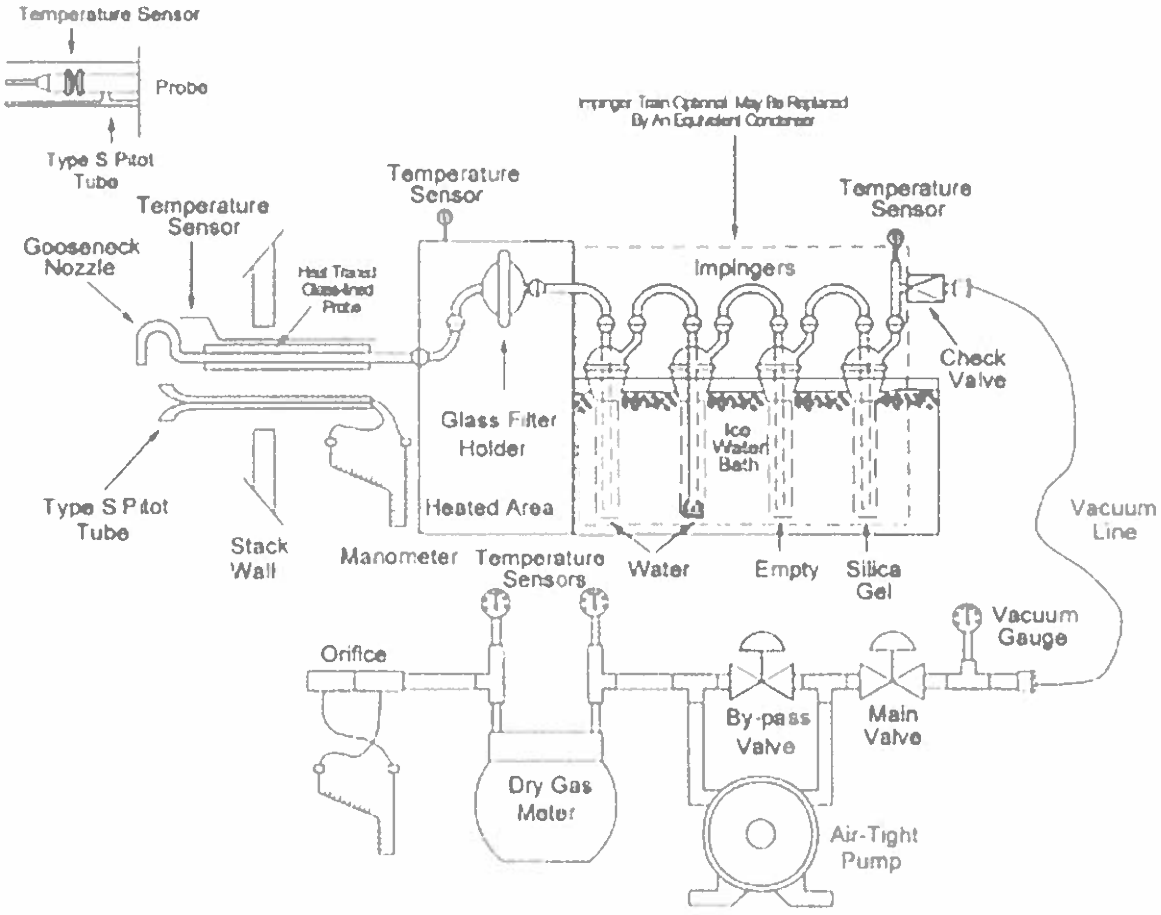

Figure 4 – USEPA Method 5 Measurement System

The PM filter holder was labeled with sample identification and transferred to the CEC laboratory. The nozzle was carefully removed from the sample probe and rinsed with acetone into a glass container. Acetone was used to rinse the probe liner, ferrules, nozzle, and all interconnecting glassware utilized between the sample nozzle and filter holder. A Teflon brush was used to loosen any adhering PM and subsequent washes and rinses were collected into the sample container. Acetone was also used to rinse any PM adhering to the Teflon brush into the sample collection container.

An acetone blank sample was collected at the sample cleanup area at the facility. The blank sample was analyzed using the same procedures as the test samples. The acetone blank was verified to be within specifications and did not impact the results.

The final particulate analysis was conducted by CEC in accordance with USEPA Method 5. The filters and the beakers containing the particulate recovered from the probe and nozzle rinses were

transferred into the desiccator for twenty-four hours to obtain a weight and then weighed every six hours, minimum, until two consecutive weights were obtained that agree within ± 0.5 milligrams.

4.2.6 USEPA Method 7E

The oxides of nitrogen (NO_X) sampling was conducted in accordance with 40 CFR 60, Appendix A, Method 7E. A Thermo Scientific Model 42i Low Source (LS) chemiluminescence analyzer with a range of 0-500 parts per million (ppm) was used to measure the NO_X concentration. The model 42i operates on the principle that nitric oxide (NO) and ozone (O_3) react to produce a characteristic luminescence with an intensity linearly proportional to the NO concentration. Infrared light emissions results when electronically excited NO_2 molecules decay to lower energy states. Nitrogen dioxide (NO_2) must first be transformed into NO before it can be measured using the chemiluminescent reaction. NO_2 is converted to NO by a stainless steel NO_2 to NO converter heated to approximately 625°C. The sample is drawn into the 42i LS through the sample bulkhead and flows through a capillary and then to the mode solenoid valve. The solenoid valve routes the sample either straight to the reaction chamber (NO mode) or through the NO_2 to NO converter and then to the reaction chamber (NO_X mode). A flow sensor prior to the reaction chamber measures the sample flow. Dry air enters the Model 42i LS through the dry air bulkhead, passes through a flow switch and then through a silent discharge ozonator. The ozonator generates the ozone needed for the chemiluminescent reaction. At the reaction chamber, the ozone reacts with the NO in the sample to produce excited NO_2 molecules. A photomultiplier tube (PMT) housed in a thermoelectric cooler detects the luminescence generated during this reaction. From the reaction chamber, the exhaust travels through the ozone converter to the pump and is released through the vent. The NO and NO_X concentrations calculated in the NO and NO_X modes are stored in memory. The difference between the concentrations is used to calculate the NO_2 concentration. The Model 42i LS outputs NO, NO_2 and NO_X concentrations to the front panel display, the analog outputs and also makes the data available over a serial or Ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a STRATA Version 3.2.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee instruments.

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the NO_X analyzer by introducing a zero, mid and high-level calibration gas

directly to the analyzer inlet. A zero gas (zero air) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gas were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and at the conclusion of each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high-level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high-level gases.

The NO_X analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of NO_X will be measured in parts per million by volume on a dry basis. A NO_X converter efficiency test was conducted on the NO_X analyzer. A NO_2 to NO conversion-efficiency test must be conducted if the system converts NO_2 to NO before analyzing for NO_X. Documentation of the NO_X converter test is provided in Appendix B.

An interference check must be conducted on each gas analyzer prior to its initial use in the field. This requirement may be met if the instrument manufacturer performs the interference check on an analyzer of the same make and model used and provides the customer with documentation of the test results. The results of the interference check performed by Thermo Scientific are presented in Appendix B.

4.2.7 USEPA Method 9

The visible Emissions (VE) observations were conducted in accordance with 40 CFR 60, Appendix A, Method 9. Method 9 requires an individual properly trained and certified in performing visual emission observations. Opacity is the degree to which light or an image is obscured when viewed through a plume. The observer's responsibility is to determine the degree to which light is obscured to the nearest 5% increment of opacity. Instantaneous readings are made every 15 seconds and the value recorded on the appropriate form. When making visual emission

determinations the observer must apply specific criteria to each source layout in order to eliminate any bias, which exerts a significant influence upon plume appearance. These variables include:

- Angle of the observer with respect to the plume
- Angle of the observer with respect to the sun
- Point of observation of attached and detached steam plume

A set of opacity data reduction calculations is defined as the average of any 24 consecutive 15-second observations. Sets need not be consecutive in time and in no case shall two sets overlap. U.S. Steel personnel were responsible for conducting the VE observations during the emissions testing. Documentation of the VE observations are presented in Appendix B.

4.2.8 USEPA Method 10

USEPA Method 10 was used for determining CO concentrations from the stack exhaust. CEC uses a Thermo Scientific 48i CO monitor. The Model 48i High Level operates on the principle that carbon monoxide (CO) absorbs infrared radiation at a wavelength of 4.6 microns. Because infrared absorption is a non-linear measurement technique, it is necessary to transform the basic analyzer signal into a linear output. The Model 48i High Level uses an internally stored calibration curve to accurately linearize the instrument output over any range up to a concentration of 20,000 ppm. The sample is drawn into the Model 48i High Level through the sample bulkhead. The sample flows through the optical bench. Radiation from an infrared source is chopped and then passed through a gas filter alternating between CO and N_2. The radiation then passes through a narrow band-pass interference filter and enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The CO gas filter acts to produce a reference beam, which cannot be further attenuated by CO in the sample cell. The N_2 side of the filter wheel is transparent to the infrared radiation and therefore produces a measurement beam, which can be absorbed by CO in the cell. The chopped detector signal is modulated by the alternation between the two gas filters with an amplitude related to the concentration of CO in the sample cell. Other gases do not cause modulation of the detector signal since they absorb the reference and measure beams equally. Thus, the GFC system responds specifically to CO. The Model 48i High Level outputs the CO concentration to the front panel display, the analog outputs, and also makes the data available over the serial or ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed.

The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a Strata Version 3.1.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee.

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the CO analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (nitrogen) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gas were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and at the conclusion of each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high level gases.

The CO analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of CO was measured in parts per million (ppm) by volume on a dry basis.

4.2.9 USEPA Method 25A

The volatile organic material (VOM) was measured using USEPA Method 25A. A sample was continuously withdrawn from the sampling location through a heated stainless-steel probe and filter. The sample was maintained at > 250°F and on a wet basis through a secondary filter and to the analyzer.

The analyzer was a California Analytical Instruments 600 series analyzer. The analyzer quantitates the total concentration of VOM'S with a flame ionization detector (FID). FID response was measured as propane. The results are reported as ppm by volume on a wet basis.

A sample system pre- and post-test bias and drift check were performed on the analyzer sampling system by introducing a zero and mid-range calibration gas at the calibration valve that is installed on the end of the sampling probe. The sampling system was operated at the normal sampling rate and no adjustments were made to the measurement system during the instrument drift check. The results are not bias corrected. The bias is calculated to determine the instrument drift.

Figure 5 presents a schematic of the USEPA Method 25A measurement system.

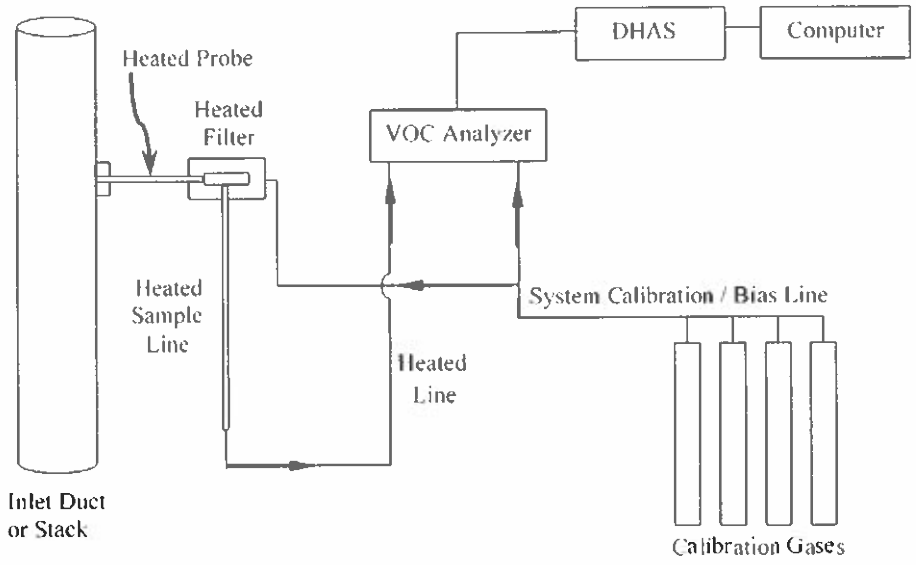

Figure 5 – USEPA Method 25A Measurement System

The acceptance criteria for the analyzer used in this test program was:

- Calibration Error - Less than ± 5% of the Calibration Gas Value.
- Zero Bias – Less than ± 5% of the Calibration Span
- Calibration Bias – Less than ± 5% of the Calibration Span
- Zero Drift – Less than ± 3% of the Calibration Span over the period of each test run.
- Calibration Drift - Less than ± 3% of Calibration Span over the period of each test run.

4.2.10 USEPA Method 29

Emissions testing for lead (Pb) was performed according to USEPA Method 29. The Pb was collected by aspirating the flue gas through a measured volume of 5% nitric acid (HNO_3) /10% hydrogen peroxide (H_2O_2) to determine the moisture and Pb concentration of the emission source.

The principal components of the sampling system are:

1. Pitot Tube Assembly
   a. Nozzle--Borosilicate glass with a sharp, tapered leading edge.
   b. Probe--Stainless steel sheath with a 5/8-inch diameter quartz glass insert wrapped with nichrome wire; electronically controlled and capable of maintaining 248 ± 25 °F with a calibrated Type "K" thermocouple.
   c. Pitot--Calibrated Stainless-steel Type "S" pitot tube constructed and attached to probe according to specifications outlined in USEPA Method 2, 40 CFR 60.
   d. Thermocouple--Calibrated Type "K" thermocouple attached to the sample probe such that the tip has no contact with metal and does not interfere with the pitot tube face openings and the sample nozzle.
   e. Glass filters housing--with a Teflon frit filter support with a quartz fiber filter.

2. Filter Box Assembly
   a. Filter Holder - Borosilicate glass, with a Teflon frit filter support and a silicone rubber gasket. The holder is designed to provide a positive seal against leakage from the outside or around the filter.
   b. Filter Heating System - The heating system is capable of monitoring and maintaining the temperature around the filter to ensure the sample gas temperature exiting the filter is 248 ± 25 °F during sampling.
   c. Filter Temperature Sensor - A thermocouple capable of measuring temperature to within ±3 °C (5.4 °F) is installed so that the sensing tip of the temperature sensor is in direct contact with the sample gas exiting the filter. The sensing tip of the sensor protrudes at least 1/2 in. into the sample gas exiting the filter. The filter temperature sensor was monitored and recorded during sampling to ensure a sample gas temperature exiting the filter of 248 ± 25 °F.

3. Impingers
   a. The Method 29 sampling train consists of four sequential impingers. Impingers one and two contained 100 ml each of an absorbing solution consisting of 5% HNO_3 / 10% H_2O_2. Impinger three was empty to prevent liquid carry over followed by a final impinger containing 300 grams of silica gel.
   b. Four impingers connected in series with glass ball/socket joint fittings and placed in an ice bath were used for these tests. The second impinger was of the Greenburg-Smith design with a standard orifice tip. The first, third and fourth impingers were of the modified Greenburg-Smith design. Final gas exit temperature was measured with a calibrated Type "K" thermocouple immersed in the gas stream.

4. Control Box

   The control box was a module containing a vacuum gauge, external leak-free pump, and thermocouple capable of measuring temperature within ±5 ° F, and dry gas meter with a minimum of 2 percent accuracy, valves and related equipment to determine sample gas volume.

Figure 6 presents an illustration of the standard Method 29 sampling train with the mercury impingers, which were not used for this test series. The optional empty knockout impinger was also not be used during the testing.

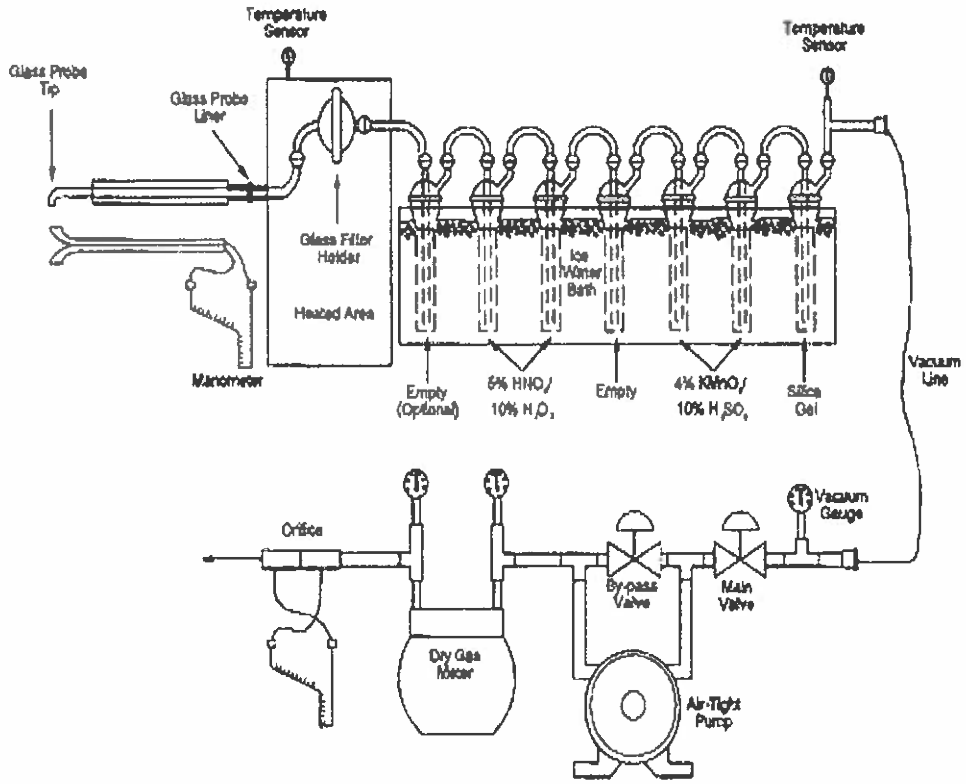

Figure 6 – USEPA Method 29 Measurement System

The sampling train was assembled per the method, ice was added to the impinger portion of the train and the probe and the filter were heated to 248 ± 25°F. Once the sampling train was at the desired temperature, the system was leak checked. A leak rate less than 0.02 cubic feet per minute (cfm) was determined and considered acceptable as outlined in 40 CFR 60. Once the sampling train passed the leak check, it was placed in the stack to begin sampling.

The sampling train was operated for a minimum of 120 minutes and over 1 cubic meter of sample gas volume was collected. The nozzle, probe liner, and front filter-half of the filter assembly were rinsed 3 times with 0.1 N nitric acid. The sample will be placed into a 250-milliliter amber glass storage container.

The liquid in the first three impingers was measured to the nearest tenth of a gram. The collected sample in the first three impingers was transferred to a one-liter amber glass storage container along with a 100-mL 0.1 N nitric acid rinse of the impingers and connecting glassware. The container was sealed and the liquid level marked.

The volume of the moisture collected by the silica gel in the final impinger was determined to the nearest 0.1 gram per Method 4. Collected condensate measurements were recorded on the Method 29 moisture determination data analysis portion of the data sheet.

The samples were shipped to the laboratory along with the appropriate chain of custody documentation. Samples, method blanks and spiked samples were weighed, digested, prepared and analyzed according to USEPA Method 29 protocol. The samples will were analyzed for Pb on a PerkinElmer ELAN 6100 inductively coupled argon plasma emission spectroscopy/mass spectrometry (ICP-MS) or similar instrument. The Pb analysis was performed by Element One, Inc. laboratories in Wilmington, NC.

Beginning June 16, 2013, creation and distribution of audit samples transitioned to a private accredited source rather than the USEPA; previously the USEPA provided audit samples for emissions testing to state and local agencies. Obtaining audit samples is now the responsibility of the source owner or an authorized testing representative or firm. Audit samples are not available for every test method. For this test program, audit samples were available for USEPA Method 29 (Pb). CEC obtained approval from the Illinois Environmental Protection Agency (IEPA) and secured the audit samples from ERA, an accredited audit sample provider. The audit samples were taken to site during the test and shipped to the appropriate laboratory along with the test sample(s) and appropriate chain of custody for analysis. The complete analytical and audit report for each sample is presented in Appendix C.

5.0 QUALITY ASSURANCE QUALITY CONTROL RESULTS

CEC has established quality assurance and quality control (QA/QC) guidelines for providing quality sampling and analytical data from source tests. These QA/QC procedures were implemented to ensure the acceptability and reliability of the data generated.

In summary, an appropriate degree of data quality was maintained throughout this project. The sampling trains were leak checked prior to and immediately after sampling. Leak rates for the isokinetic sampling trains were less than the maximum criterion of 0.02 cubic feet per minute.

The isokinetic sampling rates for the isokinetic sampling trains were within the 100% ± 10% criterion established for isokinetic sampling. The pitot leak checks were stable for at least 15 seconds. USEPA Method 5 requires the calibration of the metering system after each field use. This is typically performed in a laboratory environment. If it fails the test, the test results are invalidated. This makes a field calibration procedure highly desirable. USEPA's approved alternative method (ALT-009) based on the pre-test meter coefficient found in Method 5 Section 4.4.1 has been approved as a post-test calibration procedure. The procedure states that, "If the average of the three runs is within ±5% of the y-value, the Method 5 sampling system passes the post calibration requirements." The quality control summaries for the Methods are presented in Table 3.

Table 3 – USEPA Method 5/29 QA/QC Results

Run #	Isokinetics	Post Leak Check System	Post Leak Check Pitot	Alt-009 Results	Test Series
Criteria	**100 ± 10%**	**< 0.02 cfm**	**Stable for at least 15 seconds**	**± 5% of original Y**	**Pass/Fail**
1	96.6	0.000	Yes	2.16	Pass
2	98.5	0.000	Yes	2.70	Pass
3	101.0	0.000	Yes	3.17	Pass

Granite City Works
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Granite City, IL 62040
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ETR
04-15-2021
10-I

STI
119813AAI210415T.pdf

June 08, 2021

Initial Review – Rejected
Kevin Mattison
June 15, 2021

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE

JUL 06 2021

REVIEWER: RDH

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
9511 West Harrison Street
Des Plaines, Illinois 60016
Sent Via IEPA's File Transfer Database

RE: 119813AAI U.S. Steel – Granite City Works BOF ESP Stack Test Results

Mr. Mattison:

Pursuant to Condition 7.5.7.b(i) of Permit No. 96030056, U. S. Steel completed a stack test from April 14 – 15, 2021 on the Electrostatic Precipitator (ESP) in the BOF area of the Plant. The test demonstrates compliance with the PM, CO, and Pb emission limits. However, the test did not demonstrate compliance with the NOx and VOM emission limits listed in Condition 7.5.6(c). However, these limits are currently stayed by the Illinois Pollution Control Board pursuant to Orders issued in appeal matters PCB13-53 and 13-62. These limits are currently being addressed with a PSD revision that was submitted to the Illinois EPA in March 2020. Method 9 observations were conducted during all of the runs. All 6-minute averages demonstrated compliance with the opacity limit of 20%. Please find a summary of the stack test results below and attached, a copy of the test report.

ESP Summary of Test Results

Parameter	Average During 3 Runs	Emission Limit
VOM (Lbs/Ton Steel)	0.00832	0.0060
NOx (Lbs/Ton Steel)	0.08386	0.0389
CO (Lbs/Ton Steel)	3.4234	8.993
PM (Lbs/Ton Steel)	0.054	0.16
Pb (Lbs/Hr)	0.06600	0.1934
VE %	2.2*	20

*Highest 6-minute average, %

Should you have questions or require further information, please feel free to contact me at 618-451-3217 or via email at amespy@uss.com.

Sincerely,

Alexander Espy

Alexander Espy
Environmental Engineer

Enclosure

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MACT COMPLIANCE TEST REPORT
BASIC OXYGEN FURNACE (BOF) ESP EXHAUST STACK

GRANITE CITY WORKS
GRANITE CITY, ILLINOIS

Prepared For:

UNITED STATES STEEL CORPORATION
GRANITE CITY, ILLINOIS

Prepared By:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
ST. LOUIS, MISSOURI

CEC Project 310-859

MAY 19, 2021

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TEST REPORT CERTIFICATION

This report, testing details and approach have been developed under the supervision (including review) of the persons named below. Results contained in this report relate only to the sources tested and the parameters included in the test program.

Civil & Environmental Consultants, Inc. (CEC) operates as an accredited air emission testing body (AETB) under a quality management system in conformance with ASTM D7036-04 (Reapproved 2011) "Standard Practice for Competence of Air Emission Testing Bodies". CEC has been issued accreditation certificate number 3913.01, expiration November 30, 2021, by the joint American Association for Laboratory Accreditation (A2LA) and the Stack Testing Accreditation Council (STAC).

Date: 05/19/2021 Signature _____

Franklin M. Stevens, QSTI
Vice President
Civil & Environmental Consultants, Inc.

Date: 05/19/2021 Signature _____

Nicholas A. Pichee, QSTI
Project Manager
Civil & Environmental Consultants, Inc.

1.0 INTRODUCTION

Civil & Environmental Consultants, Inc. (CEC) was contracted to perform a compliance emissions test on the Basic Oxygen Furnace (BOF) electrostatic precipitator (ESP) exhaust stack located at the United States Steel (USS) Granite City Works (GCW) facility located in Granite City, Illinois to demonstrate compliance with Operating Permit #96030056, revision issued March 4, 2013. The purpose of this test was to determine the concentration and mass emission rate of oxides of nitrogen (NO_X), carbon monoxide (CO), volatile organic material (VOM) as carbon, particulate matter (PM) and lead (Pb) at the ESP exhaust. Visible Emissions (VE) observations were also be performed during each test period.

The compliance test was conducted by CEC, whose main office for emission measurements is located at 3000 Little Hills Expressway, Suite 102, St. Charles, Missouri, 63301. Sampling was performed in accordance with the United States Environmental Protection Agency (USEPA) Reference Methods 1, 2/2F, 3A, 4, 5, 7E, 9, 10, 25A, and 29 as published in the Title 40, *Code of Federal Regulations* (CFR), Part 60, Appendix A for sampling point determination, volumetric flow and velocity, molecular weight, moisture content, PM, NO_X, VE, CO, VOM and Pb, respectively. The compliance tests consisted of three test runs designed to collect the minimum sample volume required in Title 40, *Code of Federal Regulations* (CFR), Part 63, Subpart FFFFF (60 dscf).

Three (3) emission test runs were conducted with the BOF ESP in operation on April 14-15, 2021. Mr. Nicholas Pichee of CEC was on-site and responsible for coordinating with the plant representative, Mr. Alex Espy. Messrs. Pichee, Ezra Boyd and Ben Murowchick of CEC were responsible for the collection of the pollutant samples. USS personnel performed the VE observations on the ESP stack.

This report contains the results of the emission tests conducted during this test program. Copies of reference method field data sheets, electronic data sheets, sample analysis data, example calculations, equipment calibration records, facility operational data, and personnel certifications are included as appendices to this report.

1.1 ERRORS, OMISSIONS AND DEVIATIONS

The measured NO_X concentration exceeded the calibration span gas during run 1 for approximately 9, one-minute data points. This equates to less than 7% of the data collected during the 133-minute sample period.

2.0 SUMMARY OF TEST RESULTS

USEPA Methods 1, 2/2F, 3A, 4, 5, 7E, 9, 10, 25A and 29 were used to determine the sample points, volumetric flow and velocity, molecular weight, moisture content, PM, NO_X, VE, CO, VOM and Pb emissions from the BOF ESP exhaust stack. Table 1 of this report presents a summary of the results for the tests performed at the BOF ESP exhaust stack. The emission rates presented in Table 1 were calculated based upon stack conditions measured during the test periods. The calculations were conducted in accordance with the appropriate test methods.

Table 1 – Compliance Test Results

Pollutant	Parameter	Run 1	Run 2	Run 3	Average	Limit
VOM	tons/year	19.447	14.936	11.125	15.169	10.74
VOM	lbs/ton of steel	0.01067	0.00821	0.00609	0.00832	0.0060
NO_X	tons/year	147.168	165.564	145.854	152.862	69.63
NO_X	lbs/ton of steel	0.08075	0.09096	0.07987	0.08386	0.0389
CO	tons/year	6,351.000	8,935.200	3,429.540	6,238.580	16,097.47
CO	lbs/ton of steel	3.4793	4.9056	1.8852	3.4234	8.993
PM	tons/year	133.90	80.55	84.53	99.66	262.8
PM	lbs/ton of steel	0.073	0.044	0.046	0.054	0.16
Pb	tons/year	0.311	0.323	0.233	0.289	1.26
Pb	lb/hr	0.07109	0.07367	0.05325	0.06600	0.1934
VE	Highest 6-min Avg, %	2.5	2.4	1.7	2.2	20
VE	Overall Avg, %	0.3	0.1	0.3	0.2	20
VE	Highest Reading, %	10	20	10	13.3	20

Appendix A of this report presents the flow demonstration data. Appendix B presents the reference method test data. Appendix C presents the analytical reports. Appendix D presents example calculations used to determine the emissions. Appendix E presents copies of the calibration records for the reference method equipment. Appendix F contains the plant operating data and Appendix G contains all of the QSTI certifications for the test personnel.

3.0 FACILITY DESCRIPTION AND PROCESS MONITORING

Molten iron from the blast furnaces is transported to the BOF by torpedo cars. The iron is then transferred to the charging ladles at the re-ladling station where a combination of lime and magnesium is injected into the molten iron to remove the sulfur. The sulfur reacts with the lime and magnesium and forms a layer of slag on the surface of the iron. The iron is then sent to a slag skimming station where a mechanical arm is used to scrape slag from the surface of the iron and sent into slag pots.

After these two processes, a fresh BOF charge into one of two furnaces usually begins with scrap metal. The scrap is charged into the BOF vessel. Molten iron is then charged into the vessel on top of the scrap. A secondary hood is utilized to capture emissions during charging and emissions from this process are controlled by the BOF secondary baghouse. The BOF is then closed off and an oxygen lance is inserted to begin the melting and refining process. The oxygen lance openings on each BOF are equipped with steam rings. The steam rings are control measures for emissions of particulate matter from the BOF during the oxygen blow or refining phase when oxygen is being fed into the furnaces. The steam rings inject steam in the area between the oxygen lance and the lance hole in the lid of the furnaces, acting to suppress the emissions of particulate through this area during the refining phase. In the BOF, the injected oxygen reacts exothermically with the carbon in the iron generating heat which melts the scrap and reducing the amount of carbon in the bath, thus converting the iron to steel. Emissions from this part of the process are controlled by an electrostatic precipitator (ESP). When the refining process (a.k.a. blow cycle) is completed, molten steel from the furnace is poured into a steel transfer ladle. The tapping process where steel exits the furnace is also controlled by the BOF secondary baghouse.

Damper positions to the ESP from Furnace 1 (if in use during the test) and from Furnace 2 (if in use during the test) were measured continuously and recorded during each blow cycle. A "1" means the damper is open and a "2" means the damper is closed. This data is maintained through the Plant's electronic data collection system (PI). The ESP damper(s) are normally opened during the refining/blow cycle, as described above, and closed during the charging and tapping phases. ESP damper position from PI was downloaded into an excel spreadsheet and provided in the appendices of this report. The reason this data was recorded to ensure the damper(s) are open during the refining/blow cycles.

The precipitator has a total of 34 fields which "capture" PM emissions from the refining/blow cycle of steel making. During each test run, the number of "active fields" was read from a computer screen in the maintenance office or pulpit and recorded on a piece of paper. The normal number of ESP fields operating is between 28 and 34. This data was recorded to ensure the correct number of fields were active during each test run.

ESP stack gas flow rate in cubic feet per minute (cfm) is measured continuously and recorded through the Plant's electronic data collection system (PI). During the refining/blow cycle, the minimum flow rate is 650,000 cfm. The typical range of flow rate is 690,000 cfm – 760,000 cfm. ESP stack gas flow rate from PI was downloaded during the refining/blow cycle, inputted into an excel spreadsheet, and provided in the appendices of this report. The reason ESP stack gas flow rate was recorded was to ensure that the flow rate is above the minimum flow rate of 650,000 cfm during the refining/blow cycle.

The amount of steel produced during each heat (tons) was recorded. The weight of the steel from each heat is measured on a scale and that weight appears on a screen in the pulpit. The weights were recorded on a piece of paper and reported in tabular format (Excel or Word) in the appendices of this report. The reason the production data was collected is to have a comparison of production tons versus emission rates for each stack test going forward and to verify normal production rates were run during the stack test.

4.0 SUMMARY OF THE REFERENCE TEST METHODS

This section describes the sampling strategy, sampling and analytical methods, and quality assurance/quality control procedures that were implemented during this project. The project involved performing test runs for the parameters listed in Section 1 of this document at the BOF ESP Exhaust Stack.

4.1 SAMPLING STRATEGY

The USEPA methods that were utilized in this sampling program are:

- Method 1 for the location of sampling ports and points, and determination of cyclonic flow;
- Method 2 for velocity and volumetric flow rate determination;
- Method 3A for the determination of dry molecular weight of the stack gas;
- Method 4 for the determination of moisture in the stack gas;
- Method 5 for the determination of particulate matter (PM) emissions;
- Method 7E for the determination of oxides of nitrogen (NO_X) emissions;
- Method 9 for the determination of visible emissions (VE);
- Method 10 for the determination of carbon monoxide (CO) emissions;
- Method 25A for the determination of volatile organic material (VOM) as carbon emissions;
- Method 29 for the determination of lead (Pb) emissions.

These test methods are available in Title 40, *Code of Federal Regulations*, Part 60, USEPA's web site www.epa.gov/ttn/emc/, and SW-846 or by request from CEC.

4.2 SAMPLING AND ANALYTICAL PROCEDURES

A sampling and analysis synopsis for these methods are discussed briefly in the following subsections.

4.2.1 USEPA Method 1

The sampling ports for the stack associated with the BOF ESP exhaust stack are in place. For this test program, USEPA Method 1 was used to determine the appropriateness of the existing ports at the

sampling location and to verify the number of sampling points to be used when sampling at this location.

For particulate and flow traverses, Method 1 specifies that a minimum number of 12 traverse points can be used for stacks greater than 24 inches in diameter if the ports are located >8 stack diameters downstream and >2 stack diameters upstream from any flow disturbances and 24 traverse points when located >2 diameters downstream and >0.5 diameters upstream.

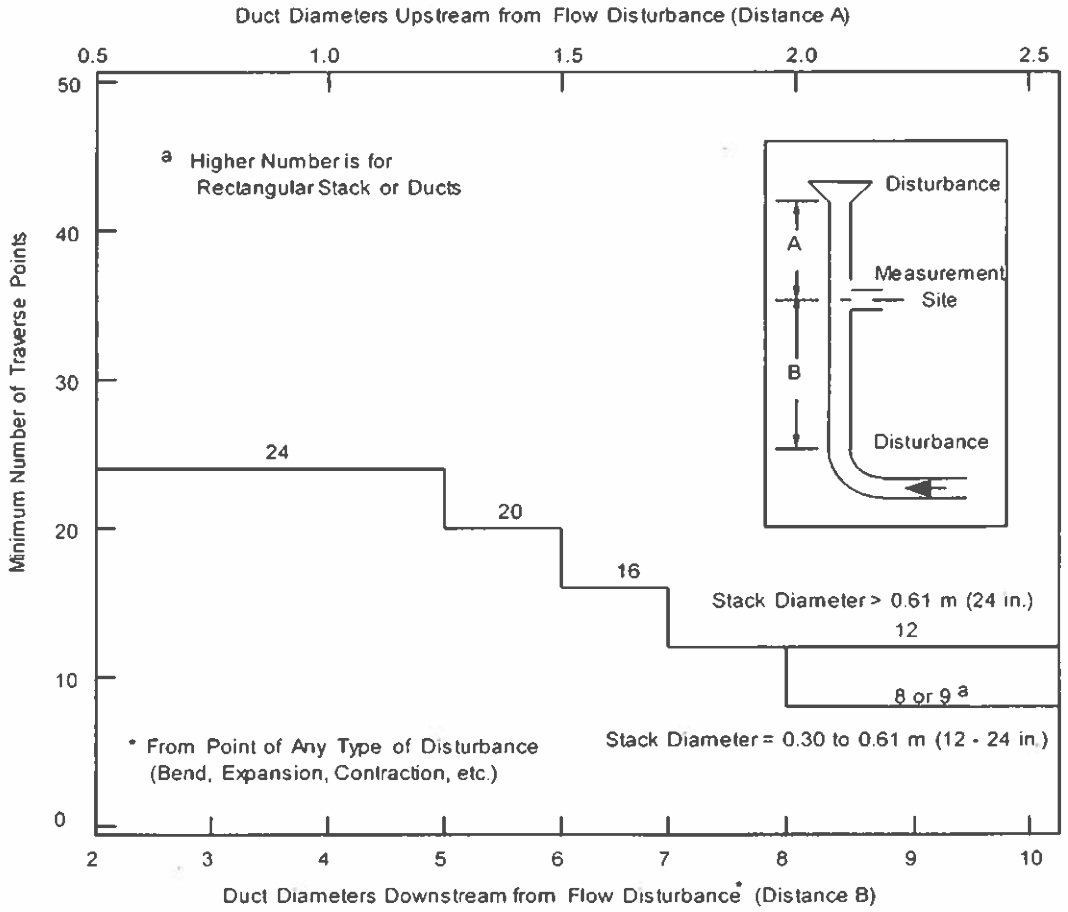

Figure 1 – Sampling Point Determination

The sampling ports at the BOF ESP exhaust stack do not meet the criteria in USEPA Method 1 for sample port location. The dimension of the BOF ESP Exhaust Stack are presented in Table 2.

Table 2 – BOF ESP Stack Dimensions

Sampling Location	Duct Diameter (in.)	Downstream Disturbance (in.)	Upstream Disturbance (in.)	Downstream Diameters	Upstream Diameters	# of Ports
BOF ESP	148	96	48	0.6	0.3	4

CEC chose to demonstrate that the sampling location is suitable for sampling in accordance with the procedures outlined in USEPA Method 1 using the alternative procedure for determining the acceptability of a sampling location not meeting the Method 1 criteria. Section 11.5 of Method 1 outlines an alternative procedure for determining the acceptability of a sampling location using a directional probe. The procedure involves measuring both the pitch and yaw angles at a minimum of 40 traverse points in ducts larger than 24 inches in diameter where blockage and wall effects are minimal. After measuring the pitch and yaw angles, the resultant angle is calculated using the following formula:

$$Ri = \text{arc cosine } [(\text{cosine } Yi)(\text{cosine } Pi)]$$

Where: Ri = resultant angle at traverse point, degree
Yi = yaw angle at traverse point, degree
Pi = pitch angle at traverse point, degree

The resultant angle is considered acceptable if the resultant angle is $\leq 20°$ and the standard deviation is $\leq 10\%$. If considered acceptable based on this alternative procedure, the maximum number of traverse points and locations as specified in Figure 1-1 for particulate sampling are utilized to conduct the PM and Pb emissions sampling. This criteria was met (average resultant angle = 10.0 and standard deviation = 5.1). Documentation of this flow demonstration is located in Appendix A of this report.

If testing for multiple pollutants or diluents at the same site, a stratification test using only one pollutant and the diluent satisfies the requirement. To test for stratification, a probe of appropriate length to measure the concentration at twelve traverse points located according to Table 1-1 or Table 1-2 of Method 1 must be used. Alternatively, the tester may measure at three points on a line passing through the centroidal area of the source. The three points must be spaced at 16.7, 50.0, and 83.3 percent of the measurement line. The source is considered to be un-stratified if the flue gas concentration varies by less than 5 percent or 0.5 ppm from the mean concentration at each traverse point and testing may be performed at a single location most closely matching the mean concentration and at least 1 meter from the stack wall. The source is considered to be minimally stratified if the flue gas concentration varies less than 10 percent or 1.0 ppm from the mean concentration at each traverse point and sampling may be performed at three sampling points spaced at 16.7, 50.0, and 83.3 percent of the measurement line from a single port. If the gas stream is found to be stratified because the 10 percent or 1.0 ppm criterion for a 3-point test is not met, then 12 traverse points located according to Table 1-1 or Table 1-2 of USEPA Method 1 must be used for the sampling. The results of the stratification test are located in Appendix B of this test report.

The VOM sampling probe was centrally located within the stack in accordance with USEPA Method 25A procedures.

4.2.2 USEPA Method 2

After determining the number of sampling points to use, USEPA Method 2/2F was used to perform preliminary velocity measurements of the flue gas in the stack while checking the system for flow conditions. Preliminary velocity measurements were made to determine the appropriate nozzle size to use to maintain isokinetic sampling rates during the sampling. Velocity measurements were also made while collecting the samples to ensure the samples were collected isokinetically and to determine the pollutant concentrations and mass emission rates.

The stack gas velocity was determined from the measurement of the velocity head at each traverse point with a calibrated Type "S" pitot tube connected to an inclined manometer (Figure 2). Measurement of the stack gas temperature was made with a calibrated Type "K" thermocouple and determination of the stack gas composition was made using USEPA Method 3A.

CEC made measurements of the face opening alignments, external tubing diameter, and base-to-opening plane distances of the pitot tubes. These measurements meet the design criteria in USEPA Method 2 for a Type "S" pitot tube and therefore a baseline coefficient value of 0.84 was assigned to the pitot tube. Verification of these measurements was recorded onto a pitot tube calibration worksheet and presented as part of the final report. Once the measurements of the pitot tube were completed, the system was assembled and leak checked, prior to making any measurements.

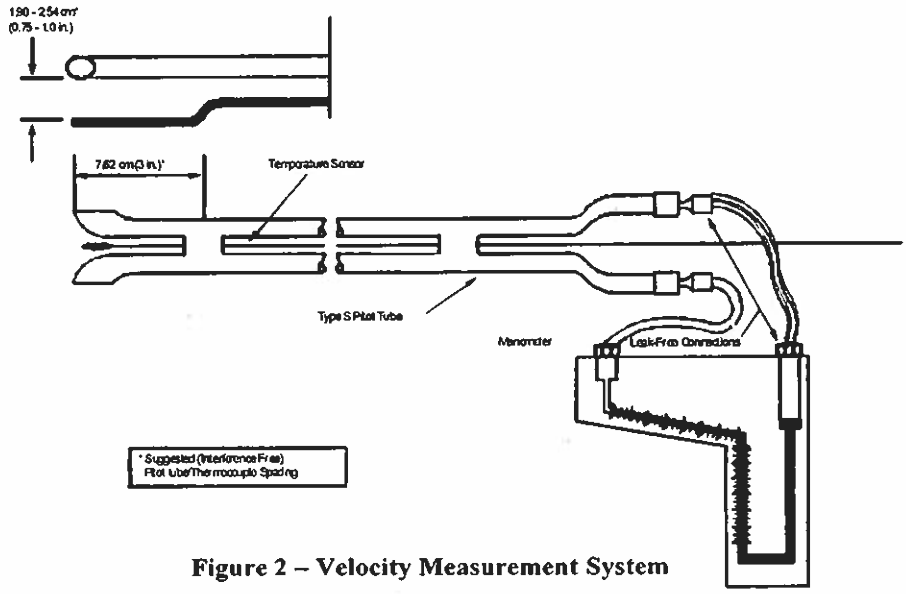

Figure 2 – Velocity Measurement System

4.2.3 USEPA Method 3A

The oxygen (O_2) sampling was conducted in accordance with 40 CFR 60, Appendix A, Method 3A. A Thermo Scientific Model 410i paramagnetic oxygen analyzer with a range of 0-25 percent was used for the diluent measurements. The Model 410i paramagnetic oxygen analyzer operates on the principle that oxygen is attracted into a strong magnetic field while most other gases are not. This paramagnetism is used to obtain fast, accurate oxygen measurements. The sample is drawn into the Model 410i through the sample bulkhead and flows through a focused magnetic field and any oxygen that is present will be attracted into the strongest part of the magnetic field. Two nitrogen filled glass spheres are mounted on a rotating suspension within the magnetic field. A mirror is mounted centrally on the suspension. Light is focused onto the mirror. The reflected light is directed onto a pair of photocells. Oxygen attracted into the magnetic field will displace

the nitrogen filled spheres, causing the suspension to rotate. The photocells will detect the movement generating a signal. The signal generated by the photocells is passed to a feedback system. The feedback system will pass a current around a wire mounted on the suspension. This causes a motor effect, which will keep the suspension in its original position. The current measured flowing around the wire is directly proportional to the concentration of oxygen within the gas mixture. The Model 410i outputs the O_2 concentration to the front panel display, the analog outputs and also makes the data available over a serial or Ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a STRATA Version 3.2.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee instruments.

Figure 3 presents a schematic of the USEPA Method 3A/7E/10 CEMS:

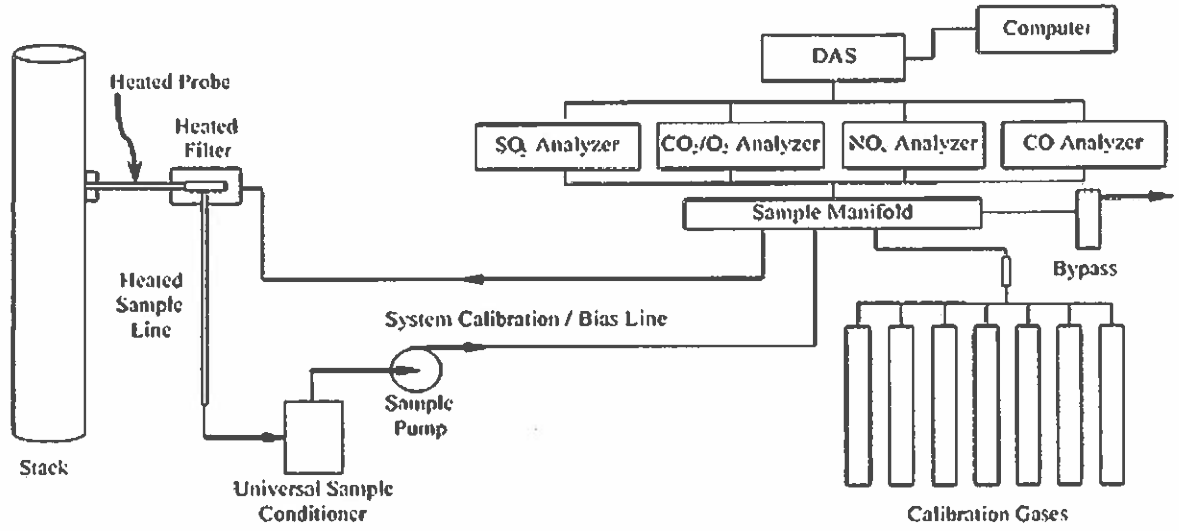

Figure 3 – USEPA Method 3A/7E/10 CEMS System

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the O_2 analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (nitrogen) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gas were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and after each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high level gases.

The O_2 analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of O_2 was measured in percentage of oxygen ($\%O_2$) by volume on a dry basis.

The carbon dioxide (CO_2) sampling was conducted in accordance with 40 CFR 60, Appendix A, Method 3A. A Thermo Scientific Model 410i non-dispersive infrared (NDIR) analyzer with a range of 0-25 percent was used for the diluent measurements. The Model 410i NDIR analyzer operates on the principle that carbon dioxide (CO_2) absorbs infrared radiation at a wavelength of 4.6 microns. The sample is drawn into the Model 410i through the sample bulkhead and flows through the optical bench. Radiation from an infrared source is chopped and then passed through a rotating optical wheel alternating between sample and reference filters. The radiation then enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The chopped detector signal is modulated by the alternation between the filters with an amplitude related to the concentration of CO_2 in the sample cell. Since infrared absorption is a non-linear measurement, it is necessary to transform the basic analyzer signal into a linear output. The Model 410i uses an internally stored calibration curve to

accurately linearize the instrument output over any range up to a concentration of 25 percent. The Model 410i outputs the CO_2 concentration to the front panel display, the analog outputs and also makes the data available over a serial or Ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a STRATA Version 3.2.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee instruments.

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the CO_2 analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (nitrogen) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gases were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and at the conclusion of each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high level gases.

The CO_2 analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of CO_2 was measured in percentage of carbon dioxide (%CO_2) by volume on a dry basis.

An interference check must be conducted on each gas analyzer prior to its initial use in the field. This requirement may be met if the instrument manufacturer performs the interference check on an analyzer of the same make and model used and provides the customer with documentation of the test results. The results of the interference check are documented in Appendix B.

4.2.4 USEPA Method 4

For this testing, the Method 4 sampling train was incorporated into the Method 5/29 sampling trains. Detailed descriptions of the sampling train configurations are presented later in the report. The moisture content of the sample gas stream was determined by extracting the gas sample at a known and regulated rate through the glass condenser train maintained below 68 degrees Fahrenheit (°F) in an ice bath with a vacuum pump. The volume of gas sampled was measured with a calibrated dry gas meter. The volume of moisture collected was measured gravimetrically with an analytical balance with a tolerance of 0.1 gram(s).

4.2.5 USEPA Method 5

The sampling and analytical procedures used during the emission testing for PM were conducted in accordance with the procedures outlined in USEPA Method 5, of 40 CFR 60. The probe and filter exit temperature were maintained at 248 ± 25 °F in accordance with the requirements of USEPA Method 5. The sampling equipment consisted of the following equipment and components:

1. Pitot Tube Assembly
   a. Nozzle - Borosilicate glass with a sharp, tapered leading edge.
   b. Probe - Stainless steel sheath with a 5/8-inch diameter glass insert wrapped with nichrome wire; electronically controlled and capable of maintaining 248 ± 25 °F with a calibrated Type "K" thermocouple.
   c. Pitot - Calibrated Stainless-steel Type "S" pitot tube constructed and attached to the probe according to the specifications outlined in USEPA Method 2, 40 CFR 60.
   d. Thermocouple - Calibrated Type "K" thermocouple attached to the sample probe such that the tip has no contact with any metal and does not interfere with the pitot tube face openings and the sample nozzle.

2. Filter Box Assembly
   a. Filter Holder - Borosilicate glass, with a Teflon frit filter support and a silicone rubber gasket. The holder is designed to provide a positive seal against leakage from the outside or around the filter.
   b. Filter Heating System - The heating system is capable of monitoring and maintaining the temperature around the filter to ensure the sample gas temperature exiting the filter is 248 ± 25 °F during sampling.
   c. Filter Temperature Sensor - A thermocouple capable of measuring temperature to within ±3 °C (5.4 °F) is installed so that the sensing tip of the temperature sensor is in direct contact with the sample gas exiting the filter. The sensing tip of the sensor protrudes at least 1/2 in. into the sample gas exiting the filter. The filter temperature sensor was monitored and recorded during sampling to ensure a sample gas temperature exiting the filter of 248 ± 25 °F.

3. Impingers
   a. The back-half Method 5 impingers were replaced with a Method 29 configuration consisting of four sequential impingers. Impingers one and two contained 100 ml each of an absorbing solution consisting of 5% nitric acid (HNO_3) / 10% hydrogen peroxide (H_2O_2). Impinger three was left empty to prevent liquid carry over. The final impinger contained 300 grams of silica gel. Normally there would be two additional impingers containing an acidified solution of $KMnO_4$ for the capture of mercury (Hg). However, since Pb is the only metal of interest in this test program, these impingers were removed from the Method 29 sampling train configuration as described above.
   b. The first and third impingers were of the Modified Greenburg-Smith design. The second impinger was of the Greenburg-Smith design with a standard orifice tip. Final gas exit temperature was measured with a calibrated Type "K" thermocouple immersed in the gas stream.

4. Control Box

   The control box is a module containing a vacuum gauge, external leak-free pump, thermocouples capable of measuring temperature within ± 5°F, dry gas meter with a minimum of 2 percent accuracy, valves and related equipment to determine sample gas volume.

The control box was leak-checked from pump to orifice at a minimum of 10 inches of mercury (in. of Hg) vacuum. The selected nozzle was calibrated with a micrometer and attached to the sample probe. The moisture sample train was prepared per Method 29 as indicated previously. The cold box portion was packed with cubed ice and assembled to the sampling train.

A pre-weighed quartz fiber filter was placed inside the filter holder onto a Teflon® support frit. The filter holder was positioned into the filter assembly unit and connected to the sample probe and impinger train with interconnecting glassware. The entire assembled sample system was leak-checked by plugging the inlet to the probe nozzle and pulling a vacuum of at least 10 inches of Hg. A leak rate less than 0.02 cubic feet per minute (cfm) was required and considered acceptable as outlined in 40 CFR 60. The negative side of the pitot tube system was vacuum leak-checked at greater than 3 inches of water column and the positive side of the pitot tube system was pressure leak-checked at greater than 3 inches of water column. If the 3 inches of water column is maintained on each side of the pitot for greater than 15 seconds, it is considered acceptable. The traverse sampling points were marked on the probe for easy visibility.

Temperature controllers for the probe were set to maintain a temperature of 248 ± 25 °F. The nozzle was placed at the first traverse point and positioned directly facing the stack gas stream. At the conclusion of each test run, the sample pump was turned off, the probe was removed from the stack, and the final sample train measurements were recorded. A final leak-check of the system was performed at the conclusion of every test run as previously described at the highest vacuum encountered during testing. A leak check of the pitot system was performed as previously described. All velocity measurements, sample train measurements, moisture data, and leak-check measurements were recorded onto the field data worksheets.

The PM filter holder and the interconnecting hardware were removed from the sample probe and the openings sealed. Likewise, the sample probe was disconnected. The impinger train, sample probe, PM filter holder, and interconnecting glassware were relocated to the sample collection area.

Figure 4 presents a schematic of the USEPA Method 5 measurement system:

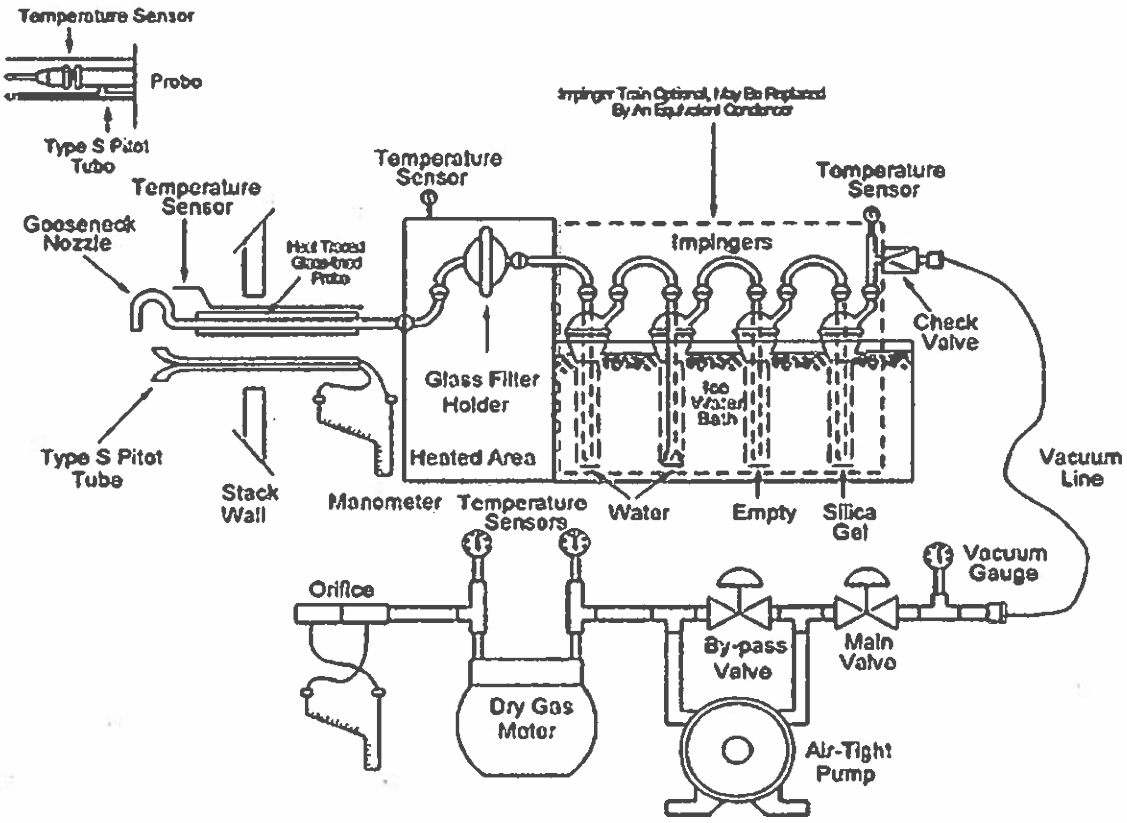

Figure 4 – USEPA Method 5 Measurement System

The PM filter holder was labeled with sample identification and transferred to the CEC laboratory. The nozzle was carefully removed from the sample probe and rinsed with acetone into a glass container. Acetone was used to rinse the probe liner, ferrules, nozzle, and all interconnecting glassware utilized between the sample nozzle and filter holder. A Teflon brush was used to loosen any adhering PM and subsequent washes and rinses were collected into the sample container. Acetone was also used to rinse any PM adhering to the Teflon brush into the sample collection container.

An acetone blank sample was collected at the sample cleanup area at the facility. The blank sample was analyzed using the same procedures as the test samples. The acetone blank was verified to be within specifications and did not impact the results.

The final particulate analysis was conducted by CEC in accordance with USEPA Method 5. The filters and the beakers containing the particulate recovered from the probe and nozzle rinses were transferred into the desiccator for twenty-four hours to obtain a weight and then weighed every six hours, minimum, until two consecutive weights were obtained that agree within ± 0.5 milligrams.

4.2.6 USEPA Method 7E

The oxides of nitrogen (NO_X) sampling was conducted in accordance with 40 CFR 60, Appendix A, Method 7E. A Thermo Scientific Model 42i Low Source (LS) chemiluminescence analyzer with a range of 0-500 parts per million (ppm) was used to measure the NO_X concentration. The model 42i operates on the principle that nitric oxide (NO) and ozone (O_3) react to produce a characteristic luminescence with an intensity linearly proportional to the NO concentration. Infrared light emissions results when electronically excited NO_2 molecules decay to lower energy states. Nitrogen dioxide (NO_2) must first be transformed into NO before it can be measured using the chemiluminescent reaction. NO_2 is converted to NO by a stainless steel NO_2 to NO converter heated to approximately 625°C. The sample is drawn into the 42i LS through the sample bulkhead and flows through a capillary and then to the mode solenoid valve. The solenoid valve routes the sample either straight to the reaction chamber (NO mode) or through the NO_2 to NO converter and then to the reaction chamber (NO_X mode). A flow sensor prior to the reaction chamber measures the sample flow. Dry air enters the Model 42i LS through the dry air bulkhead, passes through a flow switch and then through a silent discharge ozonator. The ozonator generates the ozone needed for the chemiluminescent reaction. At the reaction chamber, the ozone reacts with the NO in the sample to produce excited NO_2 molecules. A photomultiplier tube (PMT) housed in a thermoelectric cooler detects the luminescence generated during this reaction. From the reaction chamber, the exhaust travels through the ozone converter to the pump and is released through the vent. The NO and NO_X concentrations calculated in the NO and NO_X modes are stored in memory. The difference between the concentrations is used to calculate the NO_2 concentration. The Model 42i LS outputs NO, NO_2 and NO_X concentrations to the front panel display, the analog outputs and also makes the data available over a serial or Ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a STRATA Version 3.2.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee instruments.

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the NO_X analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (zero air) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gas were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and at the conclusion of each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high-level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high-level gases.

The NO_X analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of NO_X will be measured in parts per million by volume on a dry basis. A NO_X converter efficiency test was conducted on the NO_X analyzer. A NO_2 to NO conversion-efficiency test must be conducted if the system converts NO_2 to NO before analyzing for NO_X. Documentation of the NO_X converter test is provided in Appendix B.

4.2.7 USEPA Method 9

The visible Emissions (VE) observations were conducted in accordance with 40 CFR 60, Appendix A, Method 9. Method 9 requires an individual properly trained and certified in performing visual emission observations. Opacity is the degree to which light or an image is obscured when viewed through a plume. The observer's responsibility is to determine the degree to which light is obscured to the nearest 5% increment of opacity. Instantaneous readings are made every 15 seconds and the value recorded on the appropriate form. When making visual emission determinations the observer must apply specific criteria to each source layout in order to eliminate any bias, which exerts a significant influence upon plume appearance. These variables include:

- Angle of the observer with respect to the plume
- Angle of the observer with respect to the sun
- Point of observation of attached and detached steam plume

A set of opacity data reduction calculations is defined as the average of any 24 consecutive 15-second observations. Sets need not be consecutive in time and in no case shall two sets overlap. U.S. Steel personnel were responsible for conducting the VE observations during the emissions testing. Documentation of the VE observations are presented in Appendix B.

4.2.8 USEPA Method 10

USEPA Method 10 was used for determining CO concentrations from the stack exhaust. CEC uses a Thermo Scientific 48i CO monitor. The Model 48i High Level operates on the principle that carbon monoxide (CO) absorbs infrared radiation at a wavelength of 4.6 microns. Because infrared absorption is a non-linear measurement technique, it is necessary to transform the basic analyzer signal into a linear output. The Model 48i High Level uses an internally stored calibration curve to accurately linearize the instrument output over any range up to a concentration of 20,000 ppm. The sample is drawn into the Model 48i High Level through the sample bulkhead. The sample flows through the optical bench. Radiation from an infrared source is chopped and then passed through a gas filter alternating between CO and N_2. The radiation then passes through a narrow band-pass interference filter and enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The CO gas filter acts to produce a reference beam, which cannot be further attenuated by CO in the sample cell. The N_2 side of the filter wheel is transparent to the infrared radiation and therefore

produces a measurement beam, which can be absorbed by CO in the cell. The chopped detector signal is modulated by the alternation between the two gas filters with an amplitude related to the concentration of CO in the sample cell. Other gases do not cause modulation of the detector signal since they absorb the reference and measure beams equally. Thus, the GFC system responds specifically to CO. The Model 48i High Level outputs the CO concentration to the front panel display, the analog outputs, and also makes the data available over the serial or ethernet connection.

The sample was extracted from the stack through a heated and filtered stainless steel probe using an Air Dimensions diaphragm sample pump regulated by a Millennium Instruments flow panel. The sample was then transported to a Universal Analyzer gas conditioner via heated 3/8-inch PTFE sample line maintained above the dew point of the flue gas where the water vapor was removed. The sample was then analyzed continuously for the duration of each test period. The analyzer output was recorded continuously by a Strata Version 3.1.112 Data Acquisition System (DAS) manufactured by AMP-Cherokee.

USEPA Protocol-1 calibration gases were used to calibrate the analyzer system. A calibration error test was performed on the CO analyzer by introducing a zero, mid and high-level calibration gas directly to the analyzer inlet. A zero gas (nitrogen) of less than 0.25 percent of span, a certified Protocol-1 mid-level (40 to 60 percent) of span and a certified Protocol-1 high-level (100 percent) of span were used for the analyzer calibration error test. At the conclusion of the calibration error test, the zero and an upscale calibration gas were delivered to the probe tip and transported to the analyzer to determine the response time for the analyzer system configuration and to determine if the system had any biases that would affect the sample results. The system bias test was conducted prior to and at the conclusion of each test run.

The measurement system was required to meet the following QA/QC criteria for this test program:

- Analyzer Calibration Error: ± 2.0 percent of the calibration span for the zero, mid and high level calibration gases.
- System Bias: ± 5.0 percent of the analyzer calibration span for the zero and upscale calibration gases.
- Calibration Drift: ± 3.0 percent of the analyzer calibration span for the zero and mid or high level gases.

The CO analyzer was located in a temperature-controlled CEMS trailer to minimize thermal effects on the calibration of the instrument. The concentration of CO was measured in parts per million (ppm) by volume on a dry basis.

4.2.9 USEPA Method 25A

The volatile organic material (VOM) was measured using USEPA Method 25A. A sample was continuously withdrawn from the sampling location through a heated stainless-steel probe and filter. The sample was maintained at > 250°F and on a wet basis through a secondary filter and to the analyzer.

The analyzer was a J.U.M, 3-300A series analyzer. The analyzer quantitates the total concentration of VOM'S with a flame ionization detector (FID). FID response was measured as propane. The results are reported as ppm by volume on a wet basis.

A sample system pre- and post-test bias and drift check were performed on the analyzer sampling system by introducing a zero and mid-range calibration gas at the calibration valve that is installed on the end of the sampling probe. The sampling system was operated at the normal sampling rate and no adjustments were made to the measurement system during the instrument drift check. The results are not bias corrected. The bias is calculated to determine the instrument drift.

Figure 5 presents a schematic of the USEPA Method 25A measurement system.

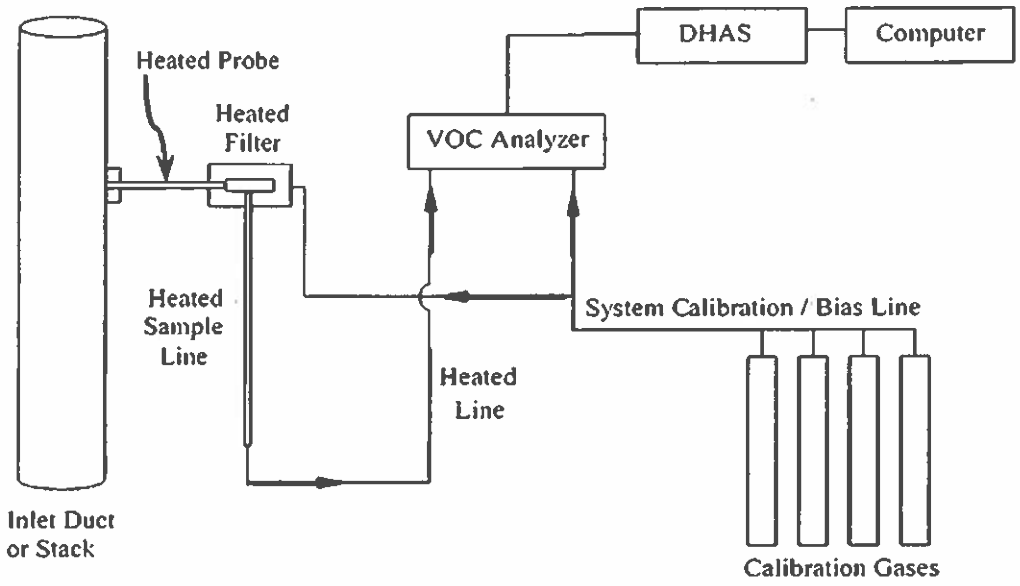

Figure 5 – USEPA Method 25A Measurement System

The acceptance criteria for the analyzer used in this test program was:

- Calibration Error - Less than ± 5% of the Calibration Gas Value.
- Zero Bias – Less than ± 5% of the Calibration Span
- Calibration Bias – Less than ± 5% of the Calibration Span
- Zero Drift – Less than ± 3% of the Calibration Span over the period of each test run.
- Calibration Drift - Less than ± 3% of Calibration Span over the period of each test run.

4.2.10 USEPA Method 29

Emissions testing for lead (Pb) was performed according to USEPA Method 29. The Pb was collected by aspirating the flue gas through a measured volume of 5% nitric acid (HNO_3) /10% hydrogen peroxide (H_2O_2) to determine the moisture and Pb concentration of the emission source.

The principal components of the sampling system are:

1. Pitot Tube Assembly
   a. Nozzle--Borosilicate glass with a sharp, tapered leading edge.
   b. Probe--Stainless steel sheath with a 5/8-inch diameter quartz glass insert wrapped with nichrome wire; electronically controlled and capable of maintaining 248 ± 25 °F with a calibrated Type "K" thermocouple.
   c. Pitot--Calibrated Stainless-steel Type "S" pitot tube constructed and attached to probe according to specifications outlined in USEPA Method 2, 40 CFR 60.
   d. Thermocouple--Calibrated Type "K" thermocouple attached to the sample probe such that the tip has no contact with metal and does not interfere with the pitot tube face openings and the sample nozzle.
   e. Glass filters housing--with a Teflon frit filter support with a quartz fiber filter.

2. Filter Box Assembly
   a. Filter Holder - Borosilicate glass, with a Teflon frit filter support and a silicone rubber gasket. The holder is designed to provide a positive seal against leakage from the outside or around the filter.
   b. Filter Heating System - The heating system is capable of monitoring and maintaining the temperature around the filter to ensure the sample gas temperature exiting the filter is 248 ± 25 °F during sampling.
   c. Filter Temperature Sensor - A thermocouple capable of measuring temperature to within ±3 °C (5.4 °F) is installed so that the sensing tip of the temperature sensor is in direct contact with the sample gas exiting the filter. The sensing tip of the sensor protrudes at least 1/2 in. into the sample gas exiting the filter. The filter temperature sensor was monitored and recorded during sampling to ensure a sample gas temperature exiting the filter of 248 ± 25 °F.

3. Impingers
   a. The Method 29 sampling train consists of four sequential impingers. Impingers one and two contained 100 ml each of an absorbing solution consisting of 5% HNO_3 / 10% H_2O_2. Impinger three was empty to prevent liquid carry over followed by a final impinger containing 300 grams of silica gel.
   b. Four impingers connected in series with glass ball/socket joint fittings and placed in an ice bath were used for these tests. The second impinger was of the Greenburg-

Smith design with a standard orifice tip. The first, third and fourth impingers were of the modified Greenburg-Smith design. Final gas exit temperature was measured with a calibrated Type "K" thermocouple immersed in the gas stream.

4. Control Box

The control box was a module containing a vacuum gauge, external leak-free pump, and thermocouple capable of measuring temperature within ±5 ° F, and dry gas meter with a minimum of 2 percent accuracy, valves and related equipment to determine sample gas volume.

Figure 6 presents an illustration of the standard Method 29 sampling train with the mercury impingers, which were not used for this test series. The optional empty knockout impinger was also not used during the testing.

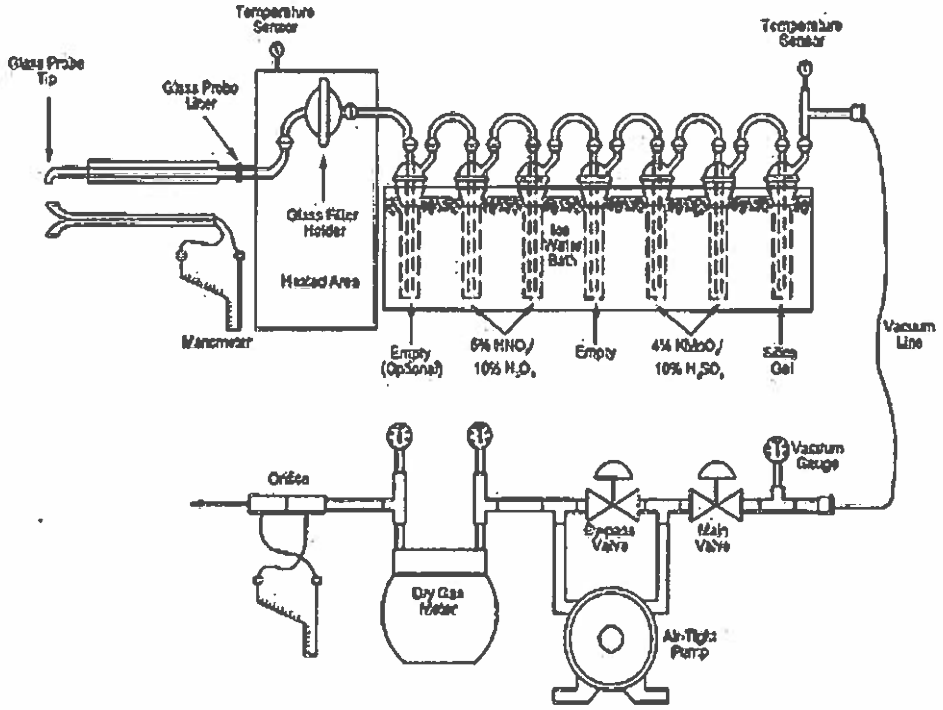

Figure 6 – USEPA Method 29 Measurement System

The sampling train was assembled per the method, ice was added to the impinger portion of the train and the probe and the filter were heated to 248 ± 25°F. Once the sampling train was at the desired temperature, the system was leak checked. A leak rate less than 0.02 cubic feet per minute (cfm) was determined and considered acceptable as outlined in 40 CFR 60. Once the sampling train passed the leak check, it was placed in the stack to begin sampling.

The sampling train was operated for such that a minimum of 60 dscf of sample gas volume was collected. The nozzle, probe liner, and front filter-half of the filter assembly were rinsed 3 times with 0.1 N nitric acid. The sample will be placed into a 250-milliliter amber glass storage container.

The liquid in the first three impingers was measured to the nearest tenth of a gram. The collected sample in the first three impingers was transferred to a one-liter amber glass storage container along with a 100-mL 0.1 N nitric acid rinse of the impingers and connecting glassware. The container was sealed and the liquid level marked.

The volume of the moisture collected by the silica gel in the final impinger was determined to the nearest 0.1 gram per Method 4. Collected condensate measurements were recorded on the Method 29 moisture determination data analysis portion of the data sheet.

The samples were shipped to the laboratory along with the appropriate chain of custody documentation. Samples, method blanks and spiked samples were weighed, digested, prepared and analyzed according to USEPA Method 29 protocol. The samples were analyzed for Pb on a PerkinElmer ELAN 6100 inductively coupled argon plasma emission spectroscopy/mass spectrometry (ICP-MS) or similar instrument. The Pb analysis was performed by Element One, Inc. laboratories in Wilmington, NC. The complete analytical report for each sample is presented in Appendix C.

5.0 QUALITY ASSURANCE QUALITY CONTROL RESULTS

CEC has established quality assurance and quality control (QA/QC) guidelines for providing quality sampling and analytical data from source tests. These QA/QC procedures were implemented to ensure the acceptability and reliability of the data generated.

In summary, an appropriate degree of data quality was maintained throughout this project. The sampling trains were leak checked prior to and immediately after sampling. Leak rates for the isokinetic sampling trains were less than the maximum criterion of 0.02 cubic feet per minute.

The isokinetic sampling rates for the isokinetic sampling trains were within the 100% ± 10% criterion established for isokinetic sampling. The pitot leak checks were stable for at least 15 seconds. USEPA Method 5 requires the calibration of the metering system after each field use. This is typically performed in a laboratory environment. If it fails the test, the test results are invalidated. This makes a field calibration procedure highly desirable. USEPA's approved alternative method (ALT-009) based on the pre-test meter coefficient found in Method 5 Section 4.4.1 has been approved as a post-test calibration procedure. The procedure states that, "If the average of the three runs is within ±5% of the y-value, the Method 5 sampling system passes the post calibration requirements." The quality control summaries for the Methods are presented in Table 3.

Table 3 – USEPA Method 5/29 QA/QC Results

Run #	Isokinetics	Post Leak Check System	Post Leak Check Pitot	Alt-009 Results	Test Series
Criteria	**100 ± 10%**	**< 0.02 cfm**	**Stable for at least 15 seconds**	**± 5% of original Y**	**Pass/Fail**
1	101.2	0.010	Yes	4.04	Pass
2	105.6	0.000	Yes	0.78	Pass
3	101.7	0.000	Yes	2.29	Pass

6.0 DATA UNCERTAINTY

Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results presented in this test report. There are several factors that can affect qualitative and quantitative measurements.

Qualitative uncertainty factors include, but are not limited to, unknown chemical interferences, sample matrix interactions, environmental conditions, sample handling and instrument operation and maintenance. To reduce the impact of these qualitative uncertainty factors, CEC has developed a set of Standard Operating Procedures (SOPs) in accordance with our corporate quality assurance guidelines and ASTM D 7036-04.

Quantitative uncertainty factors known to directly affect uncertainty include the accuracy of calibration standards as well as the precision and accuracy of instrument measurements and the test methods utilized. To reduce the impact of these quantitative uncertainty factors, CEC utilizes testing and analytical methodology that has been approved by EPA or the American Society for Testing and Materials (ASTM) where applicable. In addition, CEC personnel perform routine instrument and equipment calibrations according to manufacturer's guidelines and/or test method specifications.

The limitations of the various methods, instruments, equipment, and materials utilized during this project have been reasonably considered to be in accordance with the project data quality objective, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this test report.

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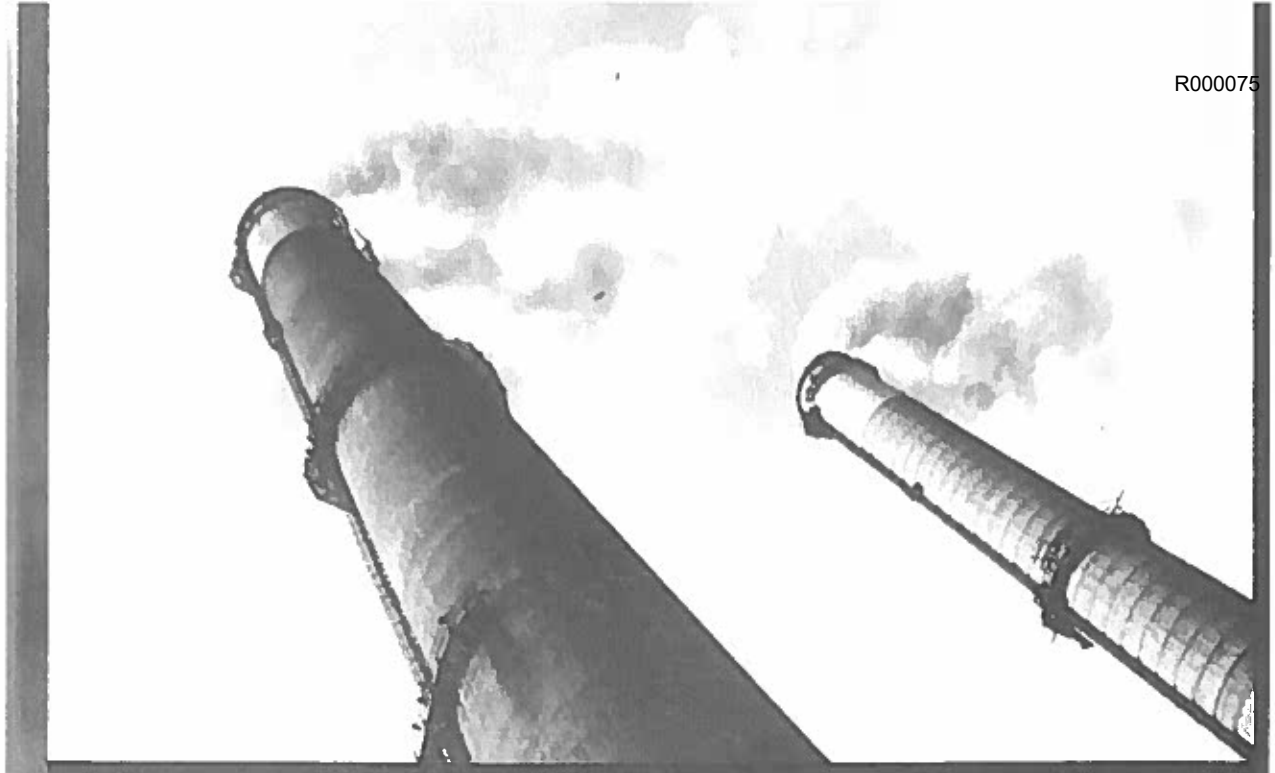

C. David Cooper
F. C. Alley

Fourth Edition

R POLLUTION CONTROL

Design Approach

per sec.) Because VOCs and NO_x are both emitted in large quantities by motor vehicles and because of the important role that sunlight plays, photochemical oxidants are usually more prevalent in large, sunny urban areas with heavy traffic. Other major sources of VOCs are industrial processes like petrochemical processing, surface coating, printing, and other large operations involving organic solvents.

Ozone and other oxidants are severe eye, nose, and throat irritants; eye irritation occurs at 100 ppb, and severe coughing occurs at 2.0 ppm. Although the NAAQS for ozone is based on an 8-hour maximum, Lippmann (1989) points out that reductions in lung functions can occur in as little as five minutes of exposure to concentrations in the range of 20 to 150 ppb. Furthermore, these acute (short-term) effects worsen as the dose (concentration × exposure time) increases.

Lippmann (1989) also raises the concern of chronic (long-term) effects. For example, people exposed to seasonally elevated concentrations of ozone for years may experience irreversible, accelerated lung aging. EPA recently passed an 8-hour standard of 0.075 ppm, but there is talk of lowering that maximum even further.

Other effects of oxidants include severe cracking of synthetic rubber and deterioration of textiles, paints, and other materials. Oxidants cause extensive damage to plants, including leaf discoloration and cell collapse (Brandt and Heck 1968), with effects starting at concentrations as low as 50 ppb. Ozone damage to crops in the United States is substantial, probably in the range of $3–6 billion annually; a 25% reduction in ambient ozone would produce benefits of about $1–2 billion annually to the agricultural sector (Murphy et al. 1999). Ozone also damages forest ecosystems in California and the eastern U.S. (EPA 2010).

Few VOCs have any known direct adverse effects on plants, animals, or materials. An exception is ethylene, which causes chlorosis and necrosis in broad-leaved plants (Brandt and Heck 1968). General retardation of growth for several kinds of plants has also been reported. Other than the displeasure experienced when exposed to certain odoriferous VOCs, no acute (short time frame) effects have been observed on humans at typical air pollution concentrations. Other VOCs are carcinogenic, and many VOCs are reactive in the atmosphere (forming oxidants).

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, tasteless gas that is *caused by* the incomplete combustion of any carbonaceous fuel. Power plants and other large furnaces are usually designed and operated carefully enough to ensure nearly complete combustion and do not emit much CO. Thus, the major *source* is the transportation sector. However, residential heating accounts for a significant fraction of total national CO emissions as do certain industrial processes.

can have significant effects on human health. CO reacts with the hemoglobin in blood to prevent oxygen transfer. Depending on the concentration of CO and the time of exposure, effects on humans range from slight headaches to nausea to death.

The toxic effects of carbon monoxide on humans are due solely to the interactions of CO with blood hemoglobin. When a mixture of air and CO is breathed, both oxygen and CO are transferred through the lungs to the blood. Both adsorb onto hemoglobin, but the equilibrium coefficient for CO is approximately 210 times as great as that for oxygen. Thus, the equilibrium ratio of carboxyhemoglobin (HbCO) to oxyhemoglobin (HbO_2) is given by the following equation:

$$\frac{HbCO}{HbO_2} = (210)\frac{\bar{P}_{CO}}{\bar{P}_{O_2}} \tag{1.32}$$

where $\bar{P}_{CO}, \bar{P}_{O_2}$ = partial pressures of CO and O_2, respectively

As more CO is breathed in and more HbCO is formed, the ability of the lungs and blood to supply oxygen to the rest of the body is decreased. Not only is the HbO_2 decreased, but that which remains tends to be more firmly bound because of the presence of HbCO (Goldsmith 1968). Equilibrium is not attained instantly. Typically, about 6 to 8 hours are required to reach equilibrium blood saturation when CO levels are approximately 50 ppm. The process is reversible, and once CO is removed from the air, HbCO will slowly break down, allowing CO to be expelled by the lungs.

Example 1.17

Estimate the percentage of HbCO in the blood of a traffic officer exposed to 40 ppm CO for several hours. Assume the HbCO content reaches 60% of its equilibrium saturation value.

Solution

Air is approximately 20.9% oxygen, so at saturation

$$\frac{HbCO}{HbO_2} = (210)\frac{40}{209{,}000} = 0.040$$

At 60% saturation,

$$\frac{HbCO}{HbO_2} = 0.024$$

To find the fraction of HbCO in the blood, we must realize that

$$HbCO + \frac{HbCO}{0.024} = 1.0$$

Thus, HbCO = 0.0234 and percent $HbCO_{actual}$ = 2.3%

The most serious effects of atmospheric CO are expected f
viduals already vulnerable to oxygen deficiencies. People with a
those with chronic heart or lung disease, and those living at hi
tudes are more at risk than others. Levels of HbCO in the blood
as 2% to 5% have been shown to induce some effects.

Cigarette smokers knowingly and voluntarily pollute thei
with particulates, VOCs, and CO. Cigarette smoke typically c
400–450 ppm CO (Wark, Warner, and Davis 1998). The blood
smokers averages between 5% and 10% HbCO, whereas nons
typically have 2% or so (Goldsmith 1968). (A small amount o
produced by body metabolism.) A heavy smoker caught in a
jam in a high-altitude city such as Denver could easily exceed
20% HbCO, which could result in headaches, fatigue, and im
driving ability.

In addition to CO, cigarette smoke contains an appr
amount of formaldehyde (HCHO)—a HAP and a fairly stable p
of incomplete combustion. In fact, a single cigarette emits ab
ing of HCHO (Masters 1991). In many bars (where smokers s
congregate and breathe each other's used smoke) it is not unc
for the formaldehyde concentration in the air to exceed levels th
cause eye, nose, and throat irritation.

An Air Quality Index

Based on an overall appraisal of the effects of various pollu
an Air Quality Index (AQI) has been adopted by the EPA (40 CF
The AQI is reported and used by many U.S. cities to indicat
day-to-day air quality. The AQI assigns a numerical rating to ai
ity, which corresponds with a particular description of the air c
and color code as shown in Table 1.10.

There are six subindices that contribute to the AQI—one ea
PM-2.5, PM-10, SO_2, CO, 8-hr O_3, and 1-hr O_3. Each subindex
from 0 to 500, with 100 corresponding to the primary NAAQS a
corresponding to significant harmful effects. The six subindic
their corresponding concentrations are listed in Table 1.11.

The calculation of the AQI begins with first calculating th
vidual subindex for each of the six categories. Each subindex is
tinuous but not smooth function of the pollution concentration. I
each subindex is defined to be a segmented linear function (4

R0000877

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

P. O. Box 19506, Springfield, IL 62794-9506

217/782-2113

REVISED
OPERATING PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001
Applicant's Designation:
Subject: Production Increase
Date Issued: January 5, 1999
Location: Southeastern Granite City

I.D. No.: 119813AAI
Date Received: December 22, 1998

Expiration Date: June 6, 2002

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

b. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.

iii. Overlapping operations of the BOF vessels is allowed under the following conditions:

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy condition (A) above.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

E. Condition B and C above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.

c. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

d. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

e. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

f. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. The Permittee shall operate and maintain the waste gas suction monitor system that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

b. The waste gas suction monitoring system shall be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated and maintained to ensure accurate and useful data.

d. The Permittee shall continuously record the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

a. Operating time of the BOF;

b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

a. Natural Gas usage: 225 million ft^3 per month and 1,346 million ft^3 per year;

b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$mmft^3\ BFG\ per\ month = \frac{(4.585277\ NTHM/day + 498.191)}{80} \times \begin{pmatrix} Number\ of \\ days\ in \\ that\ month. \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and

printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.

i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- any other pertinent information

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

39. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

d. This revised operating permit issued January 5, 1999 is issued such that the net increase in emissions of PM, PM_{10}, SO_2, NO_x and VOM resulting from increased natural gas combustion are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of significant Deterioration. The accounting of the increases in emissions are shown in Tables 7, 8 and 9 of the attachments.

e. The changes in emissions pertinent to the revised operating permit issued January 5, 1999 are summarized as follows:

- Emission increase from increased natural gas combustion:

PM-10	PM	NO_x	SO_2	CO	VOM
3.43	3.43	205.94	0.40	26.92	1.88

- Natural gas combustion baseline emissions (average of 1996 and 1997 actuals):

PM-10	PM	NO_x	SO_2	CO	VOM
2.9	2.9	174.11	0.34	22.76	1.59

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM
0.53	0.53	31.83	0.06	4.16	0.29

- Significant levels:

PM-10	PM	NO_x	SO_2	CO	VOM
15	25	40	40	100	40

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;

gr/dscf = grains per dry standard cubic foot;
acfm = actual cubic feet per minute;
mmcf = million cubic feet;
Mgal = thousands of gallons.

Please note that this permit has been revised to incorporate construction permit 98110038.

If you have any questions on this permit, please call Ernie Kierbach at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:ELK:jar
ELK\SK
cc: IEPA, FOS Region 3

COPY
Original Signed by
Donald E. Sutton, P.E.

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

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TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

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TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

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TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,346
BFG	185,030
Fuel Oil	365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	3.43
PM-10	5.1	3.43
SO_2	0.6	0.40
NO_x	306	205.94
VOM	2.8	1.88
CO	40	26.92

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

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TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

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TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	274	274	641	706	2	1,295	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,102	1,019	1,115	890	171	17,392	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

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TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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TABLE 7

Change in Emissions from Increased Natural Gas Combustion

Baseline Emissions (Average of 1996 and 1997 Actuals)

Pollutant	Emissions (Tons/Yr)
PM	2.9
PM-10	2.9
SO_2	0.34
NO_x	174.11
VOM	1.59
CO	22.76

Potential Emissions from Natural Gas Usage of 1,346 $mmft^3/Yr$

Pollutant	Emissions (Tons/Yr)
PM	3.43
PM-10	3.43
SO_2	0.40
NO_x	205.94
VOM	1.88
CO	26.92

Net Emission Change

Pollutant	Emissions (Ton/Yr)	Significant Emissions Level (Tons/Yr)
PM	0.53	25
PM-10	0.53	15
SO_2	0.06	40
NO_x	31.83	40
VOM	0.29	40
CO	4.16	100

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TABLE 8

1996 Actual Emissions from Natural Gas Usage of 1,131 mmft^3/Yr

Pollutant	Emissions (Tons/Yr)
PM	2.88
PM-10	2.88
SO_2	0.34
NO_x	173.04
VOM	1.58
CO	22.62

TABLE 9

1997 Emissions from an Allowable Natural Gas Usage of 1,145 mmft^3/Yr

Pollutant	Emissions (Tons/Yr)
PM	2.92
PM-10	2.92
SO_2	0.34
NO_x	175.19
VOM	1.60
CO	22.9

ELK:jar

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault; .

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

b. Check on a regular basis the draft rate set points;

c. Check on a regular basis primary and secondary damper settings;

d. Check on a regular basis ESP operation, including the following:

i. Fields down;

ii. Fields indicating shorts and unable to reset;

iii. Hopper screw doors are closed;

e. Check on a regular basis blow rates;

f. Check on a regular basis spray water system operation;

g. Check on a regular basis steam injection rate;

h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

j. Notify the emissions control operator and melter when isolation work begins;

k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

a. Use controlled pouring of the hot metal into the BOF vessel;

b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

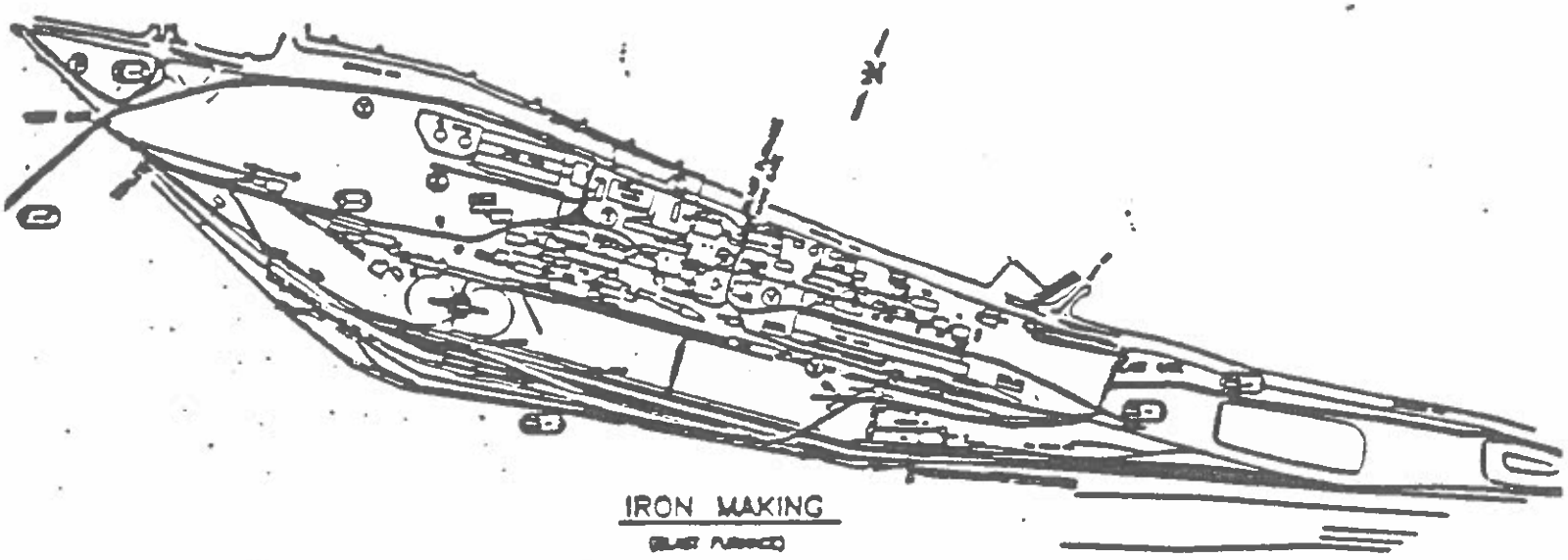
c. Use the most beneficial furnace tilt angle;

d. These procedures shall be posted in the crane operator booth.

Permit Application #95010001

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



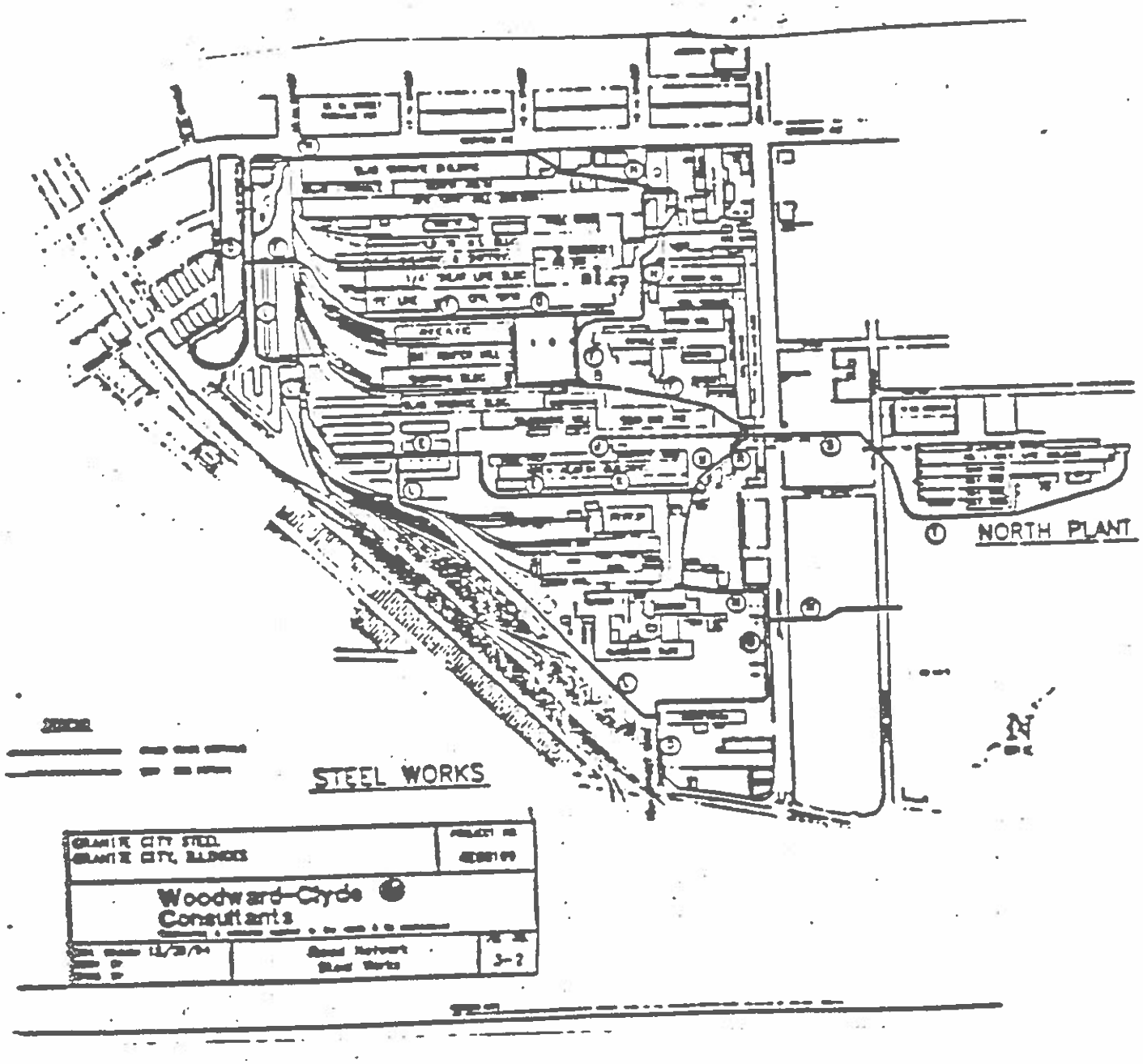
GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

3-3

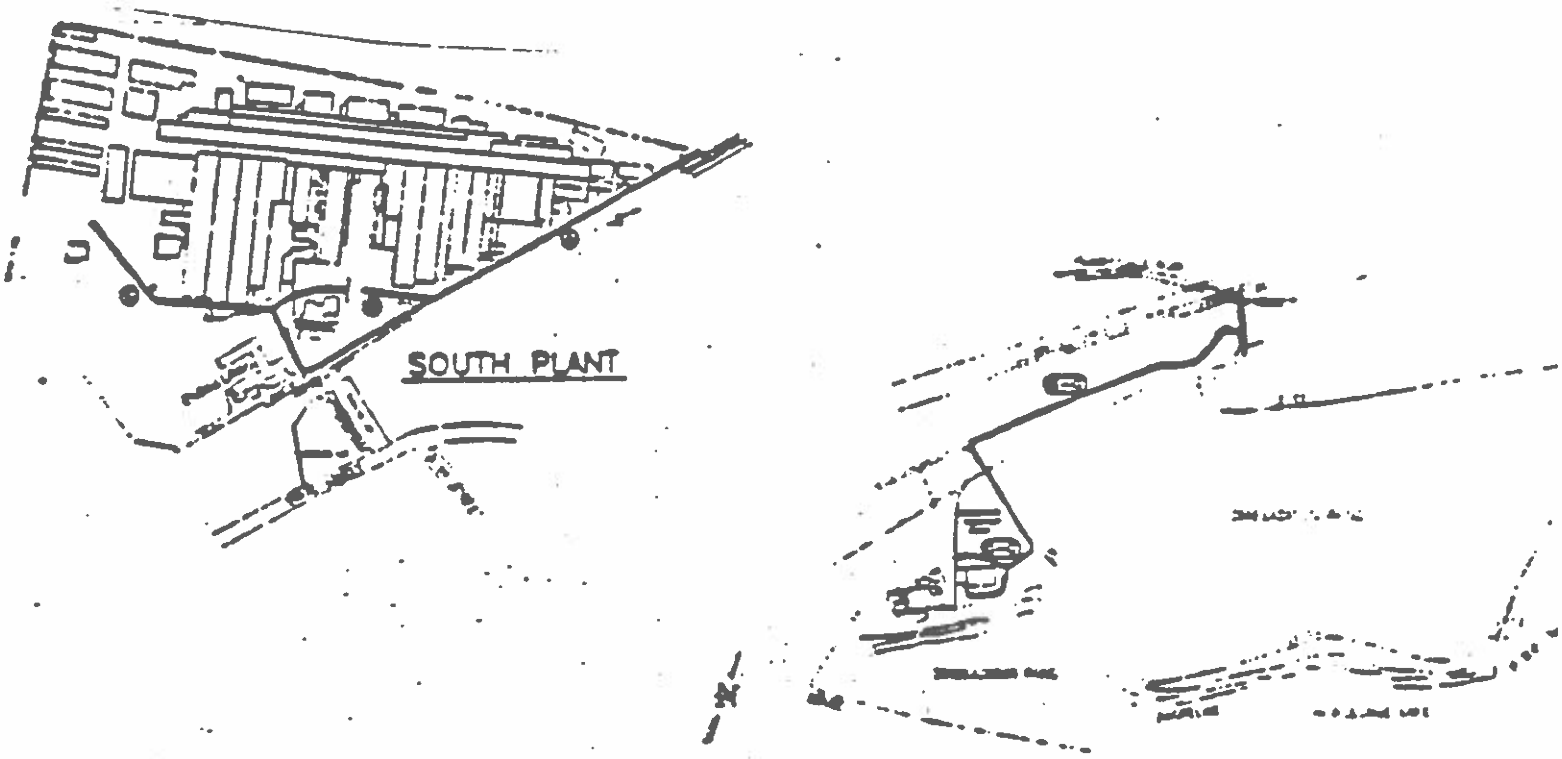
Permit Application #95010001

ATTACHMENT B (cont.)



Permit Application #95010001

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr

- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.

- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*

- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

ELK:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR OPERATING PERMITS

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special permit condition(s).

1. The issuance of this permit does not release the permittee from compliance with state and federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the United States or the State of Illinois or with applicable local laws, ordinances and regulations.

2. The Agency has issued this permit based upon the information submitted by the permittee in the permit application. Any misinformation, false statement or mispresentation in the application shall be grounds for revocation under 35 Ill. Adm. Code 201.207.

3. a. The permittee shall not authorize, cause, direct or allow any modification, as defined in 35 Ill. Adm. Code 201.102, of equipment, operations or practices which are reflected in the permit application as submitted unless a new application or request for revision of the existing permit is filed with the Agency and unless a new permit or revision of the existing permit(s) is issued for such modification.

   b. This permit only covers emission sources and control equipment while physically present at the indicated plant location(s). Unless the permit specifically provides for equipment relocation, this permit is void for an item of equipment on the day it is removed from the permitted location(s) or if all equipment is removed, notwithstanding the expiration date specified on the permit.

4. The permittee shall allow any duly authorized agent of the Agency, upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emission of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring or recording any activity, discharge or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the facilities,

c. does not take into consideration or attest to the structural stability of any unit or part of the project, and

d. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. The facilities covered by this permit shall be operated in such a manner that the disposal of air contaminants collected by the equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

7. The permittee shall maintain all equipment covered under this permit in such a manner that the performance of such equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

8. The permittee shall maintain a maintenance record on the premises for each item of air pollution control equipment. This record shall be made available to any agent of the Environmental Protection Agency at any time during normal working hours and/or operating hours. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9. No person shall cause or allow continued operation during malfunction, breakdown or startup of any emission source or related air pollution control equipment if such operation would cause a violation of an applicable emission standard or permit limitation. Should a malfunction, breakdown or startup occur which results in emissions in excess of any applicable standard or permit limitation, the permittee shall:

   a. immediately report the incident to the Agency's Regional Field Operations Section Office by telephone, telegraph, or other method as constitutes the fastest available alternative, and shall comply with all reasonable directives of the Agency with respect to the incident;

   b. maintain the following records for a period of no less than two (2) years:

      i. date and duration of malfunction, breakdown or startup,

      ii. full and detailed explanation of the cause,

      iii. contaminants emitted and an estimate of quantity of emissions,

      iv. measures taken to minimize the amount of emissions during the malfunction, breakdown or startup, and

      v. measures taken to reduce future occurrences and frequency of incidents.

10. If the permit application contains a compliance program and project completion schedule, the permittee shall submit a project completion status report within thirty (30) days of any date specified in the compliance program and project completion schedule or at six month intervals, whichever is more frequent.

11. The Permittee shall submit an Annual Emission Report as required by 35 Ill. Adm. Code. 201.302 and 35 Ill. Adm. code Part 254.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-2113

P. O. Box 19506, Springfield, IL 62794-9506

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001
Applicant's Designation:
Subject: Production Increase
Date Issued: January 25, 1996
Location: Southeastern Granite City

I.D. No.: 119813AAI
Date Received: January 3, 1995

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

ii. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the set point shall be set to establish the total draft necessary to control the corresponding portion of the process which is occurring on each vessel during the overlap. For example, minimum set point while charging at one vessel and tapping at the other would be equal to that necessary to establish a flow of 700,000 cfm (i.e., 550,000 + 150,000).

iii. Overlapping operations of the BOF vessels is allowed only as specified in operating permit application number 72080043.

iv. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

b. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

c. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

d. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. Within 270 days of the date issued of this permit, the Permittee shall install, calibrate, operate, and maintain a monitoring device that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the various exhaust ventilation rates or levels of exhaust ventilation through the main downcommer duct of the ESP emissions capture and transport system.

b. The monitoring system shall be designed to be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated, tested and maintained to ensure accurate and useful data.

d. The Agency may allow an equivalent system or method instead of the above monitoring system provided the Permittee demonstrates, and the Agency approves, that such system or method will ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks in an equivalent manner, and that such system or method can be installed and operated within the time period required for the monitoring system as stated in this permit.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

a. Operating time of the BOF;

b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft3 per month and 185,030 million ft3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

    i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days

after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on 0.05846 mmft^3 BFG generated per net ton of hot metal produced.

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and

printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

STARTUP AND TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38. Operation at the increased production rates specified in this permit is allowed for 270 days from the date issued under this construction permit.

39a. The following tests shall be performed to demonstrate compliance with the conditions of this permit within 270 days from the date issued of this permit:

i. Blast Furnace testing: The emissions of particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and the opacity from the blast furnace casthouse stack shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.445 and the requirements of this permit;

ii. Hot Metal Desulfurization testing: The emissions of particulate matter from the desulfurization baghouse shall be measured. These tests shall be designed to verify compliance with the requirements of this permit and 35 Ill. Adm. Code 212.446(b)(2);

iii. BOF testing: The emissions of particulate matter, carbon monoxide, and lead from the BOF ESP stack, and the opacity from both the BOF ESP stack and BOF Shop shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.446, 212.458 and the requirements of this permit;

iv. Fuel Combustion Units testing: The emissions of particulate matter from a representative boiler while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

v. BFG generation testing: The amount of blast furnace gas generated ($mmft^3$) per ton of hot metal produced shall be determined. The Agency may waive this requirement for testing providing the Permittee submit a sufficient explanation of how BFG generation is determined with justification that such determination is appropriate for purposes of compliance determinations with this permit.

b. These tests shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close

to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6
Nitrogen Oxides	USEPA Method 7
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Lead	USEPA Method 12

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 60 days prior to the actual date of testing of the BOF, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing the BOF, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion

accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- other pertinent information (e.g., for the BOF, pulpit set point for each process of the BOF cycle - charging, refining, and tapping);

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

40. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Unit (#39)
P.O. Box 19276
Springfield, Illinois 62794-9276

41. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage (mmft3/month and mmft3/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

42a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is

not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Jim Ross at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:jar

cc: IEPA, FOS Region 3

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

Permit Application #95010001

TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

Permit Application #95010001

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

Permit Application #95010001

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

Permit Application #95010001

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,145
BFG	185,030
Fuel Oil	365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

Permit Application #95010001

TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

Permit Application #95010001

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

Permit Application #95010001

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

b. Check on a regular basis the draft rate set points;

c. Check on a regular basis primary and secondary damper settings;

d. Check on a regular basis ESP operation, including the following:

i. Fields down;

ii. Fields indicating shorts and unable to reset;

iii. Hopper screw doors are closed;

e. Check on a regular basis blow rates;

f. Check on a regular basis spray water system operation;

g. Check on a regular basis steam injection rate;

h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

j. Notify the emissions control operator and melter when isolation work begins;

k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

a. Use controlled pouring of the hot metal into the BOF vessel;

b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

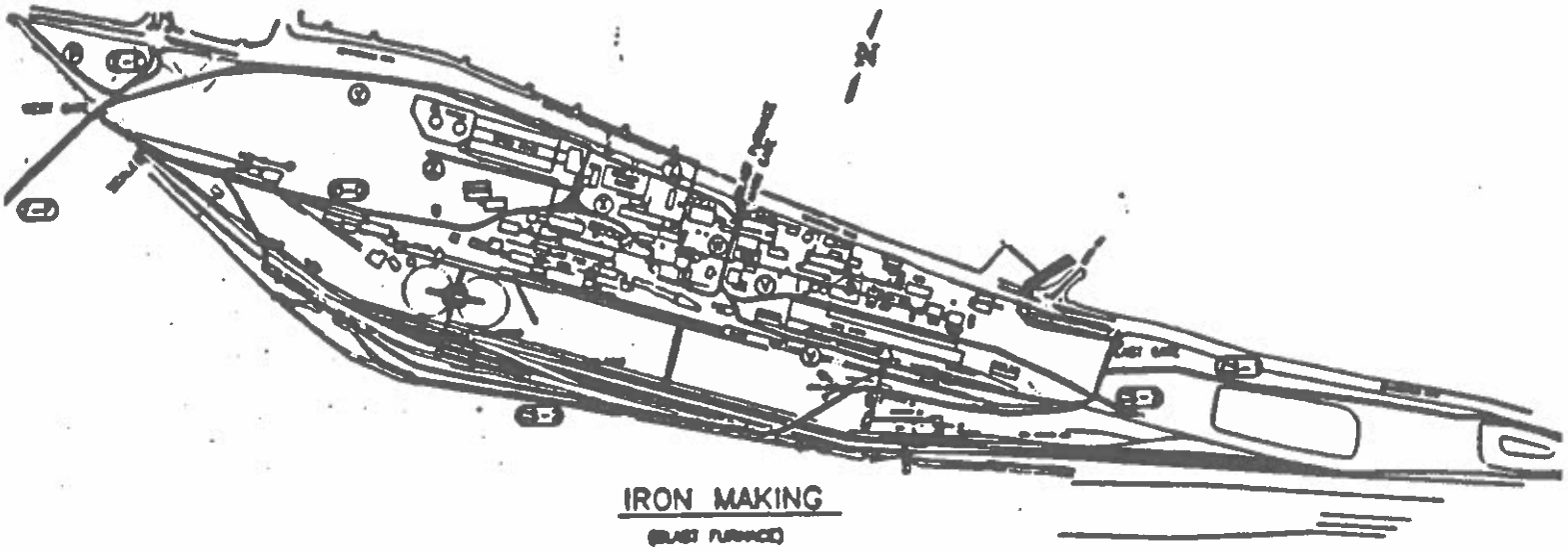
c. Use the most beneficial furnace tilt angle;

d. These procedures shall be posted in the crane operator booth.

Permit Application #95010001

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

PROJECT NO
6E96199

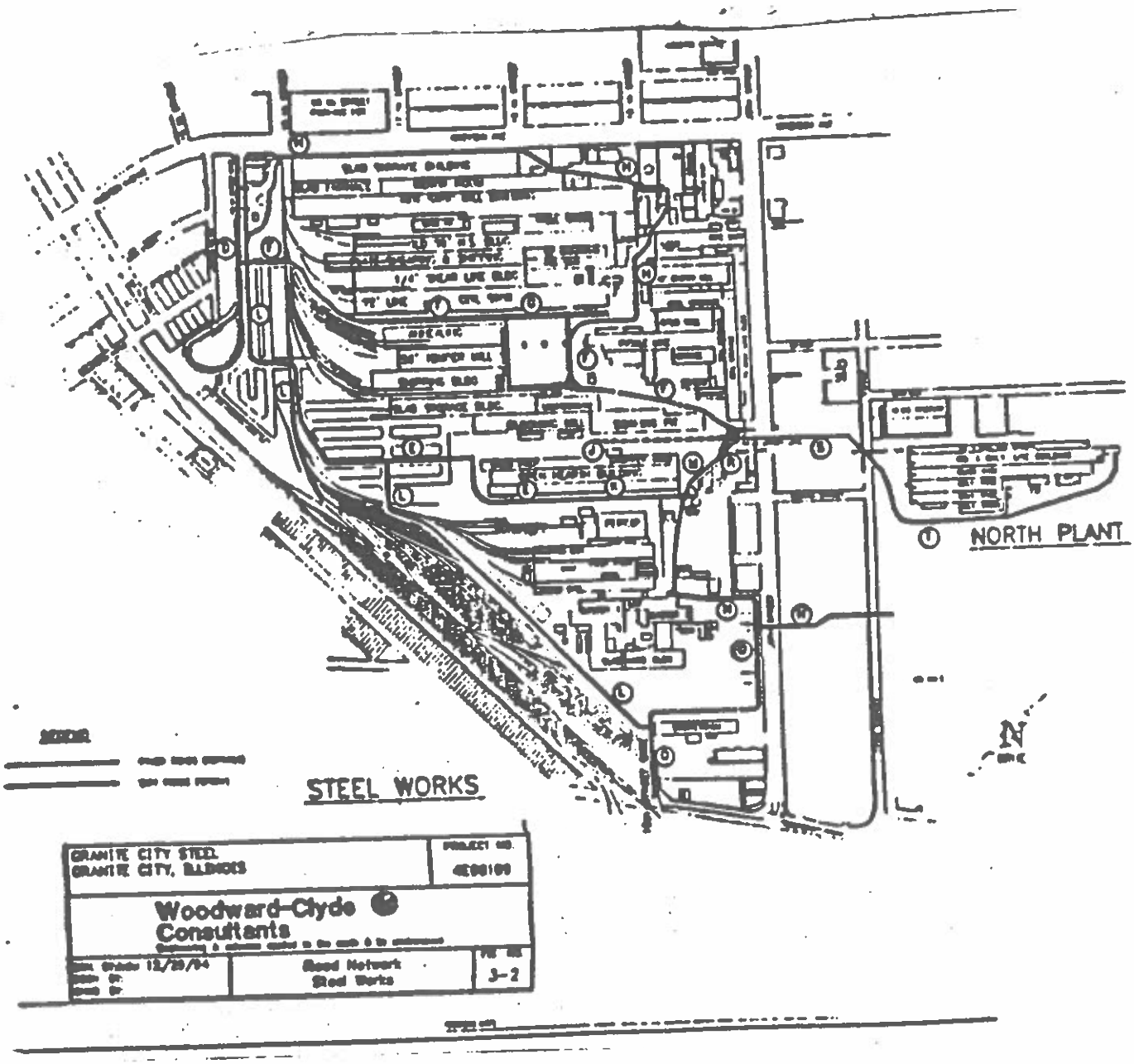
Woodward-Clyde Consultants

Road Network
Iron Making Area

FIG. NO.
3-3

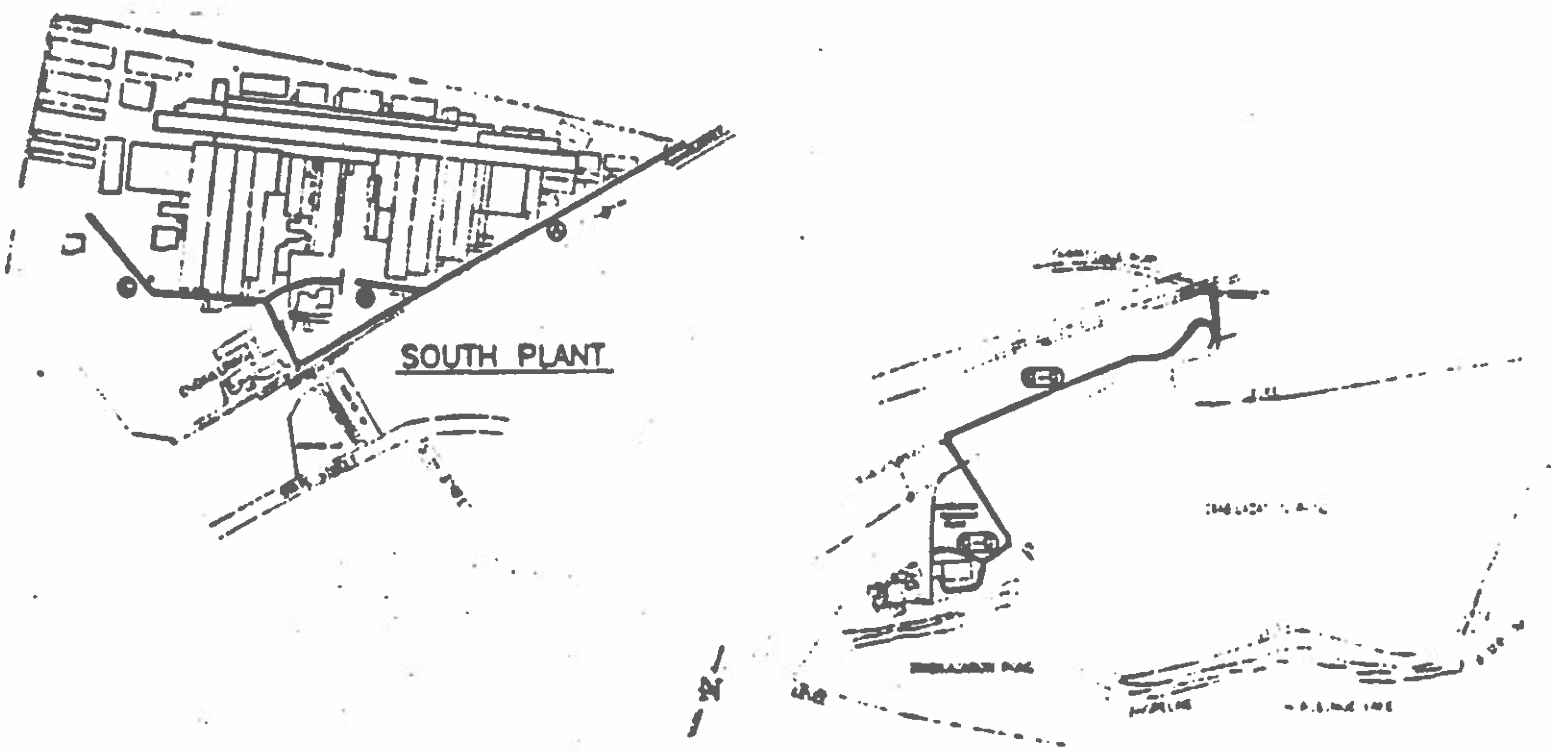
Permit Application #95010001

ATTACHMENT B (cont.)



Permit Application #95010001

ATTACHMENT B (cont.)



Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

JRR:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

P. O. Box 19506, Springfield, IL 62794-9506

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001
Applicant's Designation:
Subject: Production Increase
Date Issued: April 2, 1997
Location: Southeastern Granite City

I.D. No.: 119813AAI
Date Received: December 20, 1996

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

b. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.

iii. Overlapping operations of the BOF vessels is allowed under the following conditions:

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (aka., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy condition (A) above.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel

and

overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

E. Condition B and C above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.

c. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

d. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

e. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

f. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. The Permittee shall operate and maintain the waste gas suction monitor system that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

b. The waste gas suction monitoring system shall be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated and maintained to ensure accurate and useful data.

d. The Permittee shall continuously record the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

a. Operating time of the BOF;

b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft^3 per year;

b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months,

provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$mmft^3\ BFG\ per\ month = \frac{(4.585277\ NTHM/day + 498.191)}{80} \times \begin{pmatrix} Number\ of \\ days\ in \\ that\ month. \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace

stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

STARTUP AND TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38. Operation at the increased production rates specified in this permit is allowed until June 15, 1997 under this construction permit.

39a. The following tests shall be performed by no later than December 15, 1996 to demonstrate compliance with the conditions of this permit.

i. Blast Furnace testing: The emissions of particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and the opacity from the blast furnace casthouse stack shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.445 and the requirements of this permit;

ii. Hot Metal Desulfurization testing: The emissions of particulate matter from the desulfurization baghouse shall be measured. These tests shall be designed to verify compliance with the requirements of this permit and 35 Ill. Adm. Code 212.446(b)(2);

iii. BOF testing: The emissions of particulate matter, carbon monoxide, and lead from the BOF ESP stack, and the opacity from both the BOF ESP stack and BOF Shop shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.446, 212.458 and the requirements of this permit;

iv. Fuel Combustion Units testing: The emissions of particulate matter from a representative boiler while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. These tests shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the

Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6
Nitrogen Oxides	USEPA Method 7
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Lead	USEPA Method 12

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 60 days prior to the actual date of testing of the BOF, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing the BOF, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- other pertinent information (e.g., for the BOF, pulpit set point for each process of the BOF cycle - charging, refining, and tapping);

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

40. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Unit (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

41. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

42a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM = particulate matter = particulate;
PM-10 = particulate matter less than or equal to 10 micrometers in size;

SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

Please note that this permit has been revised to allow additional time for operation under this construction permit, to reflect the use of the waste gas suction monitoring system, to revise the BFG usage determination method, and to remove the requirement for BFG generation testing.

If you have any questions on this permit, please call Jim Ross at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:jar

cc: IEPA, FOS Region 3

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

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TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

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TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

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TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,145
BFG	185,030
Fuel Oil	365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

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TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

Permit Application #95010001

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

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TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

   a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

   b. Check on a regular basis the draft rate set points;

   c. Check on a regular basis primary and secondary damper settings;

   d. Check on a regular basis ESP operation, including the following:

      i. Fields down;

      ii. Fields indicating shorts and unable to reset;

      iii. Hopper screw doors are closed;

   e. Check on a regular basis blow rates;

   f. Check on a regular basis spray water system operation;

   g. Check on a regular basis steam injection rate;

   h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

   i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

   j. Notify the emissions control operator and melter when isolation work begins;

   k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

   a. Use controlled pouring of the hot metal into the BOF vessel;

   b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

   c. Use the most beneficial furnace tilt angle;

   d. These procedures shall be posted in the crane operator booth.

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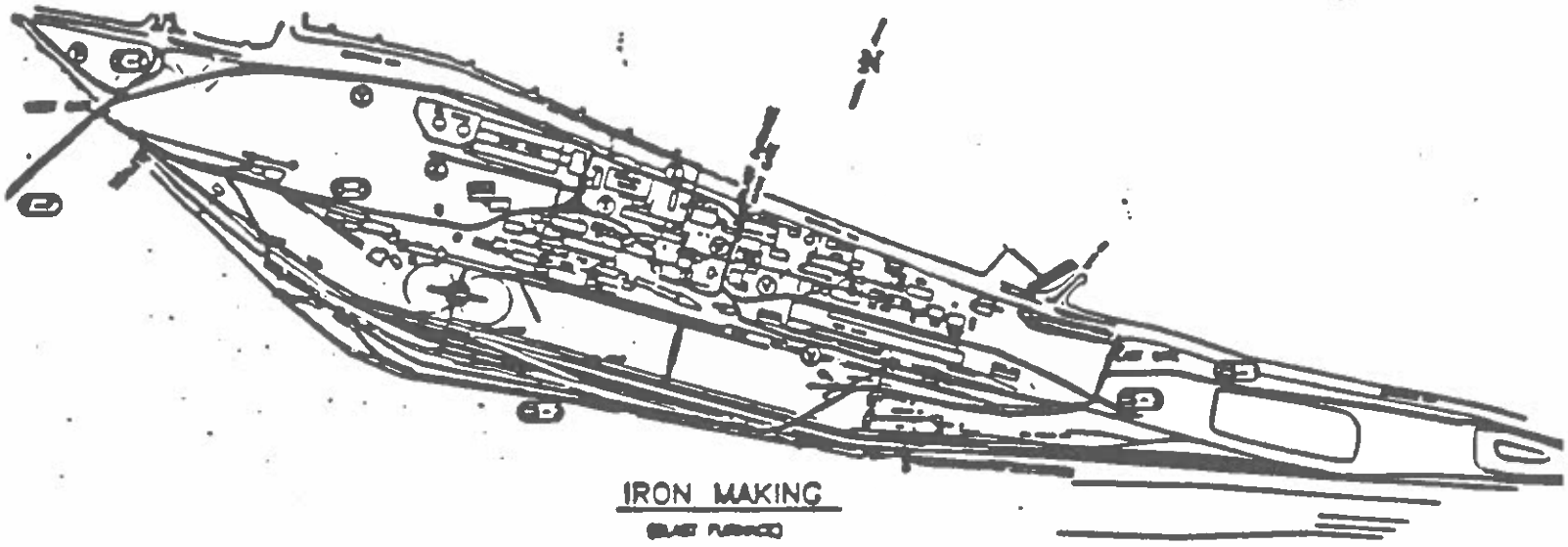
ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS

Permit Application #95010001

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

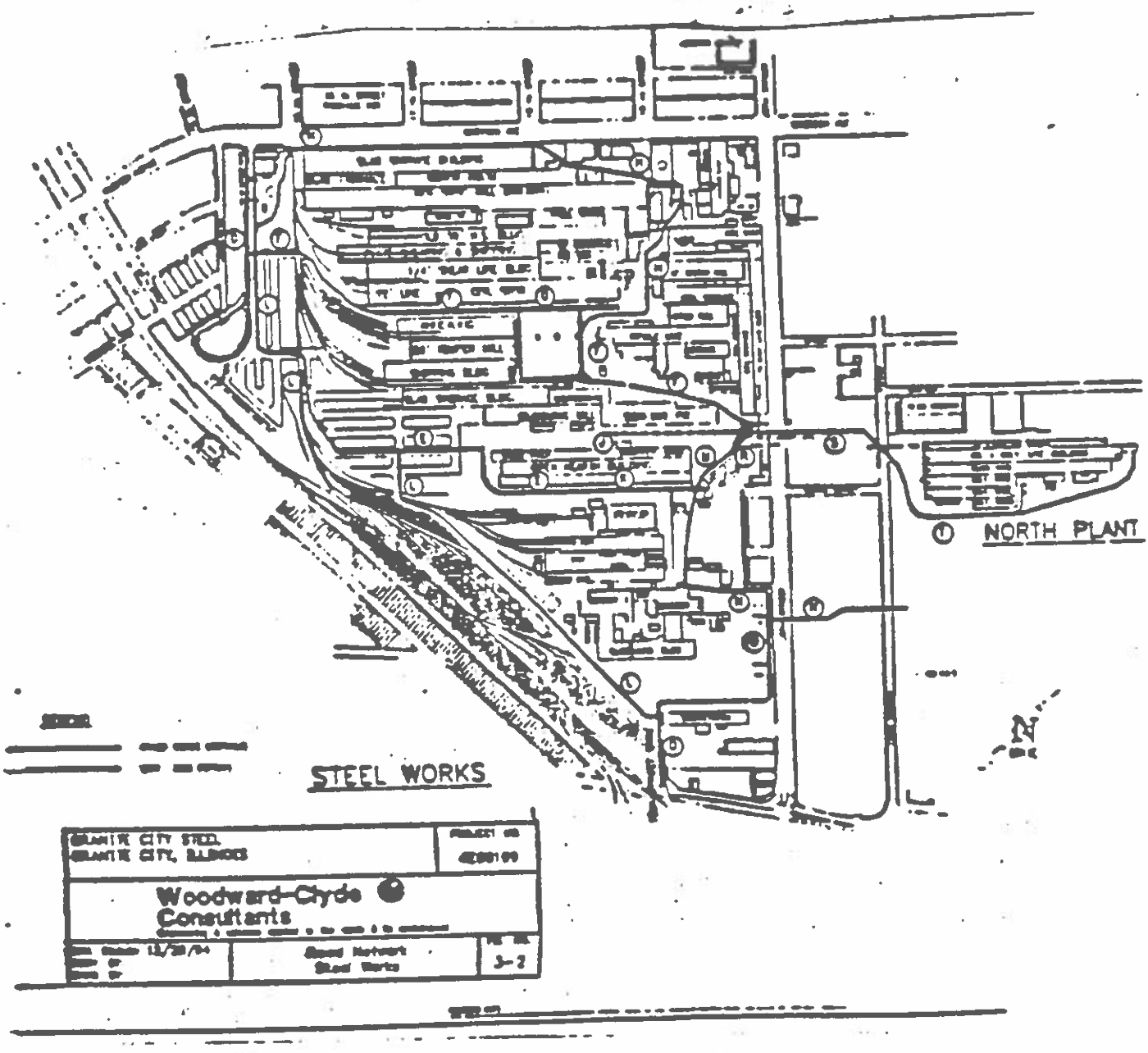
3-3

Permit Application #95010001

ATTACHMENT B (cont.)

Permit Application #95010001

ATTACHMENT B (cont.)

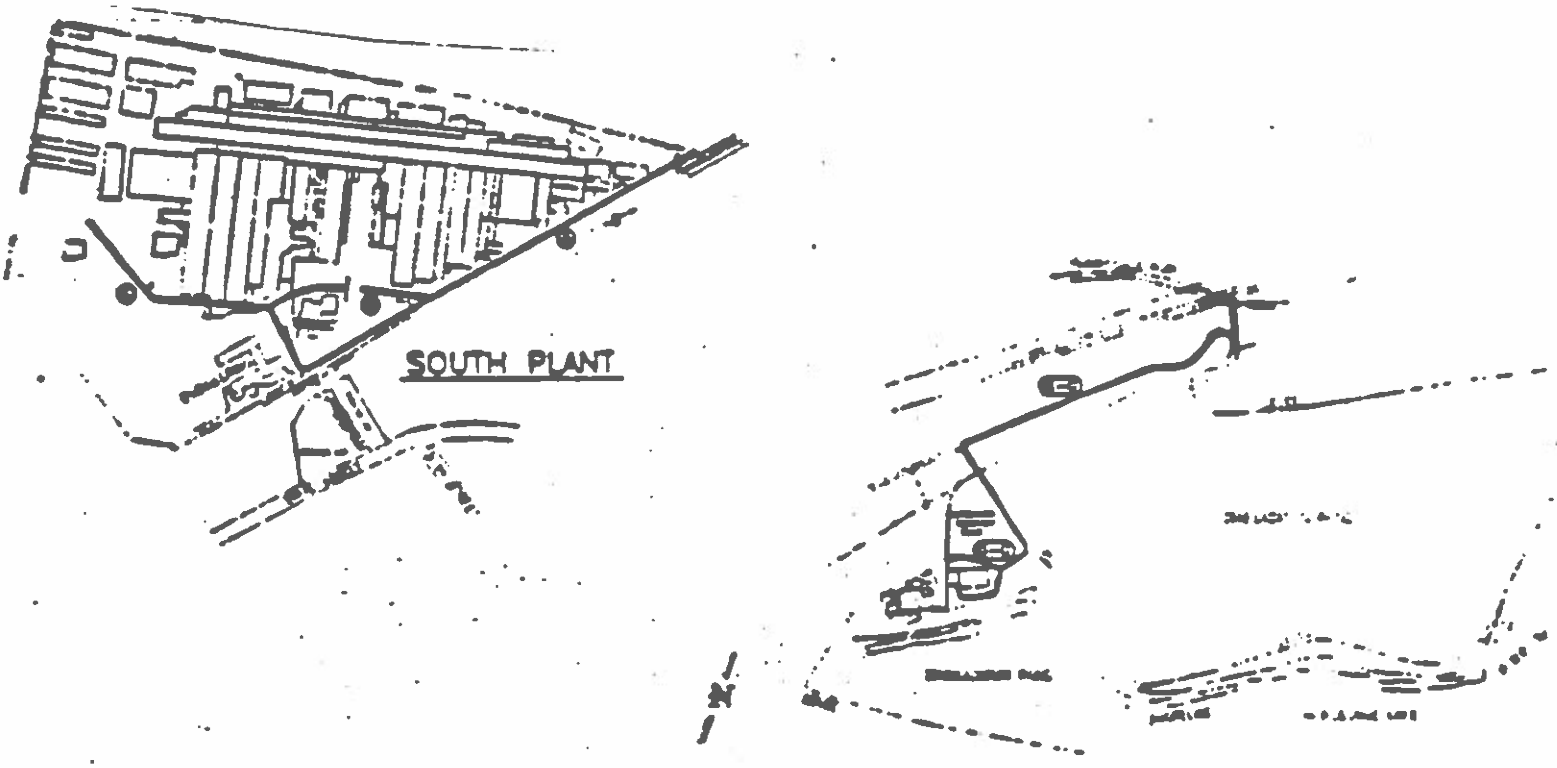


Permit Application #95010001

ATTACHMENT B (cont.)

Permit Application #95010001

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

South Plant & WWTP

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

JRR:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Cade, Director
217/782-2113

P. O. Box 19506, Springfield, IL 62794-9506

OPERATING PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001
Applicant's Designation:
Subject: Production Increase
Date Issued: June 6, 1997
Location: Southeastern Granite City

I.D. No.: 119813AAI
Date Received: February 18, 1997

Expiration Date: June 6, 2002

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

b. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.

iii. Overlapping operations of the BOF vessels is allowed under the following conditions:

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy condition (A) above.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel

and

overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

E. Condition B and C above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.

c. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

d. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

e. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

f. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. The Permittee shall operate and maintain the waste gas suction monitor system that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

b. The waste gas suction monitoring system shall be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated and maintained to ensure accurate and useful data.

d. The Permittee shall continuously record the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

a. Operating time of the BOF;

b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft^3 per year;

b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months,

provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$mmft^3\ BFG\ per\ month = \frac{(4.585277\ NTHM/day + 498.191)}{80} \times \begin{pmatrix} Number\ of \\ days\ in \\ that\ month. \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace

stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.

i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- any other pertinent information

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

39. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

Please note that this permit has been revised to allow additional time for operation under this construction permit, to reflect the use of the waste gas suction monitoring system, to revise the BFG usage determination method, and to remove the requirement for BFG generation testing.

If you have any questions on this permit, please call Ernie Kierbach at 217/782-2113.

DES

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:ELK:jar

ELK

cc: IEPA, FOS Region 3

COPY
Original Signed by
Donald E. Sutton, P.E.

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

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TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

Permit Application #95010001

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

Permit Application #95010001

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,145
BFG	185,030
Fuel Oil	365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

Permit Application #95010001

TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

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TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

Permit Application #95010001

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Permit Application #95010001

ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

   a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

   b. Check on a regular basis the draft rate set points;

   c. Check on a regular basis primary and secondary damper settings;

   d. Check on a regular basis ESP operation, including the following:

      i. Fields down;

      ii. Fields indicating shorts and unable to reset;

      iii. Hopper screw doors are closed;

   e. Check on a regular basis blow rates;

   f. Check on a regular basis spray water system operation;

   g. Check on a regular basis steam injection rate;

   h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

   i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

   j. Notify the emissions control operator and melter when isolation work begins;

   k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

   a. Use controlled pouring of the hot metal into the BOF vessel;

   b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

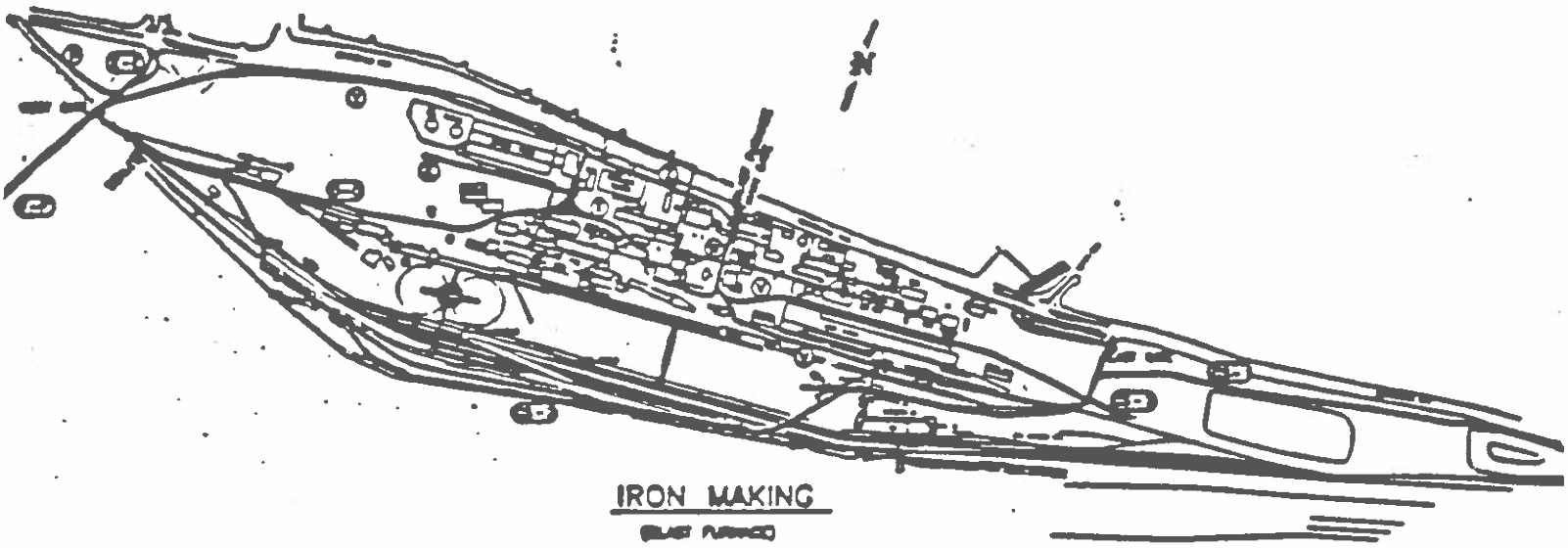
   c. Use the most beneficial furnace tilt angle;

   d. These procedures shall be posted in the crane operator booth.

Permit Application #95010001

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

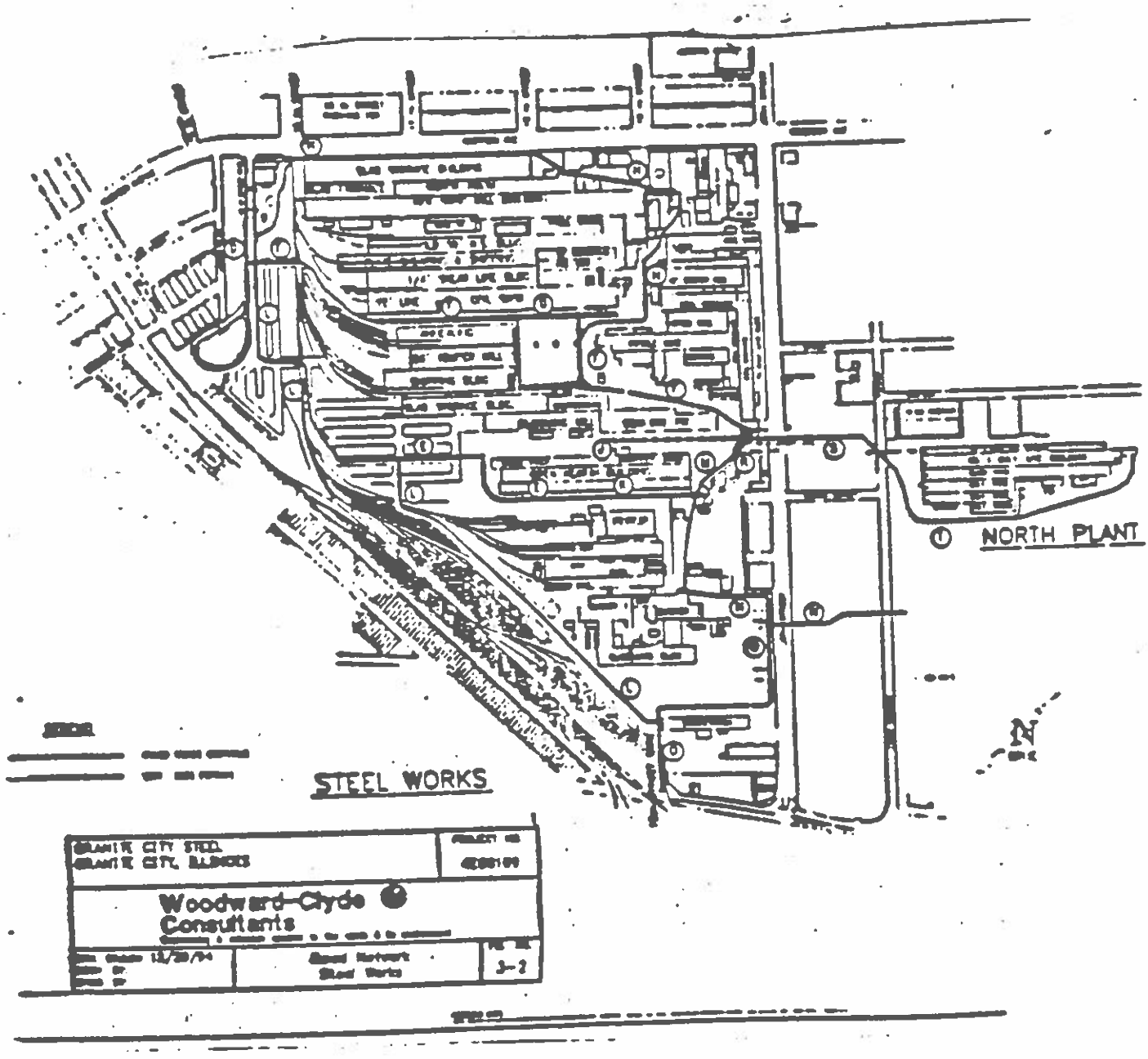
Woodward-Clyde Consultants

12/28/94

3-3

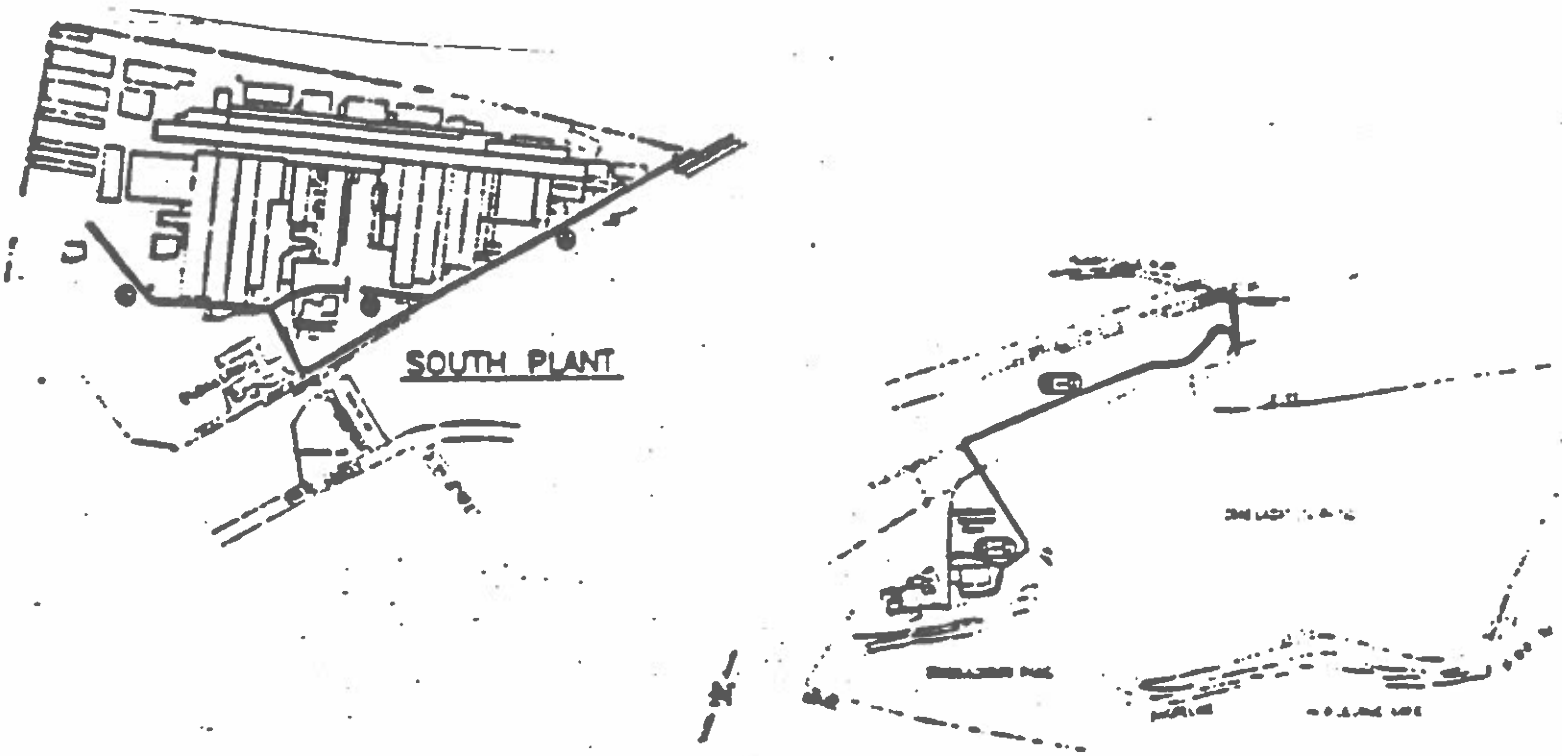
Permit Application #95010001

ATTACHMENT B (cont.)



Permit Application #95010001

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

ELK:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR OPERATING PERMITS

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special permit condition(s).

1. The issuance of this permit does not release the permittee from compliance with state and federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the United States or the State of Illinois or with applicable local laws, ordinances and regulations.

2. The Agency has issued this permit based upon the information submitted by the permittee in the permit application. Any misinformation, false statement or mispresentation in the application shall be grounds for revocation under 35 Ill. Adm. Code 201.207.

3. a. The permittee shall not authorize, cause, direct or allow any modification, as defined in 35 Ill. Adm. Code 201.102, of equipment, operations or practices which are reflected in the permit application as submitted unless a new application or request for revision of the existing permit is filed with the Agency and unless a new permit or revision of the existing permit(s) is issued for such modification.

   b. This permit only covers emission sources and control equipment while physically present at the indicated plant location(s). Unless the permit specifically provides for equipment relocation, this permit is void for an item of equipment on the day it is removed from the permitted location(s) or if all equipment is removed, notwithstanding the expiration date specified on the permit.

4. The permittee shall allow any duly authorized agent of the Agency, upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emission of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring or recording any activity, discharge or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the facilities,

c. does not take into consideration or attest to the structural stability of any unit or part of the project, and

d. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. The facilities covered by this permit shall be operated in such a manner that the disposal of air contaminants collected by the equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

7. The permittee shall maintain all equipment covered under this permit in such a manner that the performance of such equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

8. The permittee shall maintain a maintenance record on the premises for each item of air pollution control equipment. This record shall be made available to any agent of the Environmental Protection Agency at any time during normal working hours and/or operating hours. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9. No person shall cause or allow continued operation during malfunction, breakdown or startup of any emission source or related air pollution control equipment if such operation would cause a violation of an applicable emission standard or permit limitation. Should a malfunction, breakdown or startup occur which results in emissions in excess of any applicable standard or permit limitation, the permittee shall:

   a. immediately report the incident to the Agency's Regional Field Operations Section Office by telephone, telegraph, or other method as constitutes the fastest available alternative, and shall comply with all reasonable directives of the Agency with respect to the incident;

   b. maintain the following records for a period of no less than two (2) years:

      i. date and duration of malfunction, breakdown or startup,

      ii. full and detailed explanation of the cause,

      iii. contaminants emitted and an estimate of quantity of emissions,

      iv. measures taken to minimize the amount of emissions during the malfunction, breakdown or startup, and

      v. measures taken to reduce future occurrences and frequency of incidents.

10. If the permit application contains a compliance program and project completion schedule, the permittee shall submit a project completion status report within thirty (30) days of any date specified in the compliance program and project completion schedule or at six month intervals, whichever is more frequent.

11. The Permittee shall submit an Annual Emission Report as required by 35 Ill. Adm. Code. 201.302 and 35 Ill. Adm. code Part 254.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

P.O. BOX 19506, SPRINGFIELD, ILLINOIS 62794-9506

RENEE CIPRIANO, DIRECTOR

217/782-2113

OPERATING PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Michael D. Gibbons
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001
Applicant's Designation:
Subject: Production Increase, Renewal
Date Issued: June 25, 2002
Location: Southeastern Granite City

I.D. No.: 119813AAI
Date Received: April 29, 2002

Expiration Date: June 25, 2007

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

b. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.

iii. Overlapping operations of the BOF vessels is allowed under the following conditions:

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy condition (A) above.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

E. Condition B and C above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.

c. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate

matter control will occur, except for purposes of emissions testing as related to the set point.

d. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

e. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

f. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. The Permittee shall operate and maintain the waste gas suction monitor system that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

b. The waste gas suction monitoring system shall be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated and maintained to ensure accurate and useful data.

d. The Permittee shall continuously record the static pressure in the main downcommer duct of the ESP emissions capture and transport system.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

    a. Operating time of the BOF;

    b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

    c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

    d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 225 million ft^3 per month and 1,346 million ft^3 per year;

b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$\text{mmft}^3 \text{ BFG per month} = \frac{(4.585277 \text{ NTHM/day} + 498.191)}{80} \times \begin{pmatrix} \text{Number of} \\ \text{days in} \\ \text{that month.} \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.

i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- any other pertinent information

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

39. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

d. This revised operating permit issued January 5, 1999 is issued such that the net increase in emissions of PM, PM_{10}, SO_2, NO_x and VOM resulting from increased natural gas combustion are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of significant Deterioration. The accounting of the increases in emissions are shown in Tables 7, 8 and 9 of the attachments.

e. The changes in emissions pertinent to the revised operating permit issued January 5, 1999 are summarized as follows:

- Emission increase from increased natural gas combustion:

PM-10	PM	NO_x	SO_2	CO	VOM
3.43	3.43	205.94	0.40	26.92	1.88

- Natural gas combustion baseline emissions (average of 1996 and 1997 actuals):

PM-10	PM	NO_x	SO_2	CO	VOM
2.9	2.9	174.11	0.34	22.76	1.59

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM
0.53	0.53	31.83	0.06	4.16	0.29

- Significant levels:

PM-10	PM	NO_x	SO_2	CO	VOM
15	25	40	40	100	40

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Kevin Smith at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:KLS:jar
VIA cm 6/26

cc: IEPA, FOS Region 3

COPY
Original signed by
Donald E. Sutton, P.E.

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

Permit Application #95010001

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

Permit Application #95010001

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

Permit Application #95010001

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

Permit Application #95010001

TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,346
BFG	185,030

Fuel Oil 365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)		Maximum Emissions (Tons/Yr)
PM	5.1		3.43
PM-10	5.1		3.43
SO_2	0.6	0.40	
NO_x	306		205.94
VOM	2.8		1.88
CO	40		26.92

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)		Maximum Emissions (Tons/Yr)
PM	2.9		268.29
PM-10	2.9		268.29
SO_2	6.65	615.22	
NO_x	5.28	488.48	
CO	13.7		1,267.46

Permit Application #95010001

TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

Permit Application #95010001

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	274	274	641	706	2	1,295	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,102	1,019	1,115	890	171	17,392	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

Permit Application #95010001

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Permit Application #95010001

TABLE 7

Change in Emissions from Increased Natural Gas Combustion

Baseline Emissions (Average of 1996 and 1997 Actuals)

Pollutant	Emissions (Tons/Yr)
PM	2.9
PM-10	2.9
SO_2	0.34
NO_x	174.11
VOM	1.59
CO	22.76

Potential Emissions from Natural Gas Usage of 1,346 $mmft^3/Yr$

Pollutant	Emissions (Tons/Yr)
PM	3.43
PM-10	3.43
SO_2	0.40
NO_x	205.94
VOM	1.88
CO	26.92

Net Emission Change

Pollutant	Emissions (Ton/Yr)	Significant Emissions Level (Tons/Yr)
PM	0.53	25
PM-10	0.53	15
SO_2	0.06	40
NO_x	31.83	40
VOM	0.29	40
CO	4.16	100

KLS:jar

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TABLE 8

1996 Actual Emissions from Natural Gas Usage of 1,131 $mmft^3/Yr$

Pollutant	Emissions (Tons/Yr)
PM	2.88
PM-10	2.88
SO_2	0.34
NO_x	173.04
VOM	1.58
CO	22.62

TABLE 9

1997 Emissions from an Allowable Natural Gas Usage of 1,145 $mmft^3/Yr$

Pollutant	Emissions (Tons/Yr)
PM	2.92
PM-10	2.92
SO_2	0.34
NO_x	175.19
VOM	1.60
CO	22.9

KLS:jar

Permit Application #95010001

ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

d. Check oxygen blow rates and adjust, if necessary;

e. Check hot metal chemistry;

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

b. Check on a regular basis the draft rate set points;

c. Check on a regular basis primary and secondary damper settings;

d. Check on a regular basis ESP operation, including the following:

i. Fields down;

ii. Fields indicating shorts and unable to reset;

iii. Hopper screw doors are closed;

e. Check on a regular basis blow rates;

f. Check on a regular basis spray water system operation;

g. Check on a regular basis steam injection rate;

h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

j. Notify the emissions control operator and melter when isolation work begins;

k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

a. Use controlled pouring of the hot metal into the BOF vessel;

b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

c. Use the most beneficial furnace tilt angle;

d. These procedures shall be posted in the crane operator booth.

Permit Application #95010001

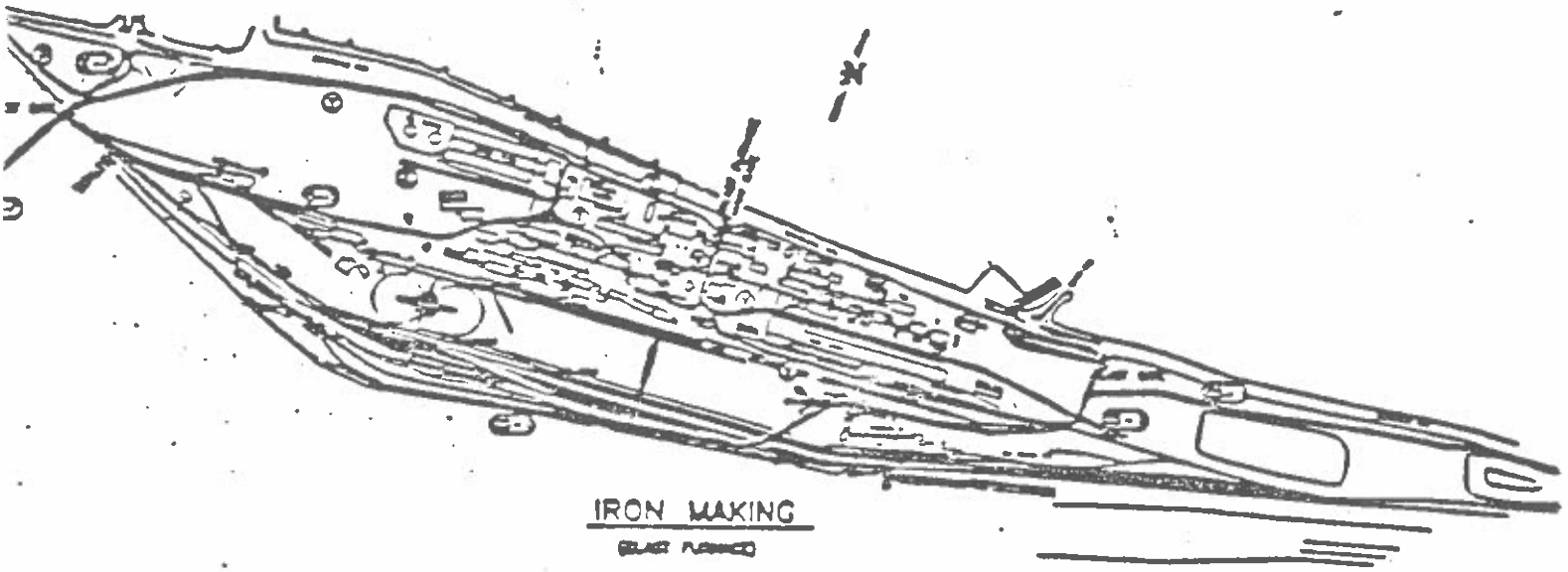
ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS

Permit Application #95010001

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

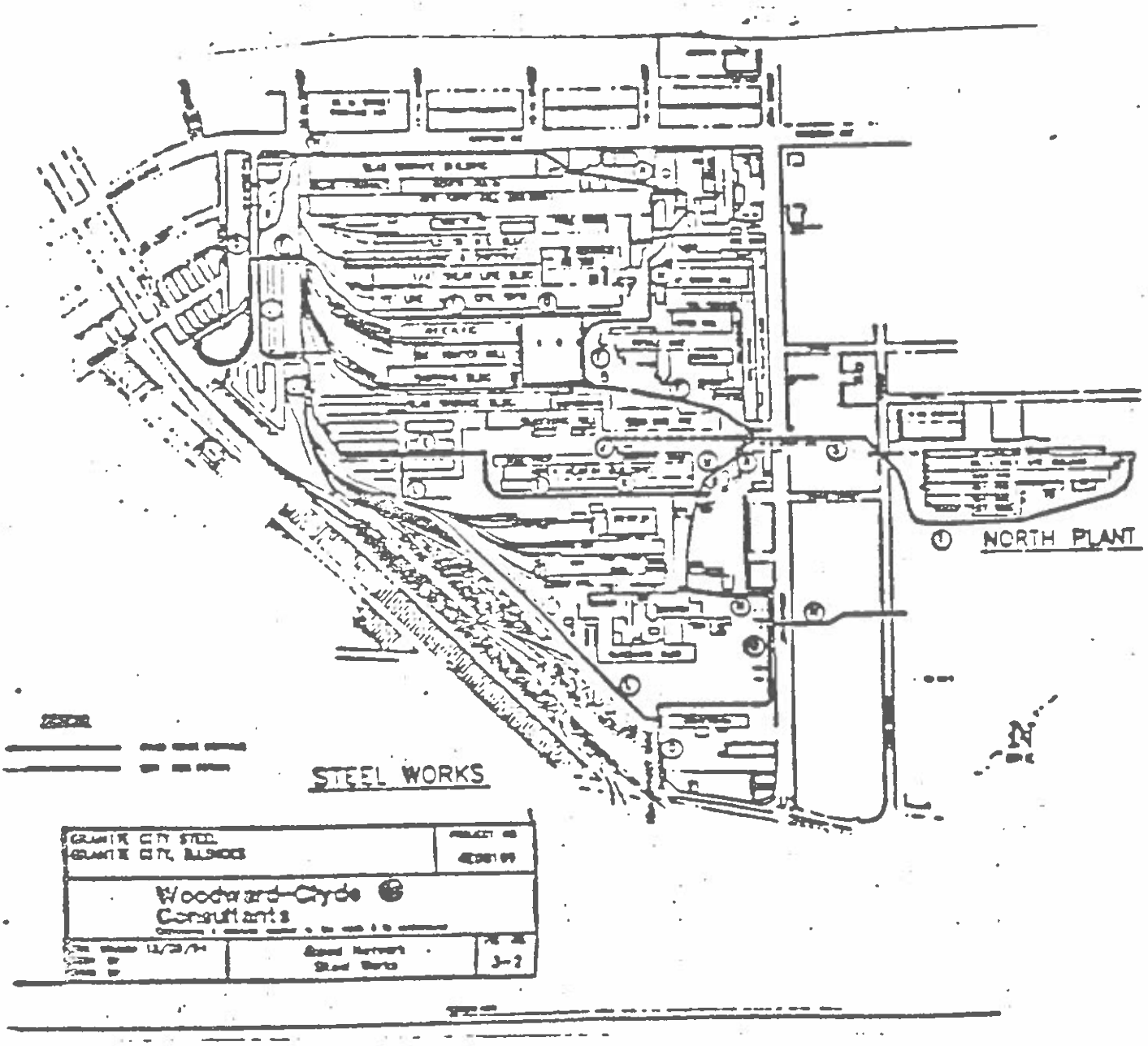
Woodward-Clyde Consultants

12/29/94

3-3

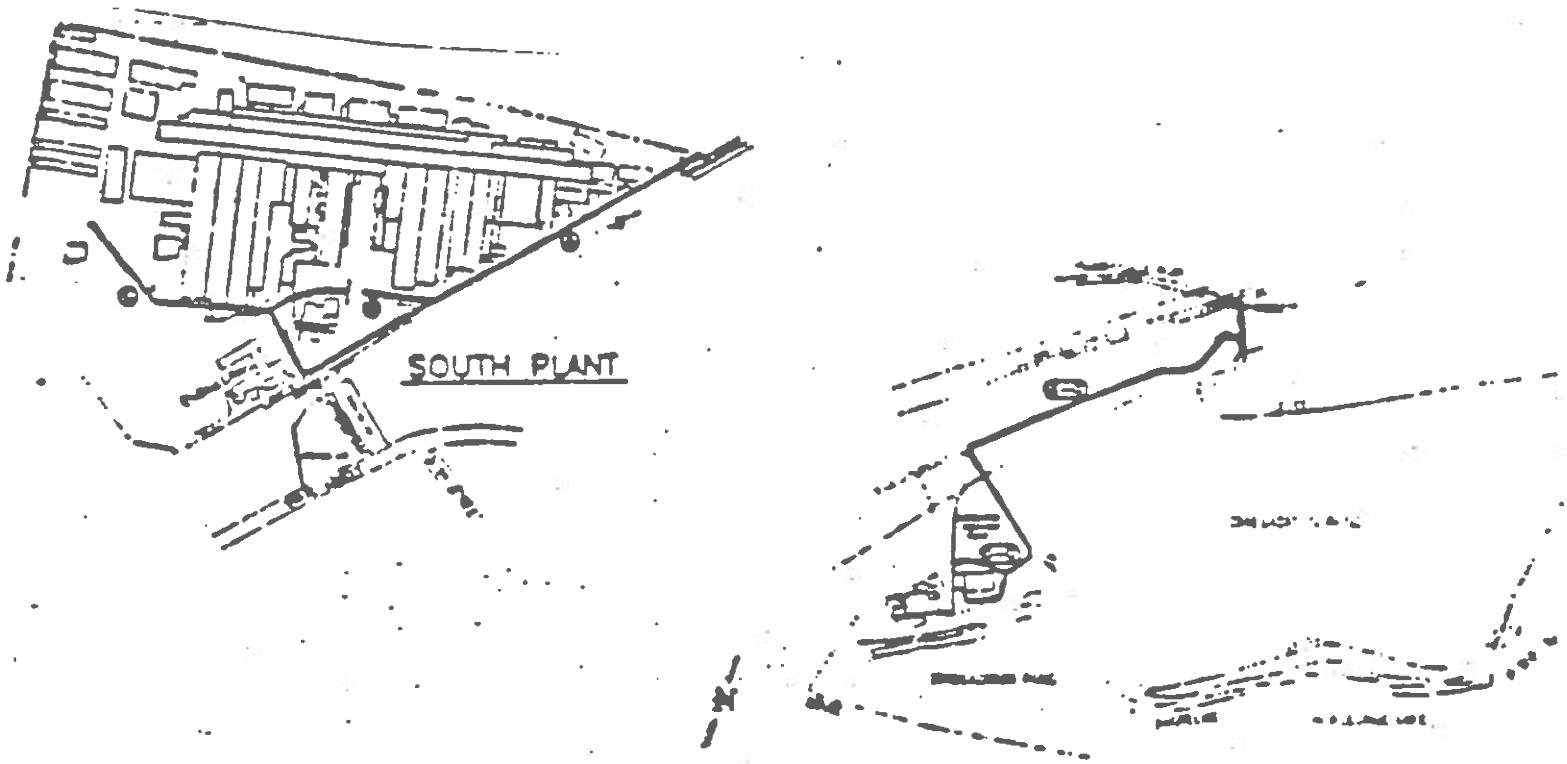
Permit Application #95010001

ATTACHMENT B (cont.)



Permit Application #95010001

ATTACHMENT B (cont.)



WASTEWATER TREATMENT FACILITY

LEGEND

GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr

- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.

- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*

- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

KLS:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR OPERATING PERMITS

May, 1993

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special permit conditions(s).

1. The issuance of this permit does not release the Permittee from compliance with state and federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statues and regulations of the United States or the State of Illinois or with applicable local laws, ordinances and regulations.

2. The Illinois EPA has issued this permit based upon the information submitted by the Permittee in the permit application. Any misinformation, false statement or misrepresentation in the application shall be ground for revocation under 35 Ill. Adm. Code 201.166.

3. a. The Permittee shall not authorize, cause, direct or allow any modification, as defined in 35 Ill. Adm. Code 201.102, of equipment, operations or practices which are reflected in the permit application as submitted unless a new application or request for revision of the existing permit is filed with the Illinois EPA and unless a new permit or revision of the existing permit(s) is issued for such modification.

   b. This permit only covers emission sources and control equipment while physically present at the indicated plant location(s). Unless the permit specifically provides for equipment relocation, this permit is void for an item of equipment on the day it is removed from the permitted location(s) or if all equipment is removed, notwithstanding the expiration date specified on the permit.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA, upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit;

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. To obtain and remove samples of any discharge or emission of pollutants; and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring or recording any activity, discharge or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are located;

b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the facilities;

c. Does not take into consideration or attest to the structural stability of any unit or part of the project; and

d. In no manner implies or suggests that the Illinois EPA (or its officers, agents, or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. The facilities covered by this permit shall be operated in such a manner that the disposal of air contaminants collected by the equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

7. The Permittee shall maintain all equipment covered under this permit in such a manner that the performance of such equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereuner.

8. The Permittee shall maintain a maintenance record on the premises for each item of air pollution control equipment. This records shall be made available to any agent of the Environmental Protection Agency at any time during normal working hours and/or operating hours. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9. No person shall cause or allow continued operation during malfunction, breakdown or startup of any emission source or related air pollution control equipment if such operation would cause a violation of an applicable emission standard or permit limitation. Should a malfunction, breakdown or startup occur which results in emissions in excess of any applicable standard or permit limitation, the Permittee shall:

a. Immediately report the incident to the Illinois EPA's Regional Field Operations Section Office by telephone, telegraph, or other method as constitutes the fastest available alternative, and shall comply with all reasonable directives of the Illinois EPA with respect to the incident;

b. Maintain the following records for a period of no less than two (2) years:

i. Date and duration of malfunction, breakdown, or startup,

ii. Full and detailed explanation of the cause,

iii. Contaminants emitted and an estimate of quantity of emissions,

iv. Measures taken to minimize the amount of emissions during the malfunction, breakdown or startup, and

v. Measures taken to reduce future occurrences and frequency of incidents.

10. If the permit application contains a compliance program and project completion schedule, the Permittee shall submit a project completion status report within thirty (30) days of any date specified in the compliance program and project completion schedule or at six month intervals, whichever is more frequent.

11. The Permittee shall submit an Annual Emission Report as required by 35 Ill. Adm. Code 201.302 and 35 Ill. Adm. Code Part 254.

R000252

National Steel

Michael D. Gibbons
Vice President & General Manager

National Steel Corporation
Granite City Division
1951 State Street
Granite City, IL 62040
Telephone: (618) 451-3241
Facsimile: (618) 451-3707

April 25, 2002

CERTIFIED MAIL NO. 7000 1670 0006 9800 1869
RETURN RECEIPT REQUESTED

Mr. Donald Sutton
Manager, Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
1340 North 9th Street
Springfield, Illinois 62702

Dear Mr. Sutton:

Subject: Application for renewal of the Production Increase Operating Permit, I.D. No. 119813AAI, IEPA Application No. 95010001, GCD Application No. PI040203 O

Granite City Division of National Steel Corporation (the Company) currently holds the subject Operating Permit issued on January 5, 1999.

The Company hereby applies for renewal of the Production Increase Operating Permit.

Should you have need of further information, in order to process this application, please contact my office or that of Larry Siebenberger, telephone (618) 451-3391.

Very truly yours,

Michael D. Gibbons
Vice President & General Manager
National Steel Corporation –
Granite City Division

MDG:ajs

Enclosure

cc: L. G. Siebenberger
C. V. Hickman

pioprenew.cvh

R000253

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

This agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111½, Section 1039. Disclosure of this information is required under that section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

APPLICATION FOR RENEWAL OF AN OPERATING PERMIT

OPERATION OF: Production Increase (A)
(SAME AS 9c ON PAGE 2)

FOR AGENCY USE ONLY
I. D. NO. 119813AAI
PERMIT NO. 95010001
DATE 4-29-02

1a. NAME OF OWNER: Granite City Division of National Steel Corporation		2a. NAME OF OPERATOR: Granite City Division of National Steel Corporation	
1b. STREET ADDRESS OF OWNER: 20th & State Streets		2b. STREET ADDRESS OF OPERATOR: 20th & State Streets	
1c. CITY OF OWNER: Granite City		2c. CITY OF OPERATOR: Granite City	
1d. STATE OF OWNER: Illinois	1e. ZIP CODE: 62040	2d. STATE OF OPERATOR: Illinois	2e. ZIP CODE: 62040

3a. NAME OF CORPORATE DIVISION OR PLANT: Granite City Division		3b. STREET ADDRESS OF EMISSION SOURCE: Rte. 203, 20th Street		
3c. CITY OF EMISSION SOURCE: Granite City	3d. LOCATED WITHIN CITY LIMITS: [X] YES [ ] NO	3e. TOWNSHIP: Granite City	3f. COUNTY: Madison	3g. ZIP CODE: 62040

4. ALL CORRESPONDENCE TO: (TITLE AND/OR NAME OF INDIVIDUAL) Michael D. Gibbons	5. TELEPHONE NUMBER FOR AGENCY TO CALL: (618) 451-3241
6. ADDRESS FOR CORRESPONDENCE: [X] OWNER [ ] OPERATOR [ ] EMISSION SOURCE	7. YOUR DESIGNATION FOR THIS APPLICATION: (B) P I 0 4 0 2 0 3 1 0

8. THE UNDERSIGNED HEREBY MAKES APPLICATION FOR A PERMIT AND CERTIFIES THAT THE STATEMENTS CONTAINED HEREIN ARE TRUE AND CORRECT, AND FURTHER CERTIFIES THAT ALL PREVIOUSLY SUBMITTED INFORMATION REFERENCED IN THIS APPLICATION REMAINS TRUE, CORRECT AND CURRENT. BY AFFIXING HIS SIGNATURE HERETO HE FURTHER CERTIFIES THAT HE IS AUTHORIZED TO EXECUTE THIS APPLICATION.*

AUTHORIZED SIGNATURE(S): (C) *To the best of my knowledge and belief

BY Michael D. Gibbons
SIGNATURE DATE

Michael D. Gibbons
TYPED OR PRINTED NAME OF SIGNER

Vice President - General Manager
TITLE OF SIGNER

BY
SIGNATURE DATE

TYPED OR PRINTED NAME OF SIGNER

TITLE OF SIGNER

(A) THIS FORM IS TO PROVIDE THE AGENCY WITH GENERAL INFORMATION ABOUT THE EQUIPMENT TO BE OPERATED.

(B) PROVIDE A DESIGNATION IN ITEM 7 ABOVE WHICH YOU WOULD LIKE THE AGENCY TO USE FOR IDENTIFICATION OF YOUR EQUIPMENT. YOUR DESIGNATION WILL BE REFERENCED IN CORRESPONDENCE FROM THIS AGENCY RELATIVE TO THIS APPLICATION. YOUR DESIGNATION MUST NOT EXCEED TEN (10) CHARACTERS.

(C) THIS APPLICATION MUST BE SIGNED IN ACCORDANCE WITH PCB REGS., CHAPTER 2, PART 1, RULE 103(a)(4) OR 103(b)(5) WHICH STATES: "ALL APPLICATIONS AND SUPPLEMENTS THERETO SHALL BE SIGNED BY THE OWNER AND OPERATOR OF THE EMISSION SOURCE OR AIR POLLUTION CONTROL EQUIPMENT, OR THEIR AUTHORIZED AGENT, AND SHALL BE ACCOMPANIED BY EVIDENCE OF AUTHORITY TO SIGN THE APPLICATION."

IF THE OWNER OR OPERATOR IS A CORPORATION, SUCH CORPORATION MUST HAVE ON FILE WITH THE AGENCY A CERTIFIED COPY OF A RESOLUTION OF THE CORPORATION'S BOARD OF DIRECTORS AUTHORIZING THE PERSONS SIGNING THIS APPLICATION TO CAUSE OR ALLOW THE CONSTRUCTION OR OPERATION OF THE EQUIPMENT TO BE COVERED BY THE PERMIT.

R000254

FOR AGENCY USE ONLY

DATA AND INFORMATION INCORPORATED BY REFERENCE FROM CURRENT OPERATING PERMIT

9a. APPLICATION NO.: 9 5 0 1 0 0 0 1

9b. I.D. NO.: 1 1 9 8 1 3 A A I

9c. OPERATION OF: Production Increase

9d. LOCATION: Granite City, Illinois

9e. PERMIT EXPIRATION DATE: 0 6 0 6 0 2

9f. HAS THE OPERATION AS DESCRIBED IN THE REFERENCED OPERATING PERMIT BEEN MODIFIED* AS DEFINED IN RULE 101 OF THE PCB REGS., CHAPTER 2, PART 1? ☐ YES ☒ NO

9g. IF "YES" SUBMIT THE APPLICABLE FORMS OR DESCRIBE IN DETAIL THE MODIFICATION OF THE OPERATION.

9h. DATE THE OPERATION WAS MODIFIED: ___ ___ ___ ___ ___ ___

10a. IF THE OPERATION IS SUBJECT TO A RULE WHOSE EFFECTIVE DATE IS ON OR BEFORE THE DATE OF THIS APPLICATION, IS SUCH OPERATION IN FULL COMPLIANCE WITH ALL SUCH RULES? ☒ YES ☐ NO

10b. IF "NO", EXPLAIN:

11. IF YOUR OPERATING PERMIT APPLICATION CONTAINS COMPLIANCE PROGRAM(S), HAS THIS COMPLIANCE PROGRAM BEEN COMPLETED AND HAVE ALL THE PROJECT COMPLETION REPORTS (APC-271) BEEN SUBMITTED? ☐ YES ☐ NO

12a. ARE YOU IN COMPLIANCE WITH ALL CONDITIONS OF ALL REFERENCED PERMITS? ☒ YES ☐ NO

12b. IF "NO", EXPLAIN:

*MODIFICATION: ANY PHYSICAL CHANGE IN, OR CHANGE IN THE METHOD OF OPERATION, OF AN EMISSION SOURCE OR OF AIR POLLUTION CONTROL EQUIPMENT WHICH INCREASES THE AMOUNT OF ANY SPECIFIED AIR CONTAMINANT EMITTED BY SUCH SOURCE OR EQUIPMENT OR WHICH RESULTS IN THE EMISSION OF ANY SPECIFIED AIR CONTAMINANT NOT PREVIOUSLY EMITTED. IT SHALL BE PRESUMED THAT AN INCREASE IN THE USE OF RAW MATERIALS, THE TIME OF OPERATION, OR THE RATE OF PRODUCTION WILL CHANGE THE AMOUNT OF ANY SPECIFIED AIR CONTAMINANT EMITTED. NOTWITHSTANDING ANY OTHER PROVISIONS OF THIS DEFINITION, FOR PURPOSES OF PERMITS ISSUED PURSUANT TO RULE 103, THE AGENCY MAY SPECIFY CONDITIONS UNDER WHICH AN EMISSION SOURCE OR AIR POLLUTION CONTROL EQUIPMENT MAY BE OPERATED WITHOUT CAUSING A MODIFICATION AS HEREIN DEFINED, AND NORMAL CYCLICAL VARIATIONS, BEFORE THE DATE OPERATING PERMITS ARE REQUIRED, SHALL NOT BE CONSIDERED MODIFICATIONS. PCB REGS., CHAPTER 2, PART 1, RULE 101.

NOTE: TO INCORPORATE OTHER CONSTRUCTION PERMITS BY REFERENCE, ATTACH A LISTING OF SUCH PERMITS USING THE FORMAT SET FORTH IN ITEM 9 OR APC-210, "DATA AND INFORMATION -- INCORPORATION BY REFERENCE."

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

P. O. Box 19506, Springfield, IL 62794-9506

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Received: March 5, 1996
Subject: Production Increase
Date Issued: July 23, 1996
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

b. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.

ii. Overlapping operations of the BOF vessels is allowed under the following conditions:

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (aka., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy condition (A) above.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel

and

overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

E. Condition B and C above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.

c. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

d. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

e. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

f. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. Within 270 days of the original date issued of this permit (January 25, 1996), the Permittee shall install, calibrate, operate, and maintain a monitoring device that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the various exhaust ventilation rates or levels of exhaust ventilation through the main downcommer duct of the ESP emissions capture and transport system.

b. The monitoring system shall be designed to be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated, tested and maintained to ensure accurate and useful data.

d. The Agency may allow an equivalent system or method instead of the above monitoring system provided the Permittee demonstrates, and the Agency approves, that such system or method will ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks in an equivalent manner, and that such system or method can be installed and operated within the time period required for the monitoring system as stated in this permit.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and

maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

    a. Operating time of the BOF;

    b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

    c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

    d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft^3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in

conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on 0.05846 $mmft^3$ BFG generated per net ton of hot metal produced.

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

STARTUP AND TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38. Operation at the increased production rates specified in this permit is allowed for 270 days from the original date issued (i.e., January 25, 1996) under this construction permit.

39a. The following tests shall be performed to demonstrate compliance with the conditions of this permit within 270 days from the original date issued of this permit (i.e., January 25, 1996):

i. Blast Furnace testing: The emissions of particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and the opacity from the blast furnace casthouse stack shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.445 and the requirements of this permit;

ii. Hot Metal Desulfurization testing: The emissions of particulate matter from the desulfurization baghouse shall be measured. These tests shall be designed to verify compliance with the requirements of this permit and 35 Ill. Adm. Code 212.446(b)(2);

iii. BOF testing: The emissions of particulate matter, carbon monoxide, and lead from the BOF ESP stack, and the opacity from both the BOF ESP stack and BOF Shop shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.446, 212.458 and the requirements of this permit;

iv. Fuel Combustion Units testing: The emissions of particulate matter from a representative boiler while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

v. BFG generation testing: The amount of blast furnace gas generated ($mmft^3$) per ton of hot metal produced shall be determined. The Agency may waive this requirement for testing providing the Permittee submit a sufficient explanation of how BFG generation is determined with justification that such determination is appropriate for purposes of compliance determinations with this permit.

b. These tests shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6
Nitrogen Oxides	USEPA Method 7
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Lead	USEPA Method 12

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 60 days prior to the actual date of testing of the BOF, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing the BOF, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- other pertinent information (e.g., for the BOF, pulpit set point for each process of the BOF cycle - charging, refining, and tapping);

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

40. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Unit (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

41. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

42a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

Please note that this permit has been revised to more clearly define the conditions which overlapping operations of the BOFs is allowed.

If you have any questions on this permit, please call Jim Ross at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:jar

COPY
Original Signed by
Donald E. Sutton, P.E.

cc: IEPA, FOS Region 3

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

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TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

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TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

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TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,145
BFG	185,030
Fuel Oil	365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

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TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

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TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

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TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

b. Check on a regular basis the draft rate set points;

c. Check on a regular basis primary and secondary damper settings;

d. Check on a regular basis ESP operation, including the following:

i. Fields down;

ii. Fields indicating shorts and unable to reset;

iii. Hopper screw doors are closed;

e. Check on a regular basis blow rates;

f. Check on a regular basis spray water system operation;

g. Check on a regular basis steam injection rate;

h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

j. Notify the emissions control operator and melter when isolation work begins;

k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

a. Use controlled pouring of the hot metal into the BOF vessel;

b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

c. Use the most beneficial furnace tilt angle;

d. These procedures shall be posted in the crane operator booth.

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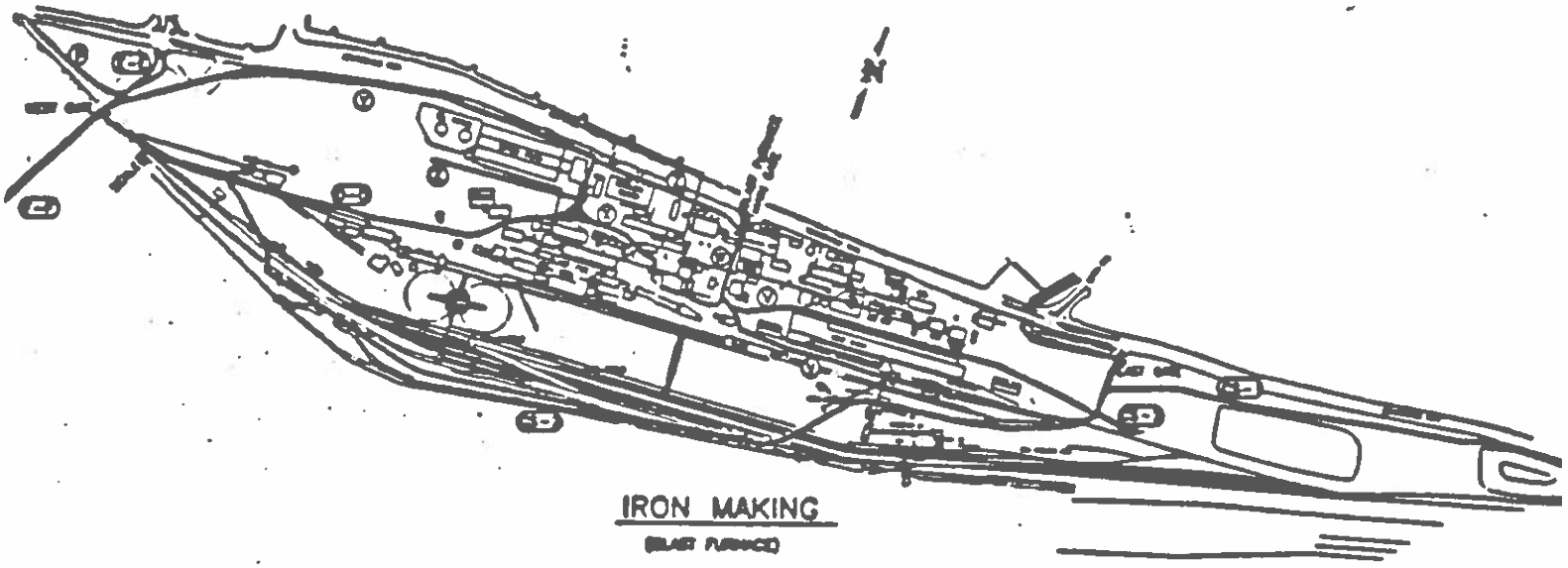
ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

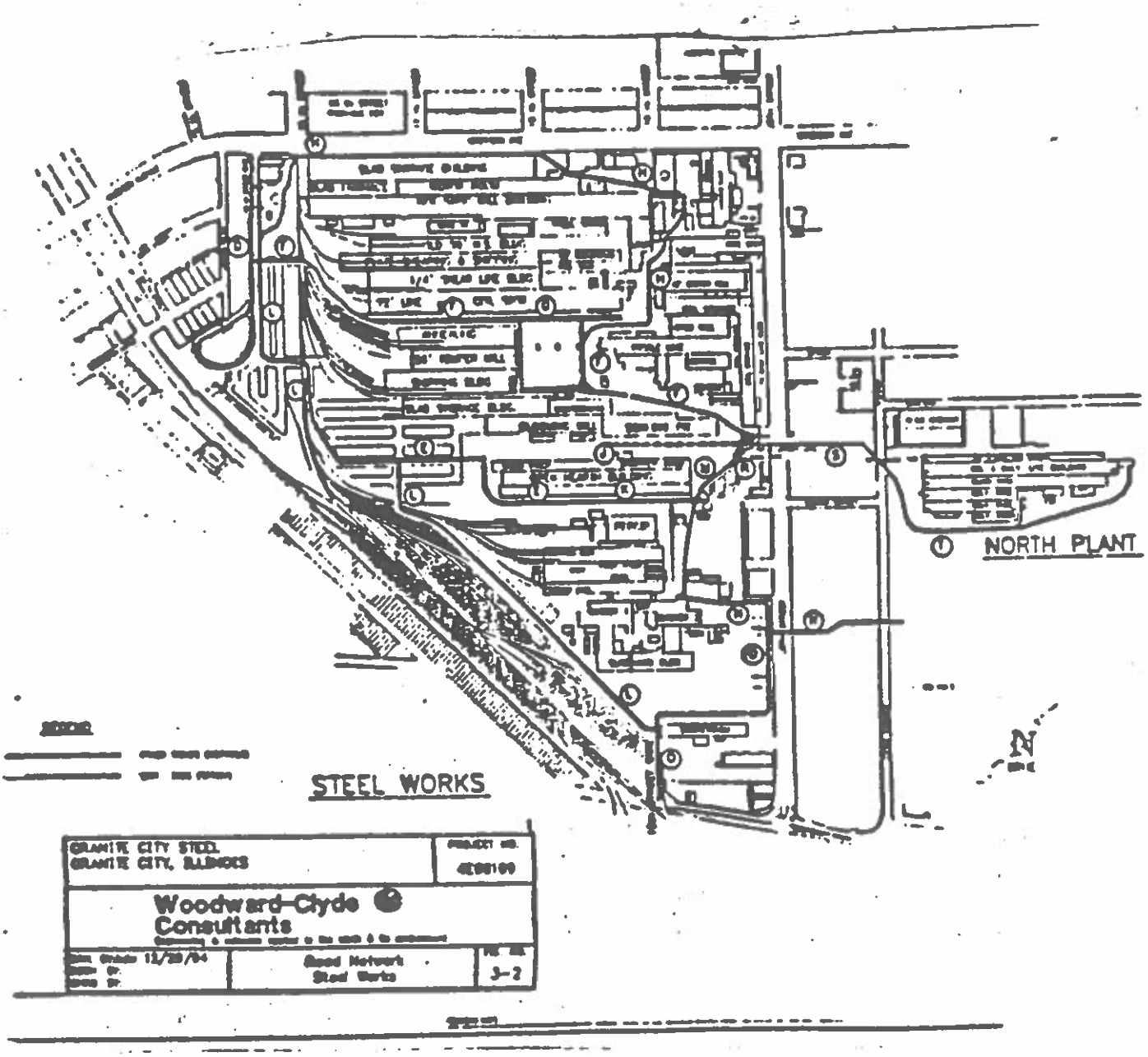
Woodward-Clyde Consultants

Road Network
Iron Making Area

3-3

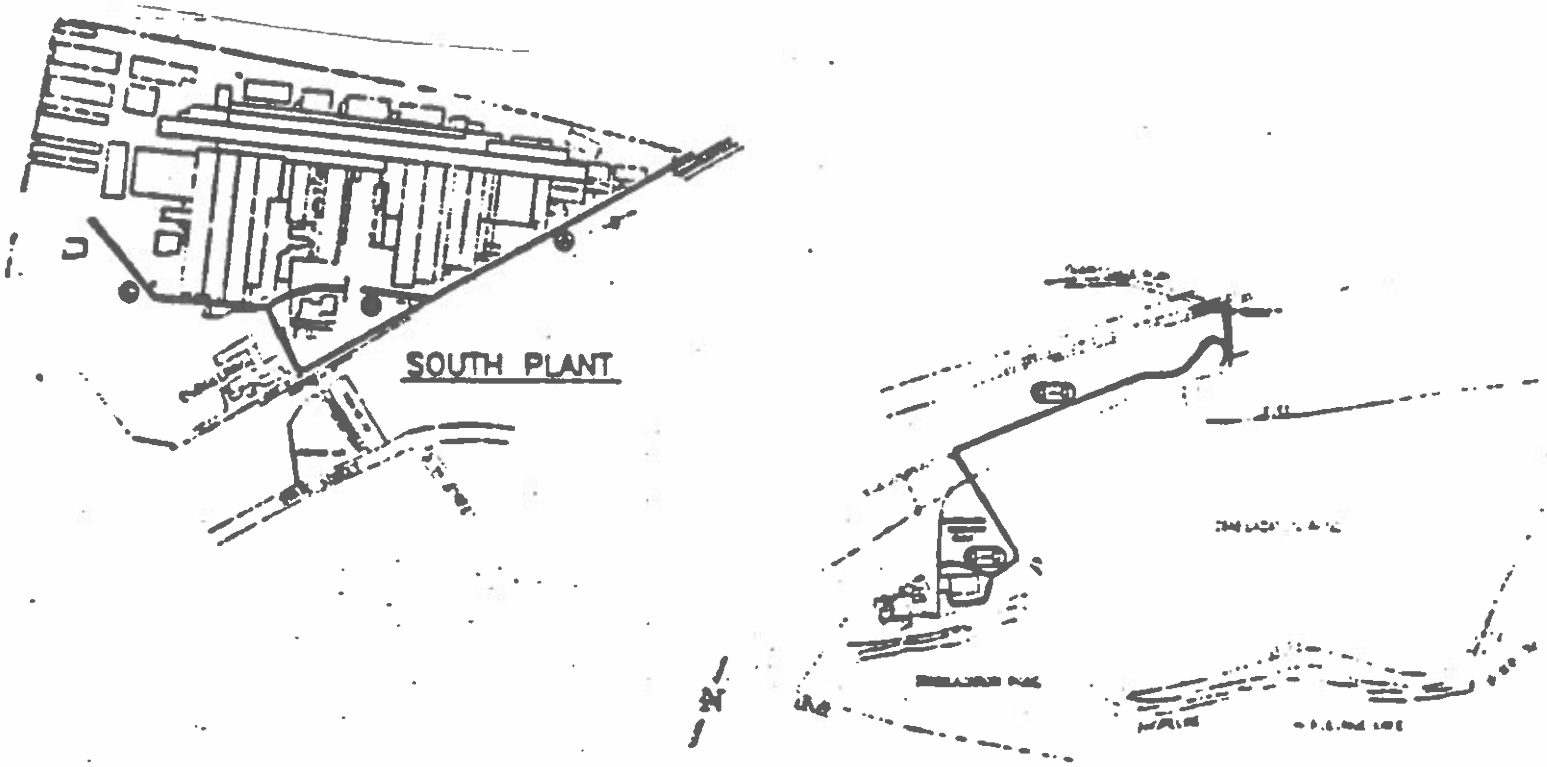
Permit Application #95010001

ATTACHMENT B (cont.)



Permit Application #95010001

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

12/28/94

South Plant & WWTP

3-4

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

JRR:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-2113

P. O. Box 19506, Springfield, IL 62794-9506

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Received: October 3, 1996
Subject: Production Increase
Date Issued: October 18, 1996
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

b. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.

iii. Overlapping operations of the BOF vessels is allowed under the following conditions:

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (aka., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy condition (A) above.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel

and

overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

E. Condition B and C above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.

c. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

d. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

e. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

f. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. Within 270 days of the original date issued of this permit (January 25, 1996), the Permittee shall install, calibrate, operate, and maintain a monitoring device that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the various exhaust ventilation rates or levels of exhaust ventilation through the main downcommer duct of the ESP emissions capture and transport system.

b. The monitoring system shall be designed to be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated, tested and maintained to ensure accurate and useful data.

d. The Agency may allow an equivalent system or method instead of the above monitoring system provided the Permittee demonstrates, and the Agency approves, that such system or method will ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks in an equivalent manner, and that such system or method can be installed and operated within the time period required for the monitoring system as stated in this permit.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and

maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

    a. Operating time of the BOF;

    b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

    c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

    d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft^3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in

conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on 0.05846 $mmft^3$ BFG generated per net ton of hot metal produced.

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

STARTUP AND TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38. Operation at the increased production rates specified in this permit is allowed until March 15, 1997 under this construction permit.

39a. The following tests shall be performed by no later than December 15, 1996 to demonstrate compliance with the conditions of this permit.

i. Blast Furnace testing: The emissions of particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and the opacity from the blast furnace casthouse stack shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.445 and the requirements of this permit;

ii. Hot Metal Desulfurization testing: The emissions of particulate matter from the desulfurization baghouse shall be measured. These tests shall be designed to verify compliance with the requirements of this permit and 35 Ill. Adm. Code 212.446(b)(2);

iii. BOF testing: The emissions of particulate matter, carbon monoxide, and lead from the BOF ESP stack, and the opacity from both the BOF ESP stack and BOF Shop shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.446, 212.458 and the requirements of this permit;

iv. Fuel Combustion Units testing: The emissions of particulate matter from a representative boiler while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

v. BFG generation testing: The amount of blast furnace gas generated (mmft^3) per ton of hot metal produced shall be determined. The Agency may waive this requirement for testing providing the Permittee submit a sufficient explanation of how BFG generation is determined with justification that such determination is appropriate for purposes of compliance determinations with this permit.

b. These tests shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6
Nitrogen Oxides	USEPA Method 7
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Lead	USEPA Method 12

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 60 days prior to the actual date of testing of the BOF, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing the BOF, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- other pertinent information (e.g., for the BOF, pulpit set point for each process of the BOF cycle - charging, refining, and tapping);

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

40. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Unit (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

41. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

42a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

Please note that this permit has been revised to allow additional time for operation and testing under this construction permit.

If you have any questions on this permit, please call Jim Ross at 217/782-2113.

COPY
Original Signed by
Donald E. Sutton, P.E.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:jar

cc: IEPA, FOS Region 3

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

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TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

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TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

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TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

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TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,145
BFG	185,030
Fuel Oil	365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

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TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

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TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

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TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

b. Check on a regular basis the draft rate set points;

c. Check on a regular basis primary and secondary damper settings;

d. Check on a regular basis ESP operation, including the following:

i. Fields down;

ii. Fields indicating shorts and unable to reset;

iii. Hopper screw doors are closed;

e. Check on a regular basis blow rates;

f. Check on a regular basis spray water system operation;

g. Check on a regular basis steam injection rate;

h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

j. Notify the emissions control operator and melter when isolation work begins;

k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

a. Use controlled pouring of the hot metal into the BOF vessel;

b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

c. Use the most beneficial furnace tilt angle;

d. These procedures shall be posted in the crane operator booth.

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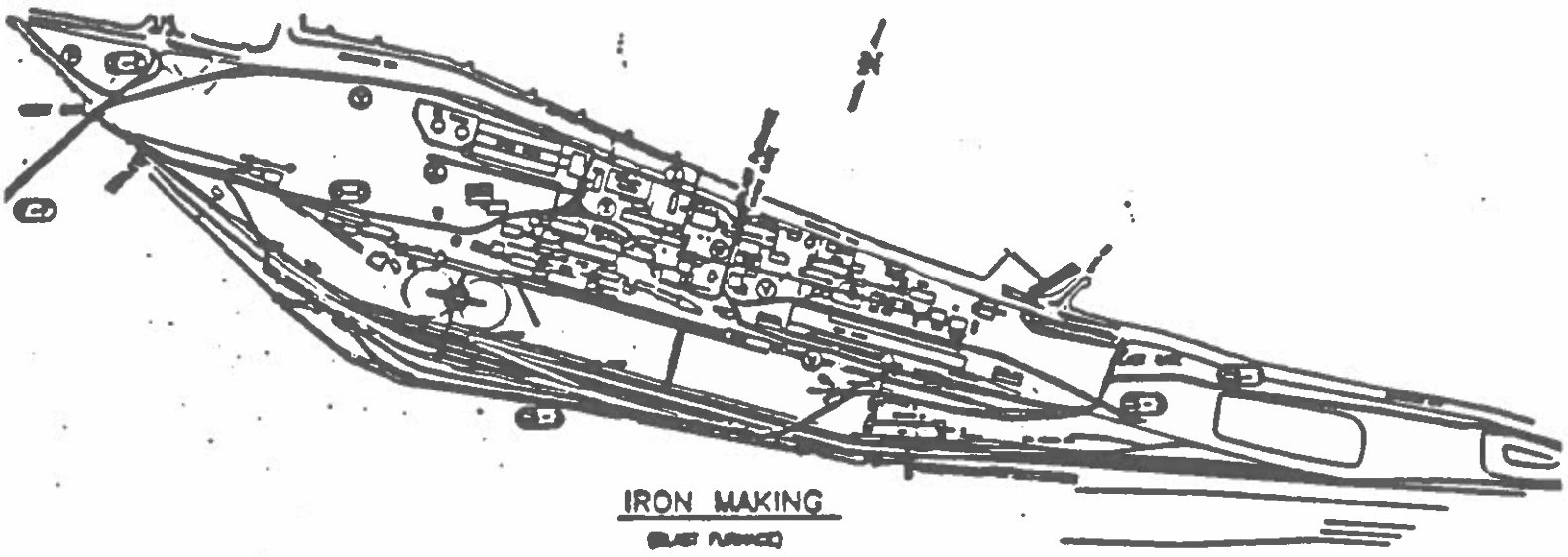
ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

12/28/94

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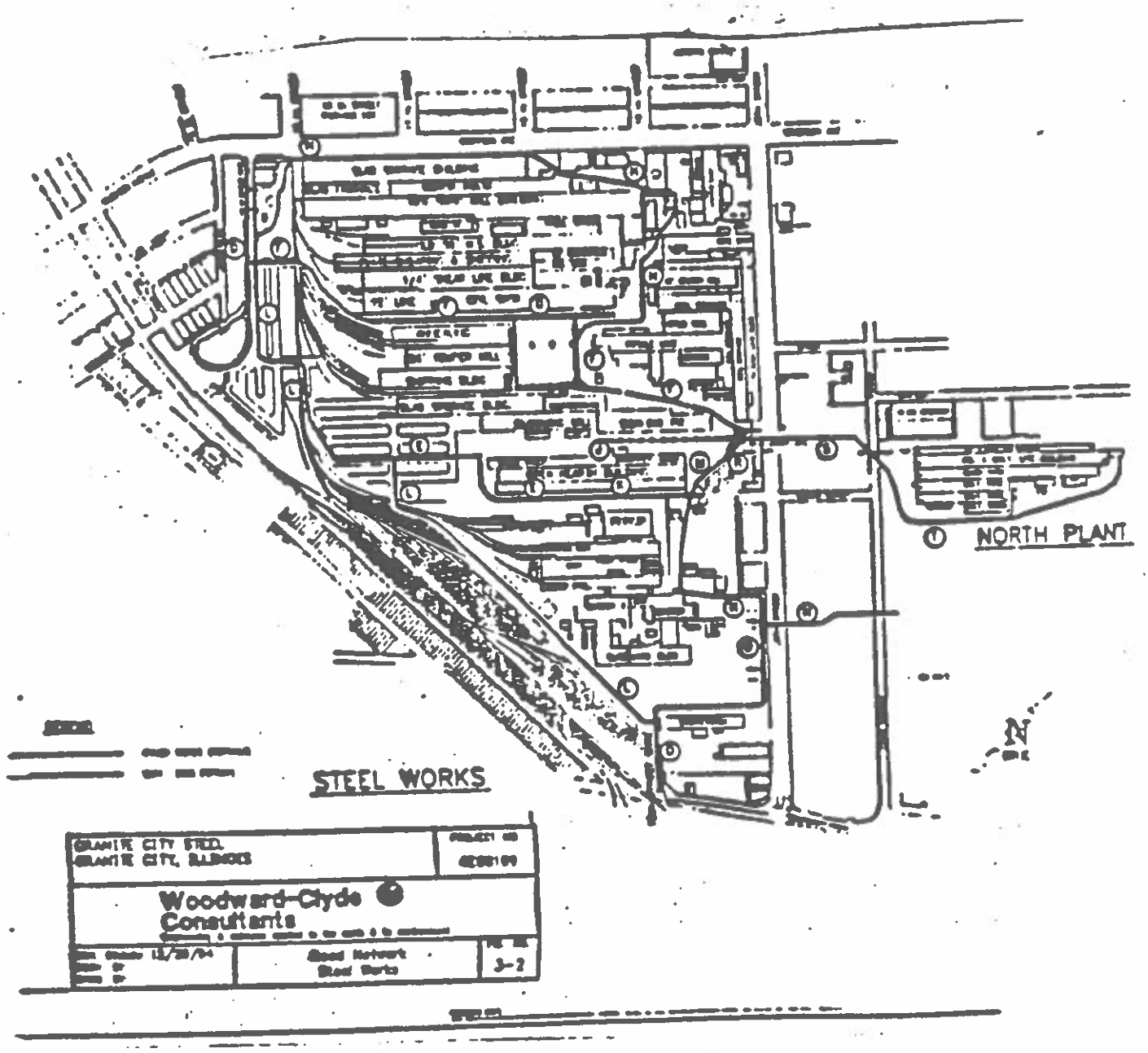
Permit Application #95010001

ATTACHMENT B (cont.)



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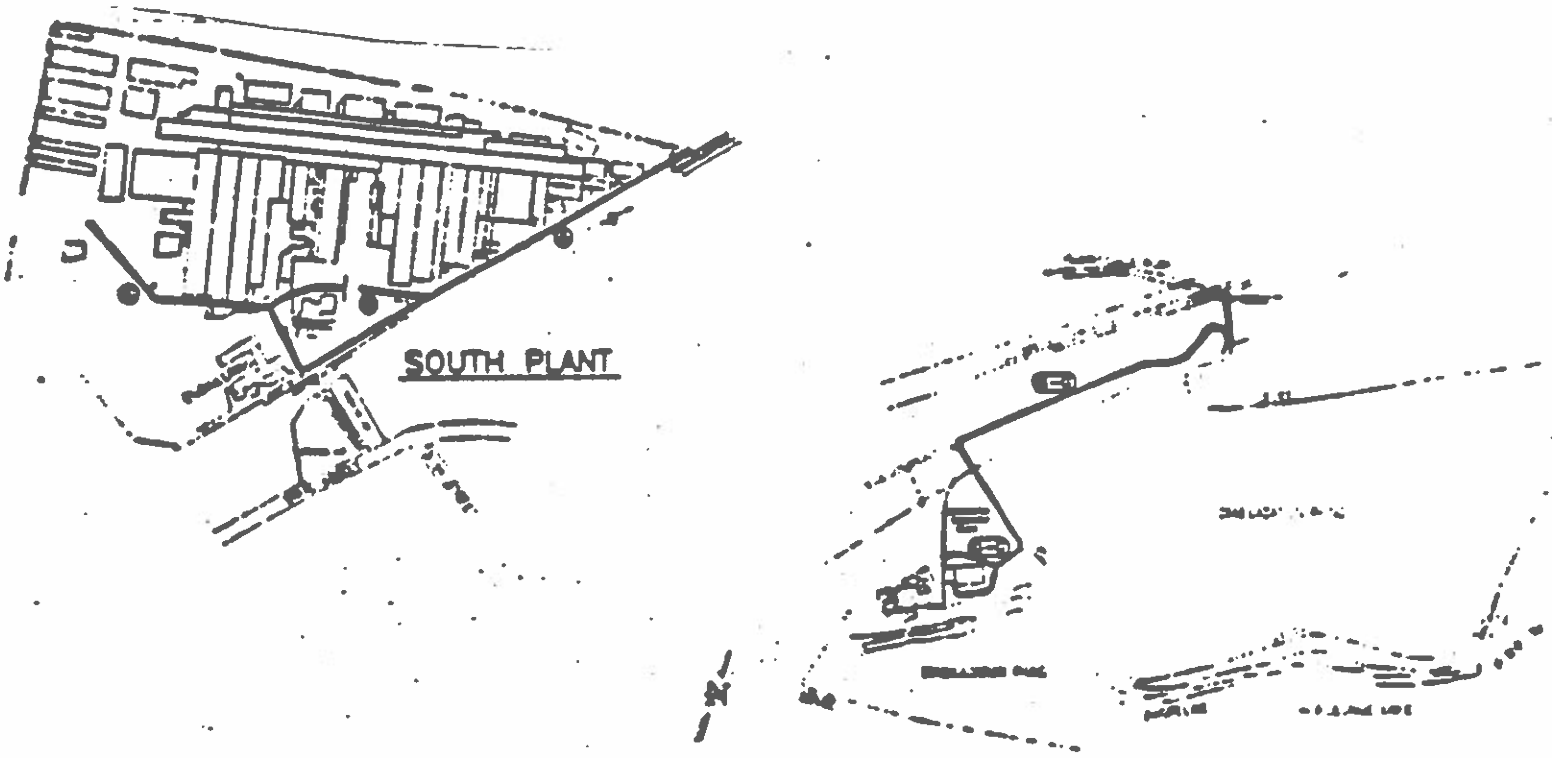
ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

JRR:jar

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST. P.O. BOX 19506. SPRINGFIELD. ILLINOIS 62794-9506 · (217) 782-2113

PAT QUINN. GOVERNOR JOHN J. KIM. INTERIM DIRECTOR

217/785-1705

CONSTRUCTION PERMIT/PSD APPROVAL
REVISED

PERMITTEE

U.S. Steel Granite City
Attn: Bryan Kresak, Environmental Director
Route 203 and 20th Street
Granite City, Illinois 62040

Application/Permit No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Orig. Issued: January 25, 1996
Subject: Production Increase
Date Revision Request: May 30, 2012
Date Revision Issued: December 17, 2012 (See Finding 1(c))
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

FINDINGS

1a. Various changes have been made to the provisions of this permit for the Basic Oxygen Furnaces (BOF's), at the request of the Permittee, so that the permit will accommodate an emission reduction project that is planned for particulate emissions from the BOFs. In particular, the revised permit does not include requirements for the operation of these BOF's and the existing electrostatic precipitator (ESP) control system that would be inconsistent with the use of a separate control system with a baghouse for secondary emissions of the BOFs, as is now planned (see Construction Permit Application 11050006).

b. Prior to issuance of this revised permit, a draft of the revised permit underwent a public comment period, including a public hearing.

c. This revised permit will become effective 33 days after the date of issuance unless a petition for review is filed, in accordance with 40 CFR Part 124, with the USEPA's Environmental Appeals Board (Board), in which case, this revised permit will only take effect when and if the Board declines the petition for review or the Board issues a decision on the merits of the appeal that does not include a remand of the proceeding.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month; and

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hour and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Opacity of emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis, pursuant to 35 IAC 212.446(c).

9. The Permittee shall operate and maintain the BOF's and associated capture and control systems in accordance with applicable requirements of the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, including requirements for operational monitoring, performance testing for opacity and emissions of particulate matter,* operation of capture and control systems within established limits for operating parameters, implementation of specified operation and maintenance practices, recordkeeping and reporting.

* As related to testing of emissions, if the Permittee is not willing to consider all particulate matter measured by testing to be PM_{10}, as provided for by 35 IAC 212.108(a)(3), performance tests for emissions

of particulate matter shall also include measurements for emissions of PM_{10} in accordance with 35 IAC 212.108(a)(1) or (2).

Note: This condition requires the Permittee to comply with the operating and maintenance requirements of 40 CFR 63 Subpart FFFFF as the means to verify ongoing compliance with the requirements of Conditions 7 and 8 and to address implementation of good air pollution control practice for the BOF's.

(Former Condition 10 has been removed in this revised permit.)

11a. Flame suppression shall be used and maintained during the entire tapping process.

b. The above requirement for flame suppression and the various requirements for the BOF's in Condition 12 and 13 shall end after the Permittee begins operation of a capture and control system for secondary emissions from the BOF's that makes these requirements infeasible or unnecessary, as explicitly recognized by Construction Permit 11050006 or other construction permit issued by the Illinois EPA for a capture and control system for secondary emissions.

12a. Except for purposes of emissions testing as related to the set points for the capture system for the BOF's, this capture system shall be operated at the following minimum set points for gas flow rate in the ESP stack until and unless the Illinois EPA approves lower minimum set point(s) based on a demonstration that a better level of particulate matter capture efficiency would now be achieved by the charging hoods and primary hoods.

b. Set points requirements while only a single BOF vessel is in operation:

i. Minimum set point during charging process: 550,000 cfm.

ii. Minimum set point during refining process: 650,000 cfm.

iii. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition).

c. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation), the minimum set point shall be 700,000 cfm.

ii. In addition, overlapping operation of the BOF vessels is subject to the following requirements. These requirements shall be part of the Standard Operating Procedure for the BOFs.

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

Removal of 12(c)-(f)

13a. i. The Permittee shall operate, maintain and calibrate a continuous operational monitor to ESP stack gas flow rate.

ii. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

b. i. The Permittee shall operate and maintain a continuous operational monitor for waste gas suction, i.e., the static pressure in the main downcomer duct of the ESP.

ii. The Permittee shall record the waste gas suction for each process (i.e., for each charge, each refine, each tap) of each steel production cycle.

c. These monitoring systems shall be calibrated on at least a quarterly basis.

d. These monitoring systems shall be operated at all times that a BOF is in operation and shall be used as mechanisms to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts.

(Former Conditions 14 through 17 have been removed in this revised permit.)

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

(The note that previously accompanied Condition 18 has been removed in this revised permit.)

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 225 million ft^3 per month and 1,346 million ft^3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

    i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

    ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

    iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

    iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

    a. The date (and time for the gate areas) each road or area was treated;

    b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

    c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

    d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

    e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

    f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

    a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

    b. At least weekly, segment of 20th street between Lee and Quincy roads;

    c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM_{10} CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM$_{10}$ contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

(Former Condition 33 has been removed from this revised permit.)

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$\text{mmft}^3 \text{ BFG per month} = \frac{(4.585277 \text{ NTHM/day} + 498.191)}{80} \times \begin{pmatrix} \text{Number of} \\ \text{days in} \\ \text{that month.} \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source as of January 15, 1996 and supersede such conditions in cases where a conflict exists.

38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.

i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall describe the specific procedures for testing, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- any other pertinent information

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

(Condition 38 required emission testing following the initial operation of the source with the expansion that has already been conducted by the Permittee. This revised permit does not require that this testing be repeated.)

REPORTING

39. Unless otherwise provided for by the provisions for reporting of deviations in the Clean Air Act Permit Program (CAAPP) permit for the source, if there is a deviation from the requirements of this permit, the Permittee shall submit a report to the Illinois EPA within 30 days after the deviation. The report shall include a description of the deviation, the probable cause of the deviation, the corrective actions that were taken and any preventative measures taken to prevent similar deviations in the future.

40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

    a. Iron and steel production (tons/month and tons/year, each);

    b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/year, each);

    c. Fuel oil usage (thousand gallons/month and thousand gallons/year, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM_{10}	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Kevin Smith at 217/782-7048.

Edwin C. Bakowski

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

Date Signed: December 17, 2012

DES:KLS:psj

cc: IEPA, FOS Region 3

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping) - captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0703	111.19
PM_{10}	0.0703	111.19
SO_2	0.2006	422.00
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.031	49.06
PM_{10}	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0024	5.17
PM_{10}	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00417	6.60
PM_{10}	0.00417	6.60
SO_2	0.0100	15.83

TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.02548	40.32
PM_{10}	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00279	6.01
PM_{10}	0.00279	6.01

TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.16	262.80
PM_{10}	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.01934 lbs/hour	1.26 tons/year

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0987	176.71
PM_{10}	0.06614	118.40
Lead	0.0129 lbs/hour	0.08 tons/year

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.03721	58.88
PM_{10}	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hour	0.09 tons/year

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00032	0.57
PM_{10}	0.00032	0.57

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0016	2.86
PM_{10}	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0050	7.94
PM_{10}	0.0050	7.94

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00715	12.80
PM_{10}	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00355	6.35
PM_{10}	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.006	10.74
PM_{10}	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00852	15.25
PM_{10}	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0071	12.71
PM_{10}	0.0071	12.71

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00722	12.92
PM_{10}	0.00722	12.92

TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3$/Year)
Natural Gas (Total)	1,346
BFG	185,030
Fuel Oil	365 thousand gallons/year

1. Natural Gas

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	5.1	3.43
PM_{10}	5.1	3.43
SO_2	0.6	0.40
NO_x	306.0	205.94
VOM	2.8	1.88
CO	40.0	26.92

2. BFG

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	2.9	268.29
PM_{10}	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	9.72	1.77
PM_{10}	9.72	1.77
SO_2	141.3	25.79
NO_x	55.0	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM_{10}	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	---	---
BOF Shop	510	451	---	70	12	16,097	1.43
Continuous Casting Operations	71	71	---	90	---	---	---
Certain Fuel Combustion Units[A]	274	274	641	706	2	1,295	0.06
Roadways	27	27	---	---	---	---	---
Material Handling	2	2	---	---	---	---	---
Total	1,102	1,019	1,115	890	171	17.392	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

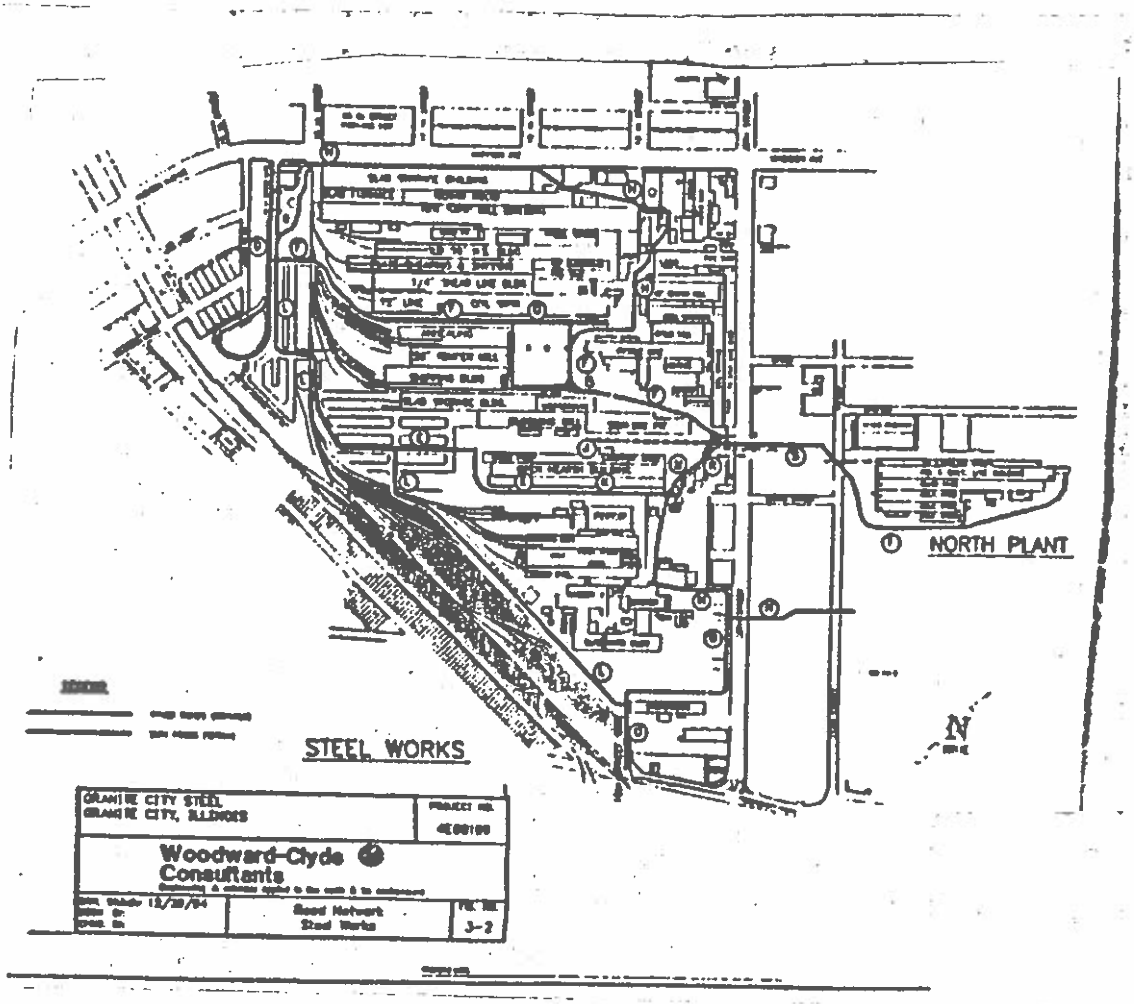
PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

ATTACHMENT A

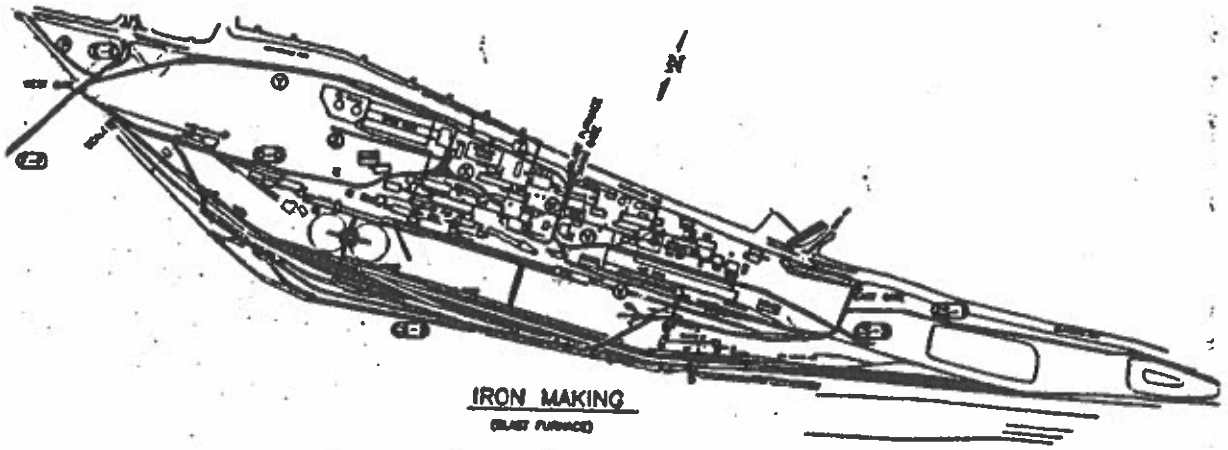
(Former Attachment A has been removed in this revised permit.)

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS

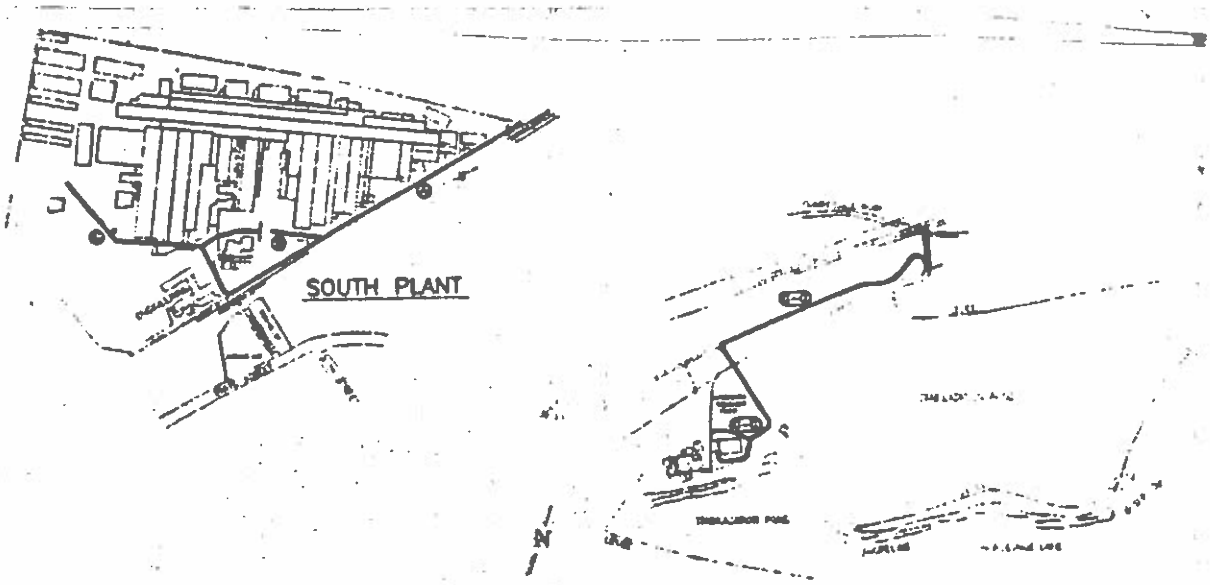


ATTACHMENT B (cont.)



GRANITE CITY STEEL GRANITE CITY, ILLINOIS	PROJECT NO. 4E06169
Woodward-Clyde Consultants	
Date Order: 12/20/84 Drawn: BH	Road Network Iron Making Area
	FIG. NO. 3-3

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Road Network
South Plant & WWTP

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE EMISSIONS OF PM_{10}

- Historic roadway emissions of 428 tons/year, minus future potential roadway emissions of 27 tons/year, equals a resulting reduction in roadway emissions of 401 tons/year

- Historic material handling emissions of 17 tons/year minus future potential material handling emissions of 2 tons/year, equals a resulting reduction in material handling emissions of 15 tons/year.

- Emission reductions resulting from the sweeping of city streets = 52 tons/year*

- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/year*

Total reductions in the emissions of PM_{10} as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/year

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

KLS:psj

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-2113

P. O. Box 19506, Springfield, IL 62794-9506

November 17, 1998

EPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
AUG 23 2013
REVIEWER JRM

National Steel Corporation
Attn: Larry Siebenberger
20th and State Streets
Granite City, Illinois 62040

Application No.: 95010001
I.D. No.: 119813AAI
Operation of: Production Increase
Letter Dated: November 13, 1998

The Illinois EPA hereby acknowledges the receipt of your above-referenced letter and confirms the withdrawal of your application request in accordance with your request.

If you have any questions concerning this matter, please contact Kevin Fargusson at 217/782-2113.

COPY

Original Signed by
Donald E. Sutton, P.E.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:KEF:FM:psj

cc: Region 3

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Air Quality Analysis for Carbon Monoxide (CO)

The following information is for the CO ambient air monitors operated by the state. Data from these monitors are uploaded to the U.S. Environmental Protection Agency (EPA) Air Quality System database, which constitutes the official record of air quality data.

EPA first promulgated the CO National Ambient Air Quality Standards (NAAQS) in 1971 by setting the eight-hour primary standard at 9 parts per million (ppm) and the one-hour primary standard at 35 ppm for protection of both public health and welfare. In its review of the standard, in 1985, EPA revoked the secondary standards (for public welfare) due to a lack of evidence of adverse effects on public welfare at or near ambient concentrations. The last reviews of the CO NAAQS were completed in 1994 and 2011, and the agency retained the standard. However, the 2011 review included new provisions for states to collocate one CO monitor with a "near-road" monitor in urban areas having a population of 1 million or more. The CO monitors at Forest Park and Blue Ridge meet this minimum requirement (see map below).

The monitoring information provided in the tables below highlights statewide air pollutant levels. No site in the state has monitored a violation of the CO standard since 1978 when the area including the city of St. Louis and the portion of St. Louis County encompassed by Interstate 270 was originally designated nonattainment for the eight-hour CO NAAQS. The area now is in attainment of the CO NAAQS, and it is subject to a limited CO maintenance plan.

For more information about CO, see the following EPA website, which includes links to additional information on health effects, standards, implementation and other material:
https://www.epa.gov/co-pollution

Carbon Monoxide (CO) Concentrations, 2008 - 2022, parts per million (ppm)

Updated 10/03/2022

MISSOURI DEPARTMENT OF NATURAL RESOURCES

1-hour CO Concentrations[a]
1-hour Standard = 35 ppm[b]
2nd Maximum 1-hour Averages

(40,000 µg/m³)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[c]
St. Louis, MO															
01 Blair Street*	3.8	4.7	2.2	1.9	1.8	1.7	1.9	1.7	2.4	2.0	1.5	2.5	2.3	1.2	1.2
02 Forest Park, I-64**	-	-	-	-	-	1.4	1.4	1.6	2.2	1.5	1.6	1.6	1.5	1.0	1.2
Kansas City, MO															
03 Blue Ridge, I-70**	-	-	-	-	-	1.6	1.5	1.3	1.4	1.6	1.9	1.4	1.6	1.5	1.9

Site numbers correspond to the map legend
[b]Quality assured data through December 31, 2021
[a]Maximum, not to be exceeded more than once in a year
[c]Preliminary data through September 30, 2022
*National Core (NCore) Multi-pollutant site
**Near-Road site, began monitoring in 2013

MISSOURI DEPARTMENT OF NATURAL RESOURCES

8-hour CO Concentrations[a]
8-hour Standard = 9 ppm[b]
2nd Maximum 8-hour Averages

(10,000 µg/m³)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[c]
St. Louis, MO															
01 Blair Street*	2.6	1.3	1.7	1.4	1.1	1.0	1.0	1.4	1.5	1.4	1.3	1.7	1.6	1.0	0.9
02 Forest Park**	-	-	-	-	-	1.0	0.9	1.2	1.4	1.1	1.1	1.2	1.2	0.8	0.8
Kansas City, MO															
03 Blue Ridge, I-70**	-	-	-	-	-	1.0	1.1	1.0	1.0	1.1	1.1	1.1	1.0	1.1	1.0

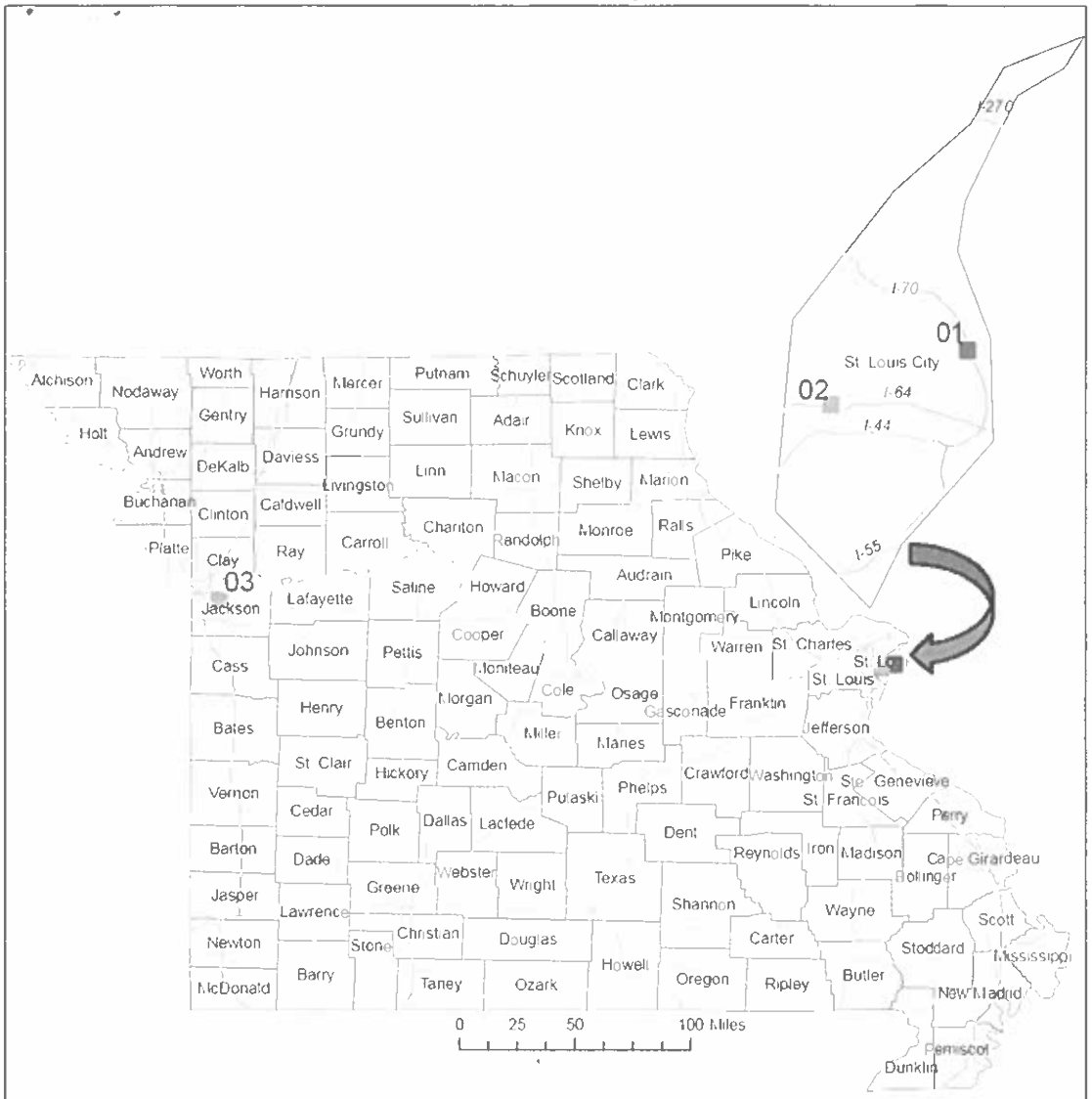
Site numbers correspond to the map legend
[b]Quality assured data through December 31, 2021
[a]Maximum, not to be exceeded more than once in a year
[c]Preliminary data through September 30, 2022
*National Core (NCore) Multi-pollutant site
**Near-Road site, began monitoring in 2013

1,142.9

1,942.9 µg/m³

Missouri's Carbon Monoxide (CO) Monitoring Network, 2022

R000353



Legend

- National Core (NCore) Multi-pollutant site
- Near-road monitoring site
- Federal roads

Site#	SiteName
01	Blair Street
02	Forest Park, I-64
03	Blue Ridge, I-70

MISSOURI DEPARTMENT OF NATURAL RESOURCES

N W E S

R000354

State of Illinois
Illinois Environmental Protection Agency

Illinois
Air Quality Report

AQI
AIR QUALITY INDEX

2016

Table B13
Carbon Monoxide Highs

AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	7011	0.36	0.36	0.36	0.35	0.30	0.30	0.30	0.30
17-031-4201	Northbrook	8051	1.22	1.22	1.15	1.09	0.78	0.67	0.65	0.64
17-163-0010	East St. Louis	7974	1.3	1.3	1.1	1.1	1.1	1.0	1.0	1.0
Statewide Average			1.0	1.0	0.9	0.8	0.7	0.7	0.7	0.6

Table B14
Carbon Monoxide 1-Hour and 8-Hour Design Values

AQS ID	City	1-Hour Samples Greater than 35 (ppm)					8-Hour Samples Greater than 9 (ppm)				
		2016	2015	2014	2013	2012	2016	2015	2014	2013	2012
17-019-1001	Bondville	0	0	0	0	0	0	0	0	0	0
17-031-4201	Northbrook	0	0	0	0	0	0	0	0	0	0
17-163-0010	East St. Louis	0	0	0	0	0	0	0	0	0	0

*The 1-hour and 8-hour carbon monoxide standard is an exceedance-based standard. The 1-hour standard is set at 35 ppm and is not to be exceeded more than once per year. The 8-hour standard is set at 9 ppm and is not to be exceeded more than once per year. More than one exceedance in a year is a violation of the National Ambient Air Quality Standard.

R000354

State of Illinois
Illinois Environmental Protection Agency

Illinois
Air Quality Report

AQI
AIR QUALITY INDEX

2016

Table B13
Carbon Monoxide Highs

AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	7011	0.36	0.36	0.36	0.35	0.30	0.30	0.30	0.30
17-031-4201	Northbrook	8051	1.22	1.22	1.15	1.09	0.78	0.67	0.65	0.64
17-163-0010	East St. Louis	7974	1.3	1.3	1.1	1.1	1.1	1.0	1.0	1.0
Statewide Average			1.0	1.0	0.9	0.8	0.7	0.7	0.7	0.6

Table B14
Carbon Monoxide 1-Hour and 8-Hour Design Values

AQS ID	City	1-Hour Samples Greater than 35 (ppm)					8-Hour Samples Greater than 9 (ppm)				
		2016	2015	2014	2013	2012	2016	2015	2014	2013	2012
17-019-1001	Bondville	0	0	0	0	0	0	0	0	0	0
17-031-4201	Northbrook	0	0	0	0	0	0	0	0	0	0
17-163-0010	East St. Louis	0	0	0	0	0	0	0	0	0	0

*The 1-hour and 8-hour carbon monoxide standard is an exceedance-based standard. The 1-hour standard is set at 35 ppm and is not to be exceeded more than once per year. The 8-hour standard is set at 9 ppm and is not to be exceeded more than once per year. More than one exceedance in a year is a violation of the National Ambient Air Quality Standard.

R000357

Illinois
Air Quality Report

AQI
AIR QUALITY INDEX

2017

Table B13
Carbon Monoxide Highs

AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	6494	0.358	0.358	0.306	0.306	0.300	0.300	0.200	0.200
17-031-4201	Northbrook	8057	1.405	1.047	1.043	1.013	0.700	0.700	0.600	0.600
17-163-0010	East St. Louis	8350	2.2	2.0	1.5	1.3	1.7	1.2	1.0	1.0
Statewide Average			1.32	1.14	0.95	0.87	0.90	0.73	0.60	0.60

State of Illinois
Illinois Environmental Protection Agency

Illinois
Air Quality Report

AQI
AIR QUALITY INDEX

2018

Table B13
Carbon Monoxide Highs

AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	5855	0.39	0.37	0.35	0.31	0.30	0.30	0.30	0.30
17-031-4201	Northbrook	8075	1.32	1.27	1.02	1.02	1.10	0.90	0.80	0.70
17-163-0010	East St. Louis	8343	2.1	2.1	1.7	1.5	1.8	1.4	1.3	1.2
Statewide Average			1.3	1.2	1.0	0.9	1.1	0.9	0.8	0.7

Table B13
2015 Carbon Monoxide Highs

AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	6059	0.36	0.33	0.32	0.32	0.3	0.3	0.3	0.3
17-031-4201	Northbrook	7996	1.30	1.27	1.09	1.07	0.8	0.8	0.8	0.8
17-163-0010	East St. Louis	8468	1.60	1.60	1.50	1.40	1.2	1.2	1.2	1.1
Statewide Average			1.08	1.07	0.97	0.93	0.8	0.8	0.8	0.8

Table B13
Carbon Monoxide Highs

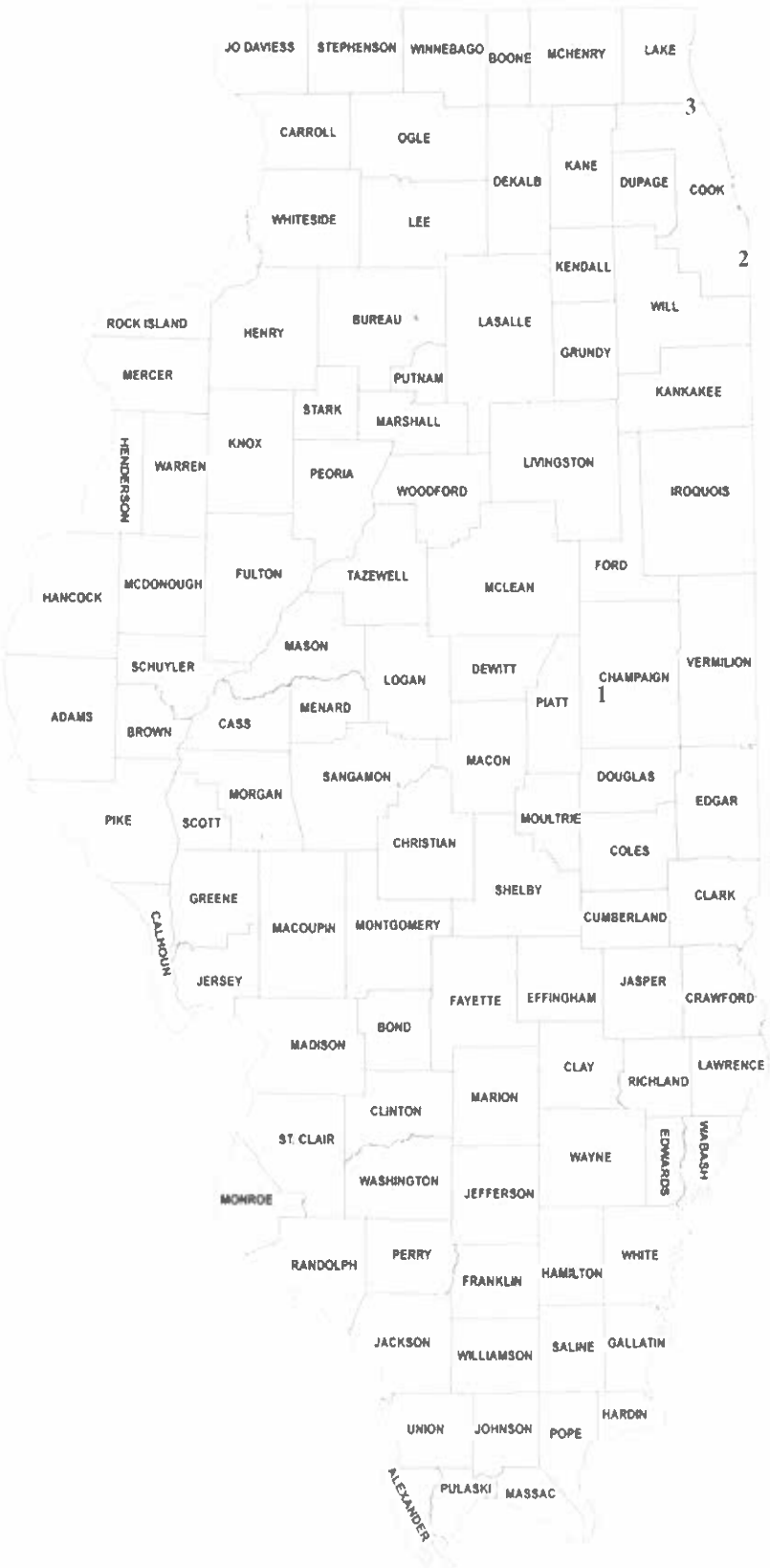
AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	618	0.17	0.14	0.14	0.10	0.1	0.1	0.1	0.1
17-031-0119	Lansing Kingery near-road #1	7025	3.1	2.7	2.3	2.2	1.8	1.5	1.2	1.2
17-031-4201	Northbrook	7668	1.55	1.20	1.10	1.08	0.9	0.9	0.8	0.7
17-163-0010	East St. Louis	5777	2.3	1.8	1.5	1.5	1.1	1.0	0.9	0.8
Statewide Average			1.78	1.46	1.26	1.22	0.98	0.88	0.75	0.70

Table B13
Carbon Monoxide Highs

AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	4806	0.21	0.20	0.20	0.16	0.2	0.1	0.1	0.1
17-031-0119	Lansing Kingery near-road #1	5645	1.8	1.7	1.4	1.4	1.4	1.1	1.1	1.0
17-031-4201	Northbrook	6264	0.98	0.92	0.86	0.79	0.7	0.6	0.6	0.5
Statewide Average			1.00	0.94	0.82	0.78	0.77	0.60	0.60	0.53

Carbon Monoxide Monitoring Sites

R000364



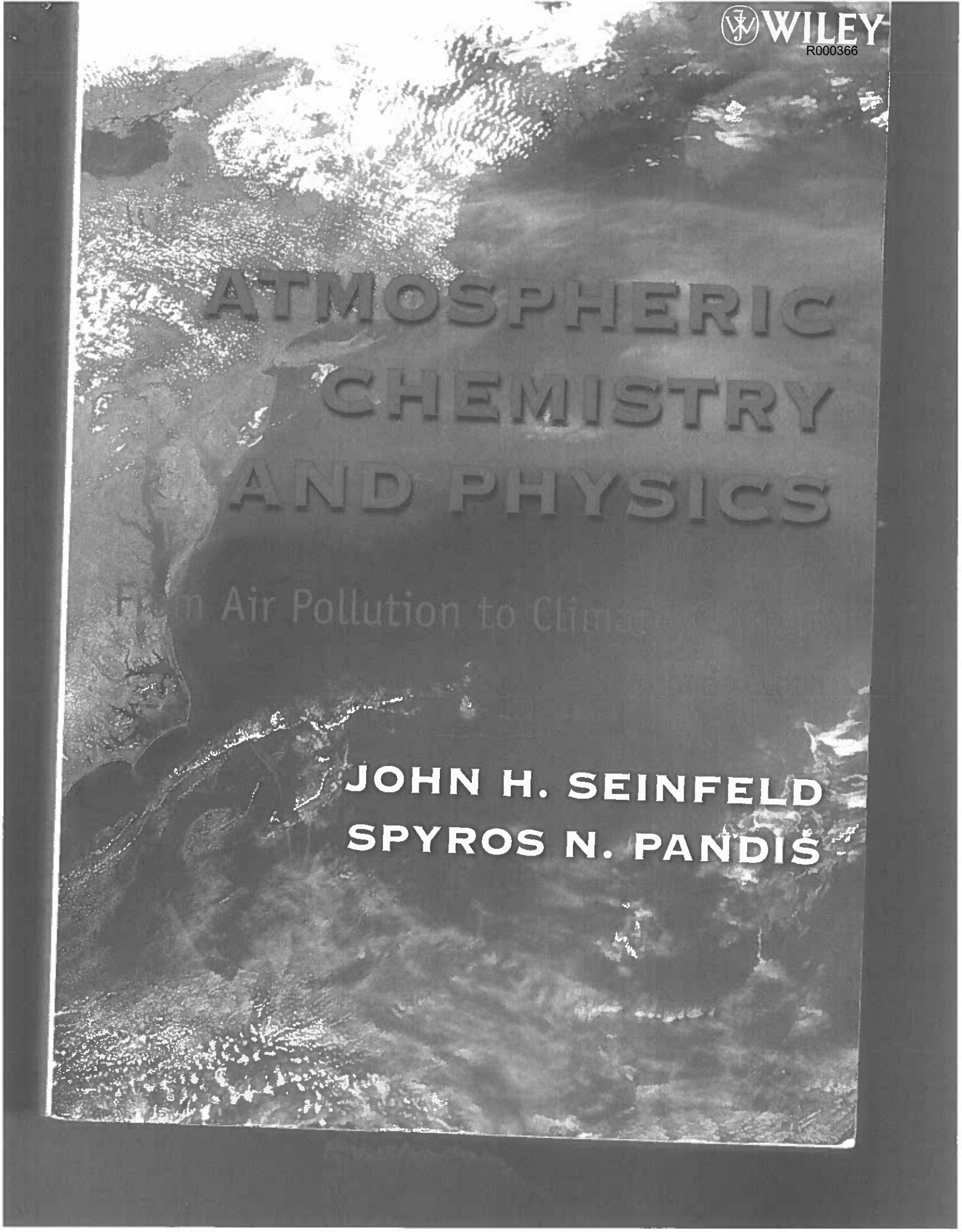
	Site ID	Site Name
1.	170191001	Bondville
2.	170310119	Lansing - Kingery near-road
3.	170314201	Northbrook

Table A4
Monitoring Directory

AQS ID	City	CO	NOy	NO2	Ozone	PM10	PM Coarse	PM2.5 FRM	PM2.5 FEM	PM2.5 AQI	PM2.5 Speciation	SO2	VOC	Toxics	TSP Pb, Metals	Meteorological
17-115-0317	Decatur Tate & Lyle South											■				
17-117-0002	Nilwood			■	■							■				
17-119-0008	Alton Clara Barton Elementary				■											
17-119-2009	Alton SIU Dental Clinic							■								
17-119-0010	Granite City Air Products														■	
17-119-0024	Granite City Gateway Medical Center							■			■					
17-119-1007	Granite City Fire Station #1					■		■		■						
17-119-1009	Maryville				■											
17-119-3007	Wood River				■			■				■				
17-119-9991	Highland				■											
17-143-0024	Peoria Fire Station #8				■											
17-143-0037	Peoria City Office Building								■							
17-143-1001	Peoria Heights				■											
17-157-0001	Houston				■				■							
17-161-3002	Rock Island				■				■							
17-163-0010	East St. Louis	■		■	■			■		■		■				
17-167-0012	Springfield Agricultural Building								■							
17-167-0014	Springfield Illinois Building				■											
17-179-0004	Pekin											■				
17-185-0001	Mount Carmel											■				

■ Active Monitor ■ Site/Monitor Installed ■ Site/Monitor Removed

WILEY
R000366



R000367

terpene-emitting conifers. Thus, all other factors being equal, natural VOC emissions are generally highest on hot summer days.

Biogenic hydrocarbon emission rates from individual plant species have been estimated experimentally by placing small plants or branches in enclosures and measuring the accumulation of emitted compounds. Extensive emission rate measurements have been reported for a relatively limited number of compounds: isoprene and a number of the dominant monoterpenes. Isoprene does appear to be the dominant compound emitted from vegetation.

There have been a number of efforts to compile inventories of biogenic hydrocarbon emissions [e.g., see Lamb et al. (1987, 1993) and Guenther et al. (1995)]. Emission rate measurements from individual plant species are used with empirical algorithms that account for temperature and, for isoprene, light effects to scale up to entire geographic regions, based on land-use data and biomass density factors. Biomass density, expressed in $g\ m^{-2}$ of area, is required to convert individual plant species emission rates, expressed in $mg\ g^{-1}\ min^{-1}$, to emission fluxes, in $mg\ m^{-2}\ min^{-1}$, which are then multiplied by vegetation class land coverage, in m^2, to yield total emissions. Uncertainties in these inventories are large; Lamb et al. (1993) estimated total U.S. biogenic hydrocarbon emissions ranging from 29 to 51 $Tg\ yr^{-1}$.

On a global scale, the largest biogenic hydrocarbon emissions occur in the tropics, with isoprene being the dominant emitted compound. These result from a combination of high temperatures and large biomass densities. During summer months, the maximum flux of biogenic hydrocarbon emissions in the southeastern United States is predicted to be as large as that in the tropics. An estimate of global biogenic VOC emissions appears in Table 2.13. On a global basis, biogenic hydrocarbon emissions far exceed those of anthropogenic hydrocarbons.

2.4.5 Carbon Monoxide

The global sources and sinks of CO are given in Table 2.14. Methane oxidation (by OH) is a major source of CO, as are technological processes (combustion and industrial processes), biomass burning, and the oxidation of nonmethane hydrocarbons. Uncertainties in each of these estimated sources are large. It is estimated that about two-thirds of the CO comes from anthropogenic activities, including oxidation of anthropogenically derived CH_4. The major

TABLE 2.13 Global Biogenic VOC Emission Rate Estimates by Source and Class of Compound, $Tg\ yr^{-1}$

Source	Isoprene	Monoterpenes	ORVOC[a]	Total VOC[b]
Woods	372	95	177	821
Crops	24	6	45	120
Shrub	103	25	33	194
Ocean	0	0	2.5	5
Other	4	1	2	9
Total	503	127	260	1150

[a]Other reactive biogenic VOCs (ORVOC).

[b]These totals include additional nonreactive VOCs not reflected in the columns to the left.

Source: Guenther et al. (1995).

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TABLE 2.14 Estimates of Global Tropospheric CO Budget (in Tg(CO) yr^{-1}) and Values Adopted by IPCC (2001)

Reference:	Hauglustaine et al. (1998)	Bergamaschi et al. (2000)	WMO (1998)	IPCC (2001)
Sources				
Oxidation of CH_4		795		800
Oxidation of isoprene		268		270
Oxidation of terpenes		136		~0
Oxidation of industrial NMHC		203		110
Oxidation of biomass NMHC		—		30
Oxidation of acetone		—		20
Subtotal in situ oxidation	881	1402		1230
Vegetation		—	100	150
Oceans		49	50	50
Biomass burning		768	500	700
Fossil and domestic fuel		641	500	650
Subtotal direct emissions	1219	1458	1150	1550
Total sources	2100	2860		2780
Sinks				
Surface deposition	190			
OH reaction	1920			

sink for CO is reaction with OH radicals, with soil uptake and diffusion into the stratosphere being minor routes.

Tropospheric CO mixing ratios range from 40 to 200 ppb. Carbon monoxide has a chemical lifetime of 30–90 days on the global scale of the troposphere. Measurements indicate that there is more CO in the Northern Hemisphere than in the Southern Hemisphere; the maximum values are found near the surface at northern midlatitudes. In general, the CO mixing ratio decreases with altitude in the Northern Hemisphere to a free tropospheric average value of about 120 ppb near 45°N. In the Southern Hemisphere CO tends to be more nearly uniformly mixed vertically with a mixing ratio of about 60 ppb near 45°S. Seasonal variations have been established to be about ± 40% about the mean in the Northern Hemisphere and ± 20% about the mean in the Southern Hemisphere. The maximum concentration is observed to occur during the local spring and the minimum is found during the late summer or early fall.

2.4.6 Carbon Dioxide

Because of its overwhelming importance in global climate, we will delay consideration of CO_2 until Chapter 22, where we address the global cycle of CO_2.

2.5 HALOGEN-CONTAINING COMPOUNDS

Atmospheric halogen-containing compounds are referred to by a variety of names:

Halocarbons—a general term referring to halogen-containing organic compounds

Chlorofluorocarbons(CFCs)—the collective name given to a series of halocarbons containing carbon, chlorine, and fluorine atoms

TABLE 2.21 United States National Ambient Air Quality Standards

Pollutant	Primary Standards	Averaging Times	Secondary Standards
Carbon monoxide	9 ppm (10 mg m^{-3})	8 h[a]	None
	35 ppm (40 mg m^{-3})	1 h[a]	None
Lead	1.5 μg m^{-3}	Quarterly average	Same as primary
Nitrogen dioxide	0.053 ppm (100 μg m^{-3})	Annual (arithmetic mean)	Same as primary
Particulate matter (PM_{10})	50 μg m^{-3}	Annual[b] (arithmetic mean)	Same as primary
	150 μg m^{-3}	24-h[a]	Same as primary
Particulate matter ($PM_{2.5}$)	15.0 μg m^{-3}	Annual[c] (arithmetic mean)	Same as primary
	65 μg m^{-3}	24-h[d]	
Ozone	0.08 ppm	8-h[e]	Same as primary
	0.12 ppm	1-h[f]	Same as primary
Sulfur oxides	0.03 ppm	Annual (arithmetic mean)	—
	0.14 ppm	24-h[a]	—
	—	3-h[a]	0.5 ppm (1300 μg m^{-3})

[a]Not to be exceeded more than once per year.

[b]To attain this standard, the expected annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 μg m^{-3}.

[c]To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15 μg m^{-3}.

[d]To attain this standard, the 3-year average of the 98th percentile of 24-h concentrations at each population-oriented monitor within an area must not exceed 65 μg m^{-3}.

[e]To attain this standard, the 3-year average of the fourth-highest daily maximum 8-h average ozone concentration measured at each monitor within an area over each year must not exceed 0.08 ppm.

[f](a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentration above 0.12 ppm is ≤ 1; (b) the 1-h NAAQS will no longer apply to an area one year after the effective date of the designation of that area for the 8-h ozone NAAQS; the effective designation date for most areas is June 15, 2004 [40 CFR 50.9; see *Federal Register* of April 30, 2004 (69 FR 23996)].

populated region, ozone violations in one area are caused, at least in part, by emissions in upwind areas. A transport commission is authorized to coordinate control measures within the interstate transport region and to recommend to the EPA when additional control measures should be applied in all or part of the region in order to bring any area in the region into attainment. Hence areas within the transport region that are in attainment of the ozone NAAQS might become subject to the controls required for nonattainment areas in that region.

The Clean Air Act requires each state to adopt a plan, a *State Implementation Plan* (SIP), which provides for the implementation, maintenance, and enforcement of the NAAQS. It is, of course, emission reductions that will abate air pollution. Thus the state plans must contain legally enforceable emission limitations, schedules, and timetables for compliance with such limitations. The control strategy must consist of a combination of measures designed to achieve the total reduction of emissions necessary for the attainment of the air quality standards. The control strategy may include, for example, such measures as emission limitations, emission charges or taxes, closing or relocation of commercial or industrial facilities, periodic inspection and testing of motor vehicle

6 Chemistry of the Troposphere

The troposphere behaves as a chemical reservoir relatively distinct from the stratosphere. Transport of species from the troposphere into the stratosphere is much slower than mixing within the troposphere itself. A myriad of species are emitted at the Earth's surface, and those with chemical lifetimes less than about a year or so are destroyed in the troposphere. Even though solar radiation of the most energetic wavelengths is removed in the stratosphere, light of sufficiently energetic wavelengths penetrates into the troposphere to promote significant photochemical reactions in the troposphere. A factor important in tropospheric chemistry is the relatively high concentration of water vapor. The chemistry of the stratosphere involves the reactions that form and destroy ozone; ozone formation and removal is, likewise, central to the chemistry of the troposphere.

In the troposphere, for every 1,000,000,000 molecules, about 35 of them are, on average, O_3. Ground-level O_3 mixing ratios in the troposphere range from 20 to 60 ppb. Values can exceed 100 ppb in urban areas and broad regions downwind of urban complexes, especially under conditions in which a stationary high-pressure system produces several days of high temperatures and stagnant conditions. One of the most notable events in the eastern United States was one that occurred during the second week of June 1998; ozone mixing ratios exceeding 90 ppb were observed at every surface monitoring site in an area extending from Maine to Virginia to Ohio. Even higher values were found in the cities of the northeastern corridor. Ozone levels exceeding 200 ppb are considered a severe air pollution episode. The highest recorded hourly average O_3 mixing ratio in North America was apparently 680 ppb, in downtown Los Angeles in 1955. The current U.S. National Ambient Air Quality Standard for O_3 is an 8-h average of 80 ppb (see Chapter 2).

With the emergence of Los Angeles photochemical smog in the late 1940s and early 1950s and the identification of O_3 as its principal ingredient, those involved in the effort began to understand the nature of this new form of air pollution. In two pioneering articles published in *Industrial and Engineering Chemistry*, Arie J. Haagen-Smit identified ozone as the principal component of photochemical smog and postulated that a free-radical chain reaction mechanism involving organics and oxides of nitrogen was responsible for O_3 buildup (Haagen-Smit 1952; Haagen-Smit et al. 1953). Although the species oxidizing the hydrocarbons and other organic compounds was unknown, Haagen-Smit did deduce the critical fact that nitrogen oxides play the role of a catalyst in ozone formation. It was long known that hydroxyl (OH) radicals react rapidly with hydrocarbons, but whether OH radicals played any significant role in the chemistry of the troposphere was unknown.

The hint came in 1969, and then the breakthrough came in 1971. With information on the ^{14}C content of atmospheric CO, Bernard Weinstock deduced that the atmospheric

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lifetime of CO was 0.1 year, a value far smaller than what had been believed up to that time (Weinstock 1969). The short residence time implied that CO is being removed from the atmosphere far faster than any known mechanism could explain. Noting that a likely process for conversion of CO to CO_2 in the stratosphere is

$$CO + OH \longrightarrow CO_2 + H$$

Weinstock suggested that the same reaction could be an effective removal mechanism for tropospheric CO and noted that to maintain the needed OH levels would require some kind of regenerative chain mechanism for tropospheric OH, although he did not know what that mechanism was. It was known that photodissociation of O_3 in the wavelength range of 290–320 nm produces excited atomic oxygen, $O(^1D)$, a small fraction of which reacts with atmospheric water vapor to produce OH radicals. Hiram ("Chip") Levy showed that even that small fraction is sufficient to produce OH radicals in the atmosphere at a rate exceeding 10^5 molecules cm^{-3} s^{-1}, making OH the dominant oxidizing free radical in the troposphere (Levy 1971).

Ozone in the troposphere is generated from two major classes of precursors: volatile organic compounds (VOCs) and oxides of nitrogen (NO_x, which denotes the sum of NO and NO_2). The process of ozone formation is initiated by the reaction of the OH radical with organic molecules. The subsequent reaction sequence is catalyzed by NO_x, in an interwoven network of free-radical reactions. Most of the direct emission of NO_x to the atmosphere is in the form of NO. NO_2 is formed in the atmosphere by conversion of NO. As in the stratosphere, the two oxides of nitrogen are generally grouped together as NO_x because interconversion between NO and NO_2 is rapid (with a tropospheric timescale of ~5 min) compared to the timescale for organic oxidation (one to several hours). NO_x mixing ratios range from 5 to 20 ppb in urban areas, about 1 ppb in rural areas during regionwide episodes, and from 10 to 100 ppt in the remote troposphere.

In the remote troposphere, ozone formation is sustained by the oxidation of carbon monoxide (CO) and methane (CH_4), each through reaction with OH. Both CO and CH_4 are long-lived species, with atmospheric lifetimes against OH reaction of about 2 months and 9 years, respectively. Ozone formation in the urban and regional atmosphere is driven by much shorter-lived volatile organic compounds emitted from anthropogenic and biogenic sources. These include alkenes, aromatics, and oxygenated organic species. Because two classes of precursor compounds are involved in tropospheric ozone formation, volatile organic compounds (VOCs) and oxides of nitrogen (NO_x), a key question is how changing VOC and NO_x levels affect the amount of ozone formed. We will see that ozone formation depends critically on the level of NO_x.

We begin this chapter with hydroxyl radical generation by O_3 photolysis and then proceed first to the chemistry of NO_x as we develop the overall organic/NO_x chemistry of the troposphere.

6.1 PRODUCTION OF HYDROXYL RADICALS IN THE TROPOSPHERE

The key to understanding tropospheric chemistry begins with the hydroxyl (OH) radical. Because the OH radical is unreactive toward O_2, once produced, it survives to react with virtually all atmospheric trace species. The most abundant oxidants in the atmosphere are O_2 and O_3, but these molecules have large bond energies and are generally unreactive,

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If, on the other hand, $[NO_2]_0 = [O_3]_0 = 0$, then $[O_3] = 0$. This is clear since in the absence of NO_2 there is no means to produce atomic oxygen and therefore ozone. Thus the maximum steady-state ozone concentration would be achieved with an initial charge of pure NO_2. The ensuing ratios of ozone attained in urban and regional atmospheres are often greater than those in the sample calculation. Since most of the NO_x emitted is in the form of NO and not NO_2, the concentration of ozone reached, if governed solely by reactions 1–3, cannot account for the actual observed concentrations. It must be concluded that reactions other than 1–3 are important in tropospheric air in which relatively high ozone concentrations occur.

Characteristic Time for the Photochemical NO_x Cycle to Achieve Steady State The photochemical NO_x cycle can be written concisely as the reversible reactions

$$NO_2 + h\nu \underset{3}{\overset{1-2}{\underset{O_2}{\rightleftharpoons}}} NO + O_3$$

where reaction 1 is the rate-determining step of the forward reaction. The rate equation for $[O_3]$ is

$$\frac{d[O_3]}{dt} = j_{NO_2}[NO_2] - k_3[NO][O_3]$$

The characteristic relaxation time to steady state is based on the reverse reaction:

$$\tau = \frac{1}{k_3[NO]}$$

At 298 K, $k_3 = 1.9 \times 10^{-14}$ cm^3 molecule^{-1} s^{-1}. Let us evaluate τ at an NO mixing ratio of 1 ppb at 1 atm. Thus, $[NO] = 10^{-9}[M] = (10^{-9})(2.5 \times 10^{19}) = 2.5 \times 10^{10}$ molecules cm^{-3}, and

$$\tau = \frac{1}{(1.9 \times 10^{-14})(2.5 \times 10^{10})} = 0.22 \times 10^4 \text{ s} = 0.6 \text{ h}$$

At an NO mixing ratio of 10 ppb, $\tau \cong 3.6$ min.

6.3 ATMOSPHERIC CHEMISTRY OF CARBON MONOXIDE

We now turn to the tropospheric chemistry of carbon-containing compounds, the simplest of which, in many respects, is CO. The atmospheric oxidation of CO exhibits many of the key features of that of much more complex organic molecules, and so it is the ideal place to begin a study of the chemistry of the troposphere.

Carbon monoxide reacts with the hydroxyl radical

$$CO + OH \xrightarrow{1} CO_2 + H \qquad \text{(reaction 1)}$$

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and the hydrogen atom formed in reaction 1 combines so quickly with O_2 to form hydroperoxyl radical HO_2:

$$H + O_2 + M \longrightarrow HO_2 + M$$

that, for all intents and purposes, we can simply write reaction 1 as

$$CO + OH \xrightarrow{1} CO_2 + HO_2 \qquad \text{(reaction 1)}$$

The addition of an H atom to O_2 weakens the O—O bond in O_2, and the resulting HO_2 radical reacts much more freely than O_2 itself. When NO is present, the most important atmospheric reaction that the HO_2 radical undergoes is with NO:

$$HO_2 + NO \xrightarrow{2} NO_2 + OH \qquad \text{(reaction 2)}$$

We have already encountered this important reaction in the stratosphere.

The hydroperoxyl radical also reacts with itself to produce hydrogen peroxide (H_2O_2):[1]

$$HO_2 + HO_2 \xrightarrow{3} H_2O_2 + O_2 \qquad \text{(reaction 3)}$$

Hydrogen peroxide is a temporary reservoir for HO_x ($OH + HO_2$):

$$H_2O_2 + h\nu \xrightarrow{4} OH + OH \qquad \text{(reaction 4)}$$

$$H_2O_2 + OH \xrightarrow{5} HO_2 + H_2O \qquad \text{(reaction 5)}$$

Reaction 4 returns two HO_x species, whereas in reaction 5 one HO_x is lost to H_2O. The NO_2 formed in reaction 2 participates in the photochemical NO_x ($NO + NO_2$) cycle:

$$NO_2 + h\nu \xrightarrow{6} NO + O \qquad \text{(reaction 6)}$$

$$O + O_2 + M \xrightarrow{7} O_3 + M \qquad \text{(reaction 7)}$$

$$NO + O_3 \xrightarrow{8} NO_2 + O_2 \qquad \text{(reaction 8)}$$

Finally, termination of the chain occurs when OH and NO_2 react to form nitric acid:

$$OH + NO_2 + M \xrightarrow{9} HNO_3 + M \qquad \text{(reaction 9)}$$

This reaction removes both HO_x and NO_x from the system.

The CO oxidation is represented in terms of the HO_x family in Figure 6.1. P_{HO_x} denotes the rate of OH generation from O_3 photolysis. For simplicity, we do not show a flux from H_2O_2 back into HO_x. Within the HO_x family, OH and HO_2 rapidly cycle between

[1]Reaction 3 has both bimolecular and termolecular channels (Table B.1). At 298 K at the surface ($[M] = 2.46 \times 10^{19}$ molecules cm^{-3}) the second-order rate coefficients for the two channels are 1.7×10^{-11} and 1.2×10^{-12} cm^3 $molecule^{-1}$ s^{-1}, respectively.

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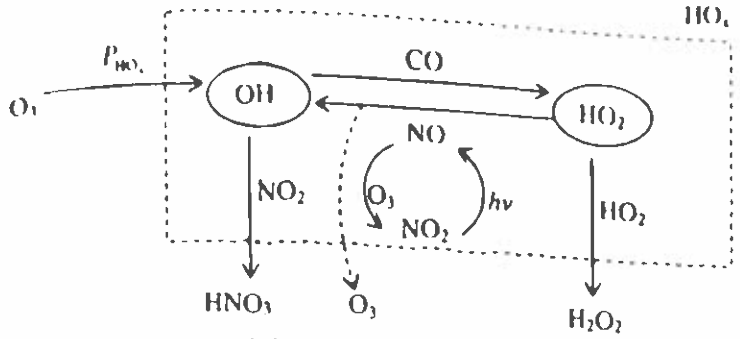

FIGURE 6.1 Reactions involving the HO_x ($OH + HO_2$) family in CO oxidation.

themselves, so that a steady-state OH/HO_2 partitioning is established, which depends on the NO_x level. Figure 6.2 shows CO oxidation from the perspective of the NO_x chemical family. The heavy arrows interconnecting NO and NO_2 in Figure 6.2, which represent the photochemical NO_x cycle, indicate that this cycle occurs more frequently than either the $NO + HO_2$ or $OH + NO_2$ reactions. As a result, the partitioning between NO and NO_2 within the NO_x family is approximately controlled by the photostationary state relation (6.6):

$$[O_3] = \frac{j_{NO_2}[NO_2]}{k_{NO+O_3}[NO]}$$

If the ratio of $[NO_2]$ to $[NO]$ increases, then the steady-state O_3 concentration increases.

Each time an $HO_2 + NO$ reaction occurs, an additional O_3 molecule is produced as the resulting NO_2 molecule photolyzes. In Figure 6.1 and 6.2, this is indicated by the dashed lines leading to O_3. This is a "new" O_3 molecule because the NO_2 molecule formed from $HO_2 + NO$ did not require an O_3 molecule in its formation. Thus, the rate of production of O_3 is simply equal to the rate of the $HO_2 + NO$ reaction:

$$P_{O_3} = k_{HO_2+NO}[HO_2][NO] \tag{6.9}$$

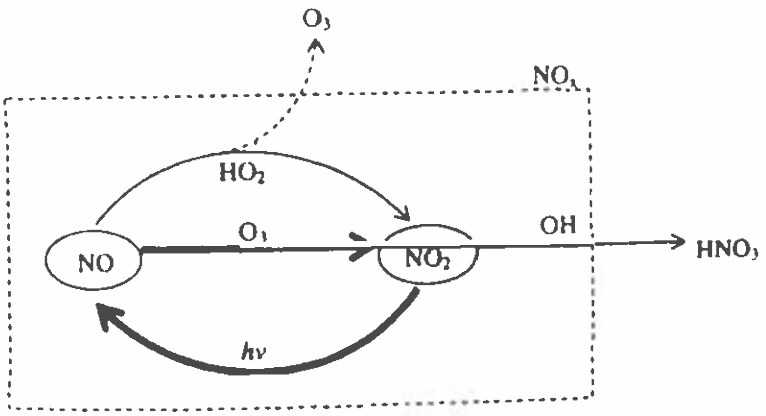

FIGURE 6.2 Reactions involving the NO_x ($NO + NO_2$) family in CO oxidation.

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It turns out that the overall behavior of the CO oxidation system depends critically on the overall level of NO_x. (Recall that there is also an effect of NO_x level on stratospheric chemistry.) This can be seen most clearly by examining the nature of the system at the limits of low and high NO_x.

6.3.1 Low NO_x Limit

Let us obtain the expression for the rate of O_3 formation in the CO system in the low NO_x limit. The overall steady state HO_x balance is (see Figure 6.1)

$$P_{HO_x} = 2k_{HO_2+HO_2}[HO_2]^2 + k_{OH+NO_2}[OH][NO_2] \tag{6.10}$$

The rate of generation of HO_x is balanced by loss through both $HO_x + HO_x$ and $HO_x + NO_x$ reactions; the two loss terms above can be denoted as

$$HHL = 2k_{HO_2+HO_2}[HO_2]^2 \tag{6.11}$$

$$NHL = k_{OH+NO_2}[OH][NO_2] \tag{6.12}$$

At low NO_x, the principal sink of HO_x is the $HO_2 + HO_2$ reaction. Neglecting the $OH + NO_2$ reaction, we obtain the steady-state concentration of HO_2 under low NO_x conditions:

$$[HO_2] \cong \left(\frac{P_{HO_x}}{2k_{HO_2+HO_2}}\right)^{1/2} \tag{6.13}$$

Substituting (6.13) into (6.9), we obtain the rate of O_3 generation in the low NO_x limit as

$$P_{O_3} = k_{HO_2+NO}\left(\frac{P_{HO_x}}{2k_{HO_2+HO_2}}\right)^{1/2}[NO] \tag{6.14}$$

Thus, the rate of O_3 production increases linearly with the NO concentration and proportionally to the square root of the HO_x generation rate. Note that P_{O_3} is independent of the CO level; this is because NO_x is the limiting reactant at the low NO_x limit.

6.3.2 High NO_x Limit

At high NO_x, the steady-state HO_x balance is

$$P_{HO_x} \cong k_{OH+NO_2}[OH][NO_2] \tag{6.15}$$

so the steady-state concentration of OH is

$$[OH] = \frac{P_{HO_x}}{k_{OH+NO_2}[NO_2]} \tag{6.16}$$

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In order to compute P_{O_3} from (6.9), we need to know $[HO_2]$. Within the HO_x family, OH and HO_2 rapidly interconvert (Figure 6.1), so we can neglect the effect of the $OH + NO_2$ and $HO_2 + HO_2$ reactions on their steady-state partitioning

$$k_{CO+OH}[CO][OH] = k_{HO_2+NO}[HO_2][NO] \tag{6.17}$$

$$[HO_2] = \frac{k_{CO+OH}[CO][OH]}{k_{HO_2+NO}[NO]} \tag{6.18}$$

Using (6.16) for $[OH]$, we obtain

$$[HO_2] = \frac{k_{CO+OH}P_{HO_x}[CO]}{k_{HO_2+NO}k_{OH+NO_2}[NO][NO_2]} \tag{6.19}$$

Finally, substituting (6.19) into (6.9), the rate of O_3 production in the high NO_x limit is

$$P_{O_3} = \frac{k_{CO+OH}P_{HO_x}[CO]}{k_{OH+NO_2}[NO_2]} \tag{6.20}$$

Therefore, in the high NO_x limit, the rate of O_3 production increases linearly with both the CO concentration and the rate of HO_x generation but decreases with increasing NO_x. Since ample NO_x exists, the rate of the overall photochemical cycle is controlled by the $CO + OH$ reaction; in fact, there is so much NO_x available that as NO_x increases, the $OH + NO_2$ termination reaction increases in importance, effectively limiting the OH/HO_2 cycling and thereby decreasing the amount of O_3 that can be formed.

6.3.3 Ozone Production Efficiency

An important measure of atmospheric ozone-forming oxidation cycles is the *ozone production efficiency* (OPE). Because NO_x gets cycled back and forth between NO and NO_2 in O_3 generation, NO_x can be viewed as the catalyst in O_3 formation. One can define the OPE as the number of molecules of O_3 formed per each NO_x removed from the system. The rate of production of O_3 is given by (6.9):

$$P_{O_3} = k_{HO_2+NO}[HO_2][NO] \tag{6.9}$$

The rate at which NO_x is removed from the system is

$$L_{NO_x} = k_{OH+NO_2}[OH][NO_2] \tag{6.21}$$

Thus

$$OPE = \frac{P_{O_3}}{L_{NO_x}} = \frac{k_{HO_2+NO}[HO_2][NO]}{k_{OH+NO_2}[OH][NO_2]} \tag{6.22}$$

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[illegible] as a function of the NO_x level for the CO system OPE depends on the ratios $[HO_2]/[OH]$ and $[NO]/[NO_2]$. We need to obtain expressions for these ratios. Two equations are needed to determine [OH] and $[HO_2]$; we choose the steady-state balance for [illegible]

$$P_{HO_x} = 2k_{HO_2+HO_2}[HO_2]^2 + k_{OH+NO_2}[OH][NO_2] \quad (6.[illegible])$$

and the steady-state balance for $[HO_2]$

$$k_{OH+CO}[OH][CO] = k_{HO_2+NO}[HO_2][NO] + 2k_{HO_2+HO_2}[HO_2]^2 \quad (6.[illegible])$$

Equations (6.23) can be combined with (6.10) to eliminate [OH] and yield a quadratic equation for $[HO_2]$

$$a[HO_2]^2 + b[HO_2] + c = 0$$

where

$$a = 2k_{HO_2+HO_2}\left(1 + \frac{k_{OH+NO_2}[NO_2]}{k_{OH+CO}[CO]}\right)$$

$$b = \frac{k_{HO_2+NO}\,k_{OH+NO_2}[NO_2][NO]}{k_{OH+CO}[CO]}$$

$$c = -P_{HO_x}$$

The quadratic equation can be solved to yield $[HO_2]$ as a function of [CO], [NO], and $[NO_2]$.

The $[HO_2]/[OH]$ ratio can be written as

$$\frac{[HO_2]}{[OH]} = \frac{1}{\dfrac{k_{HO_2+NO}[NO]}{k_{OH+CO}[CO]} + \dfrac{2k_{HO_2+HO_2}[HO_2]}{k_{OH+CO}[CO]}} \quad (6.24)$$

where the second term in the denominator is the deviation from the rapid OH/HO_2 cycling approximation (6.18). This term reflects the effect of the $HO_2 + HO_2$ reaction in perturbing the OH/HO_2 ratio from that in which all HO_2 is assumed to react with NO. The $[NO]/[NO_2]$ ratio is determined from the photochemical NO_x cycle:

$$\frac{[NO]}{[NO_2]} = \frac{j_{NO_2}}{k_{NO+O_3}[O_3]} \quad (6.6)$$

Figure 6.3 shows the ozone production efficiency for CO oxidation at 298 K at the Earth's surface as a function of $[NO_x] = [NO] + [NO_2]$ for NO_x mixing ratios from 1 ppt to 100 ppb. At the ground-level conditions of Figure 6.3, we assume that $P_{HO_x} = 1\ \text{ppt s}^{-1}$, that $[NO]/[NO_2] = 0.1$, and a CO mixing ratio of 200 ppb. The OPE is largest at the lowest concentration of NO_x; at these low levels, NO_x termination by $OH + NO_2$ is suppressed and each NO_x participates in more O_3 production cycles. At 100 ppb NO_x, OPE approaches zero, as the concentration of NO_2 is so large that the $OH + NO_2$ reaction occurs preferentially relative to propagation of the cycle.

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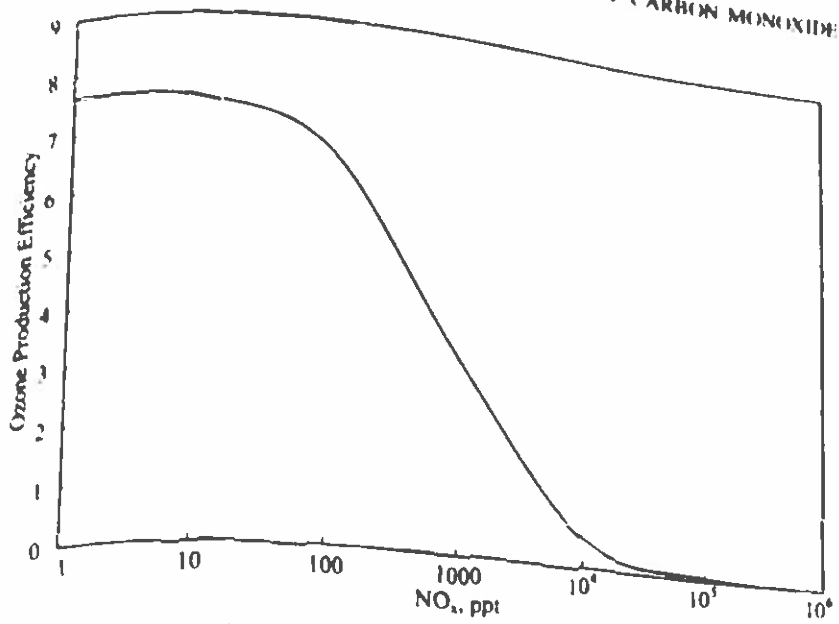

FIGURE 6.3 Ozone production efficiency (OPE) for atmospheric CO oxidation as a function of the NO_x ($NO + NO_2$) level. Conditions are 298 K at the Earth's surface, $P_{HO_x} = 1$ ppt s^{-1}, $[NO]/[NO_2] = 0.1$, and CO mixing ratio of 200 ppb.

Dependence of P_{O_3} on NO_x Abundance in CO Oxidation One of the key aspects of tropospheric chemistry is the dependence of ozone production on the NO_x abundance. We have derived relationships for P_{O_3} for the CO system in the limits of low and high NO_x. Here we examine how P_{O_3} depends on the NO_x abundance over the complete range of NO_x levels. To do this, we will fix the rate of HO_x production, P_{HO_x}, and vary the NO concentration at a fixed NO_2/NO ratio. Under conditions of high HO_2 radical abundance relative to NO_x, the primary chain-terminating reaction is the $HO_x + HO_x$ reaction, $HO_2 + HO_2$. This condition is referred to as *NO_x-limited*. At sufficiently high NO_x levels, chain termination results from the $HO_x + NO_x$ reaction, $OH + NO_2$. This condition is called *NO_x-saturated*. By varying the NO_x concentration, we can explore the point at which the system crosses over from NO_x-limited to NO_x-saturated conditions. The crossover point occurs at the NO concentration where $\partial P_{O_3}/\partial[NO] = 0$. The actual value of the NO concentration at this crossover point depends on the values of P_{HO_x} and the NO_2/NO ratio.

The calculation described above is presented by Thornton et al. (2002), in modeling ozone concentrations downwind of Nashville, Tennessee. For numerical values, assume 298 K at the Earth's surface, $[NO_2]/[NO] = 7$, and $P_{HO_x} = 0.1, 0.6,$ or 1.2 ppt s^{-1}. The NO_2/NO ratio of 7 approximates that at midday in a regional continental atmosphere. In order to avoid having to represent the detailed chemistry of the many hydrocarbon species present in such an atmosphere, Thornton et al. (2002) assumed that the ozone-forming characteristics of the airmass could be simulated as if all the hydrocarbons were replaced by CO at a mixing ratio of 4500 ppb. This is feasible because the atmospheric oxidation of CO exhibits most of the major chemical features of that of more complex organic molecules.

Figure 6.4 shows $[HO_2]$, P_{O_3}, and HHL and NHL as a function of [NO] from 10 to 2500 ppt. The behavior exhibited in Figure 6.4 is very basic to tropospheric

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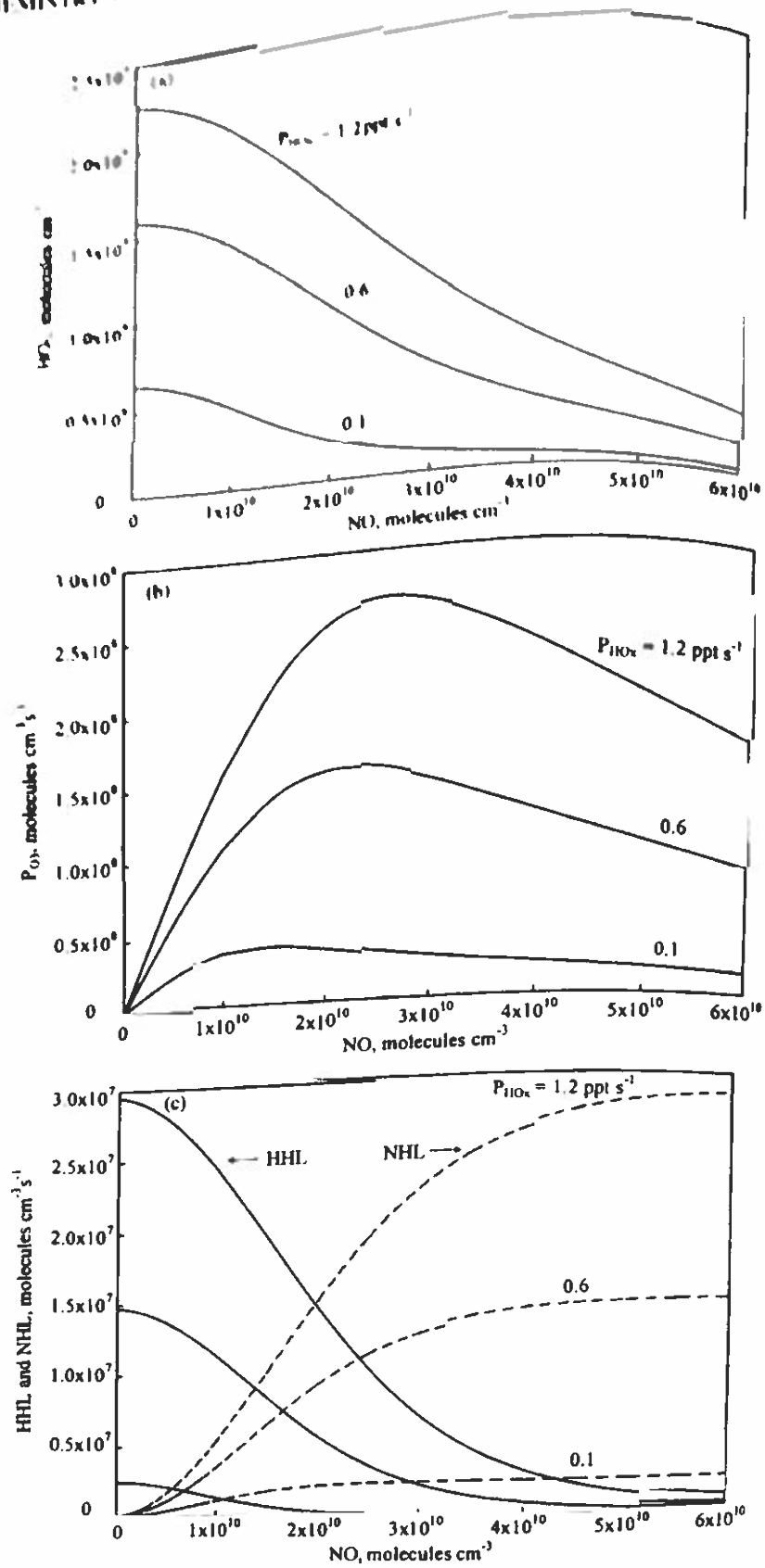


FIGURE 6.4 Characteristics of the atmospheric oxidation of CO as a function of NO_x level. Conditions are 298 K at the Earth's surface, $[NO_2]/[NO] = 7$; three values of P_{HO_x} (0.1, 0.6, and 1.2 ppt s^{-1}) are considered. A similar calculation has been presented by Thornton et al. (2002). (a) HO_2 concentration; (b) ozone production rate, P_{O_3}; (c) HHL and NHL [see (6.11) and (6.12)].

R000380

chemistry, and its ramifications will appear again and again. $[HO_2]$ decreases as $[NO]$ increases; this behavior is a result of the fact that as the overall NO_x level increases, the $OH + NO_2$ termination reaction becomes increasingly important, more effectively removing HO_x from the system. The O_3 production rate P_{O_3} achieves a maximum at a particular value of $[NO]$; the larger the value of P_{HO_x}, the larger the value of both P_{O_3} and $[NO]$ at the maximum. Panel (c) shows the HO_x and NO_x loss rates, HHL and NHL. HHL is at its maximum at low $[NO]$, where $[HO_2]$ is at its maximum. Likewise, NHL is largest at high $[NO]$, where $[NO_2]$ is at its maximum. As P_{HO_x} increases, $[HO_2]$ is larger at any given NO level. P_{O_3} attains a maximum reflecting the competition between decreasing HO_2 as NO increases and the NO increase itself. At higher P_{HO_x}, $[HO_2]$ will remain high for larger values of $[NO]$, thus shifting the maximum in P_{O_3}. The maximum in P_{O_3} occurs at a larger value of NO than that at which HHL = NHL. HHL depends on $[HO_2]^2$ versus $P_{O_3} \sim [HO_2]\,[NO]$. At any value of $[NO]$, HHL + NHL = P_{HO_x}. As $[NO]$ increases, HHL decreases with the square of $[HO_2]$, while the decrease of $[HO_2]$ is somewhat compensated for by the increase of $[NO]$ in P_{O_3}. As a result, the HHL/NHL crossover occurs at a smaller value of $[NO]$ than that at which P_{O_3} reaches its maximum.

6.3.4 Theoretical Maximum Yield of Ozone from CO Oxidation

The theoretical maximum yield of O_3 per CO + OH reaction would occur if NO_x concentrations were sufficiently high that every HO_2 radical reacts with NO rather than with itself and termination of the chain by the $OH + NO_2$ reaction were neglected. The resulting mechanism would be

$$\begin{aligned} CO + OH &\xrightarrow{O_2} CO_2 + HO_2 \\ HO_2 + NO &\longrightarrow NO_2 + OH \\ NO_2 + h\nu &\xrightarrow{O_2} NO + O_3 \\ \hline \text{Net: } CO + 2O_2 + h\nu &\longrightarrow CO_2 + O_3 \end{aligned}$$

While it is informative to see that one O_3 molecule could theoretically result from each CO + OH reaction, this condition can never be achieved. If NO_x levels are sufficiently high to keep HO_2 from reacting with itself, they are also sufficiently high so that some NO_2 must react with OH to form HNO_3, thereby terminating the chain reaction.

6.4 ATMOSPHERIC CHEMISTRY OF METHANE

The principal oxidation reaction of methane, CH_4, is with the hydroxyl radical:

$$CH_4 + OH \xrightarrow{1} CH_3 + H_2O \qquad \text{(reaction 1)}$$

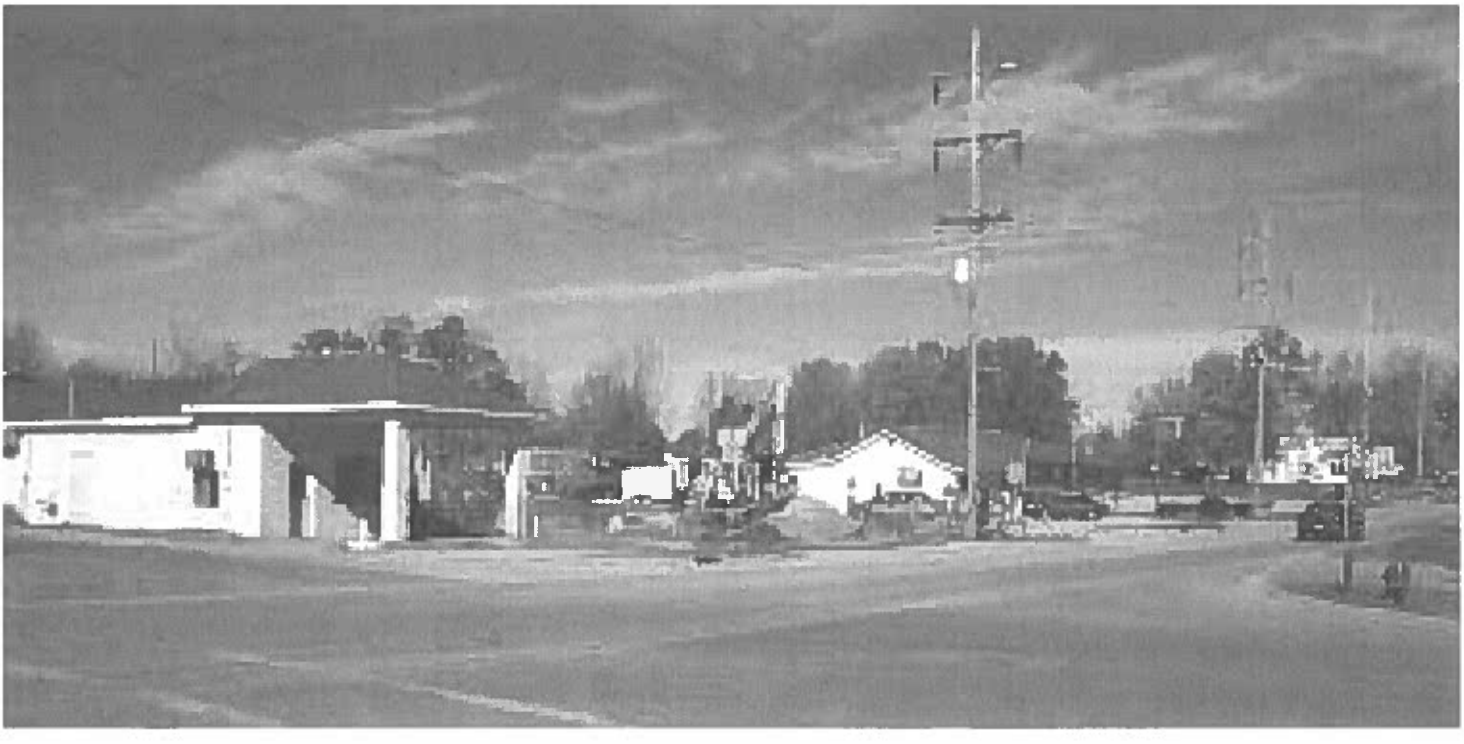
As in the case of the hydrogen atom, the methyl radical, CH_3, reacts virtually instantaneously with O_2 to yield the methyl peroxy radical, CH_3O_2

$$CH_3 + O_2 + M \longrightarrow CH_3O_2 + M$$

Illinois' Underground Storage Tank Fund Guide

The Underground Storage Tank (UST) Fund helps tank owners and operators pay for cleaning up leaks from petroleum USTs. By doing so, the UST Fund also satisfies the federal financial assurance requirements for all Illinois tank owners and operators. Since its inception in 1989, the UST Fund has paid more than $800 million. Illinois generates money for the UST Fund through a $0.003 per-gallon motor fuel tax and an $0.008 per-gallon environmental impact fee, both of which are due to expire in 2025.

Two state agencies share administration of the UST Fund. The Illinois Office of the State Fire Marshal (OSFM) determines if an UST owner or operator is eligible for payment from the UST Fund and determines the deductible amount to be paid by the owner or operator. The Illinois Environmental Protection Agency (Illinois EPA) reviews budgets and payment requests for corrective action to determine if the costs are reasonable, eligible, and consistent with the associated technical plan. The Illinois EPA also prepares and processes vouchers for payment claims. Two other state agencies are involved in the financial aspect of the UST Fund; the Illinois Department of Revenue collects the motor fuel tax and environmental impact fee, and the Office of the Comptroller issues the checks once Illinois EPA has prepared and processed a voucher for payment claims.



A leaking UST site during remediation

Three sets of laws and regulations affect the payment of costs related to a tank release:

Sections 22.18, 22.18a, 22.18b, and 22.18c of the Environmental Protection Act (Act) and **35 Illinois Administrative Code (35 Ill. Adm. Code) 731**, referred to as Old Law or Part 731, apply to owners and operators of USTs that contain petroleum who reported a release before September 13, 1993, and have not elected to proceed under Title XVI of the Act. Part 731 also applies to releases of regulated non-petroleum substances, regardless of when they were reported.

Title XVI of the Act as effective prior to June 24, 2002, and **35 Ill. Adm. Code 732**, referred to as Part 732, apply to tank owners and operators of USTs who reported a release of petroleum on or after September 13, 1993, and before June 24, 2002, or who elected to proceed under Title XVI of the Act before June 24, 2002.

Title XVI of the Act as amended by **Public Act 92-0554** and **35 Ill. Adm. Code 734**,referred to as Part 734, apply to tank owners and operators of USTs who reported a release of petroleum on or after June 24, 2002, or who elected to proceed under Title XVI of the Act on or after June 24, 2002.

The payment request process differs according to whether the leaking UST site is subject to Part 731, Part 732, or Part 734.

What are the eligibility requirements for accessing the UST Fund?

1. Costs incurred for corrective action must result from the confirmed UST release of:
   - Fuel as defined in Section 1.19 of the **Motor Fuel Tax Law**
   - Aviation fuel
   - Heating oil
   - Kerosene
   - Used oil that has been refined from crude oil used in a motor vehicle, as defined in Section 1.3 of the Motor Fuel Tax Law.
2. The UST owner or operator cannot be the United States Government.
3. The owner or operator cannot be exempt from the per-gallon tax as established by the amended Motor Fuel Tax Law. Those exempt include airports with more than 300,000 operations per year located in a city of more than 1,000,000 inhabitants (O'Hare International Airport and Midway Airport in Chicago); and rail carriers registered pursuant to Section 18c-7201 of the Illinois Vehicle Code.
4. The owner or operator must have registered the tank with the OSFM and have paid all required fees.
5. The UST must not have been taken out of service prior to January 1, 1974.
6. The UST must not be classified as a farm or residential heating oil tank.
7. Effective January 1, 2006, **Public Act 94-0274** amended the definition of "owner" at Section 57.2 of the Act. It expanded the definition to include any person who has submitted to the Illinois EPA a written election to proceed under Title XVI of the Act and has acquired an ownership interest in a site on which one or more registered tanks have been removed, but on which corrective action has not yet resulted in the issuance of a No Further Remediation Letter by the Illinois EPA pursuant to Title XVI of the Act. The buyer of a property with a reported release may become the tank owner for the purpose of remediating the site and accessing the UST Fund, provided the OSFM eligibility criteria are met. More information about this law is in the new "owner" law **fact sheet**.

What are the deductibles?

and the owner or operator has been determined eligible to access the UST Fund, the UST owner or operator may access the UST Fund for eligible corrective action costs after the application of a **$5,000** deductible.

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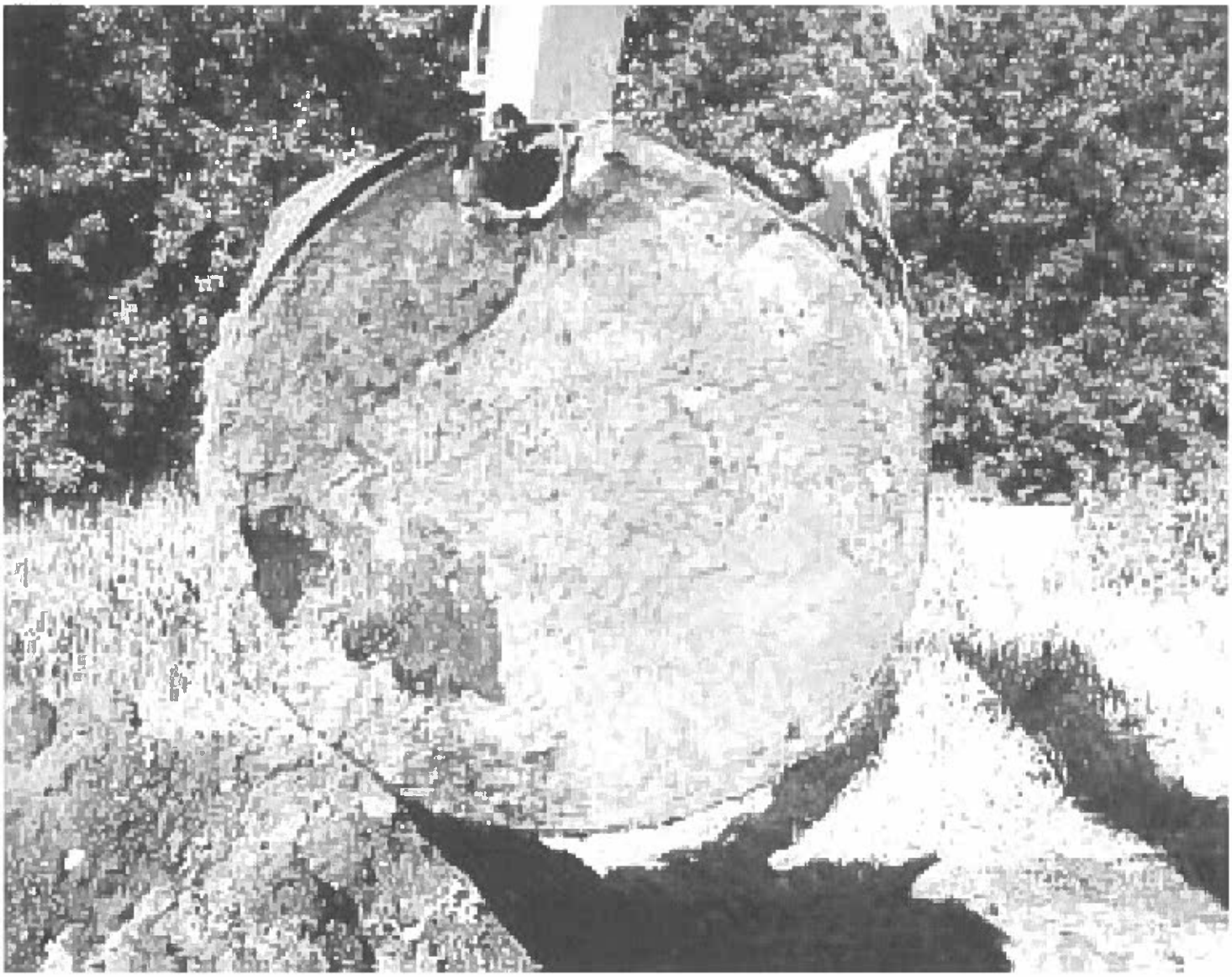
If a release of petroleum from an underground storage tank was reported *prior to June 8, 2010* and the owner or operator has been determined eligible to access the UST Fund, the UST owner or operator may access the UST Fund for eligible corrective action costs after the application of a **$10,000** deductible, except in the following situations:

1. A deductible of **$15,000** shall apply if one or more, but not all, of the USTs were registered prior to July 28, 1989, and the State received notice of the confirmed release on or after July 28, 1989.
2. A deductible of **$50,000** shall apply if any of the USTs were registered prior to July 28, 1989, and the State received notice of the confirmed release prior to July 28, 1989.
3. A deductible of **$100,000** shall apply if none of the USTs were registered prior to July 28, 1989 (except in cases where the tanks were not registered prior to July 1, 1992, and are used to store heating oil for consumptive use only on premises other than a farm or residential unit).

Eligible costs

Costs requested for payment from the UST Fund must also meet eligibility requirements. Eligible costs are those that:

1. Were incurred after the owner or operator notified the Illinois Emergency Management Agency (IEMA) of a confirmed UST release;
2. Resulted from a release of petroleum;
3. Are associated with corrective action activities and for materials or services provided or performed in conjunction with corrective action activities;
4. Are reasonable and are for corrective action activities that do not exceed the minimum requirements of the Act and regulations; and
5. Have not already been paid to the owner or operator under a private insurance policy, other written agreement, or court order.



Removing a leaking UST

Pay careful attention to the guidelines below to help ensure more timely review and processing of your payment requests.

What is the application for payment request process for Old Law (Part 731) sites?

Two sets of forms will need to be completed:

1. The **Eligibility and Deductible Application**, which is available from the OSFM. Return the completed application to the OSFM. The OSFM determines tank owner or operator eligibility and the appropriate deductible amount, and returns a decision to the tank owner

submitted to Illinois EPA for payment from the UST Fund.

2. **Billing forms**, which are available on the Illinois EPA's Web site. Make sure that the billing forms are complete and have the appropriate signatures and seals. General guidance regarding the completion of the billing forms is as follows:

1. All technical reports must be submitted prior to receiving payment, and corrective action costs must be reasonable. Implementation of corrective action activities may proceed without Illinois EPA approval; technical adequacy of the work conducted will be evaluated upon completion of corrective action activities.
2. The application for payment must be accompanied by a certification from an Illinois-registered Licensed Professional Engineer (L.P.E.) or Licensed Professional Geologist (L.P.G.), who certifies that the work billed was performed. This certification must be on an Illinois EPA form and have the L.P.E.'s or L.P.G.'s original signature and seal affixed.
3. For costs incurred between July 28, 1989, and September 1992, proof of payment of all costs is required. Proof of payment is defined as a copy of the front and back of each canceled check.
4. For costs incurred between September 1992 and September 1993, proof of payment of the deductible amount only is required. Proof of payment is defined as a copy of the front and back of each canceled check.
5. For costs incurred after September 1993, the Illinois EPA will deduct the amount of the deductible from the first payment. Proof of payment of the deductible amount is suggested but not required. Proof of payment is defined as a copy of the front and back of each canceled check.
6. Landfill tickets or invoices should be included to document the amount of contaminated soil removed and accepted at the landfill, if applicable.
7. The owner or operator must include an original and notarized Private Insurance Affidavit with the first submittal.
8. The application for payment must contain a completed Federal Taxpayer Identification Number and Legal Status Disclosure Certification with the first submittal.
9. Each application for payment must contain an original signed and notarized Owner/Operator and Licensed Professional Engineer/Geologist Billing Certification Form, which includes a perjury statement.
10. The Women and Minority Business Enterprises Form must be submitted.
11. The following costs are generally not payable under a Part 731 cleanup:

- OSFM prior to notifying IEMA of a release);
- Work performed prior to IEMA notification;

- OSFM permit charges;
- Concrete and asphalt replacement costs;
- Insurance charges billed as direct costs;
- Interest and finance charges;
- Attorney fees;
- Mathematical errors;
- Costs associated with seeking reimbursement;
- UST system upgrading costs;
- Costs or losses resulting from business interruption;
- Costs that lack supporting documentation.

What is the payment request process for Part 732 and Part 734 sites?

1. Perform early action activities and submit the 20-Day Certification and 45-Day Report to the Illinois EPA. No budget is required for these activities, but costs must be reasonable, eligible, and associated with activities pursuant to Section 57.6 of the Act and 35 Ill. Adm. Code 732.202 or 734.210. A request for payment may be submitted after early action activities are completed.

Cleaning an underground storage tank

1. Request the **Eligibility and Deductible Application from** the OSFM. Complete this application and return it to the OSFM. The OSFM determines tank owner or operator eligibility and the appropriate deductible amount, and returns a decision to the tank owner or operator. **A copy of this letter from OSFM must be included with all budgets and applications submitted to Illinois EPA for payment from the UST Fund.**

2. Obtain the **budget and billing forms** from the Illinois EPA Web site.

3. Request payment of costs by submitting the Federal Taxpayer Identification Number and Legal Status Disclosure Certification, Illinois EPA standard billing forms, the Owner/Operator and Licensed Professional Engineer/Geologist Billing Certification Form, Private Insurance Coverage Questionnaire, Private Insurance Affidavit, and Women and Minority Business Enterprises Form. Illinois EPA approval of the payment requested cannot

4. **For sites subject to Part 732**, payment of costs associated with site classification may be requested following approval or modification of a site classification work plan, budget, and completion report. Payment of costs associated with low priority corrective action or high priority corrective action may be requested following approval or modification of a low or high priority corrective action plan and budget.

5. **For sites subject to Part 734**, payment of costs associated with site investigation may be requested upon completion of each site investigation stage and following approval or modification of a site investigation plan and budget or the site investigation completion report, whichever is applicable. Actual costs of work performed must be submitted prior to approval of payment from the UST Fund. Payment of costs associated with corrective action may be requested following approval or modification of a corrective action plan and budget.

6. **For sites subject to Part 732 or 734**, effective March 1, 2006, costs associated with on-site corrective action to achieve remediation objectives that are more stringent than site-specific Tier 2 remediation objectives are ineligible for payment from the UST Fund. Likewise, if an Illinois EPA-approved groundwater ordinance exists and can be used as an institutional control for the release being remediated, costs associated with groundwater remediation are ineligible for payment from the UST Fund (35 Ill. Adm. Code 732.408, 732.606(ddd), and 732.606(eee); 734.410, 734.630(aaa), and 734.630(bbb)).

Where to Direct Your UST and Leaking UST Questions

If you have questions concerning permits required for tank installations, upgrades or removals; leak prevention or detection requirements; financial responsibility requirements; or eligibility and deductible determinations for the UST Fund, contact:

Office of the State Fire Marshal

Division of Petroleum and Chemical Safety
1035 Stevenson Drive
Springfield, Illinois 62703
217-785-1020

Office of the State Fire Marshal

If you have questions concerning the review of budget plans and technical reports, or the status of applications for payment from the UST Fund, contact:

Illinois Environmental Protection Agency

Leaking Underground Storage Tank Section

P.O. Box 19276
Springfield, Illinois 62794-9276
217-524-3300

This publication is for general information only and is not intended to replace, interpret, or modify laws, rules, or regulations.

Frequently Asked Questions about Leaking USTs

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1. Q. Where do the Leaking Underground Storage Tank (UST) Program requirements originate?

2. Q. What is the definition of an UST?

3. Q. I reported a release from my farm UST to the Illinois Emergency Management Agency (IEMA). Is my UST regulated by the Illinois EPA's Leaking UST Program?

4. Q. Is my residential heating oil tank regulated by the Illinois EPA's Leaking UST Program?

5. Q. My heating oil UST is used to store heating oil for resale. Is it regulated by the Illinois EPA's Leaking UST Program?

6. Q. If there is a release from my 100-gallon UST, am I required to follow the Leaking UST Program regulations?

7. Q. I have an aboveground storage tank (AST) on my property. Is it regulated by the Illinois EPA's Leaking UST Program?

8. Q. My UST was taken out of operation sometime before 1974. Is it regulated by the Illinois EPA's Leaking UST Program?

9. Q. What are early action activities?

10. Q. What should I do if I need to remove free product beyond 45 days of discovery of free product?

11. Q. What is site classification?

12. Q. What is site investigation?

13. Q. What is the liability associated with my UST release, regardless of the applicable Leaking UST Programs regulation?

14. Q. If my UST release is not regulated by the Leaking UST Program, can I still get help from the Illinois EPA?

15. Q. Do I have to use the services of an Illinois EPA-approved consultant?

16. Q. Do I have to use the Illinois EPA Budget and Billing Forms?

17. Q. What early action activities are payable from the UST Fund?

18. Q. Why is my application for payment being returned?

UST Fund?

20. Q. If I do not own the UST, can I access the UST Fund?

21. Q. Who reviews applications for payment from the UST Fund?

22. Q. How do I find out the status of my application for payment?

23. Where to Direct Your UST and Leaking UST Questions

1. Q. Where do the Leaking Underground Storage Tank (UST) Program requirements originate?

A. Illinois' environmental laws and regulations governing leaking USTs are found in:

Sample collection using direct push technology

1. Environmental Protection Act (Act), Title XVI, Petroleum Underground Storage Tanks; and

2. Title 35, Illinois Administrative Code (35 Ill. Adm. Code), Subtitle G, Part 731, Underground Storage Tanks; Part 732, Petroleum Underground Storage Tanks; and Part 734, Petroleum Underground Storage Tanks.

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2. Q. What is the definition of an UST?

A. An UST includes the tank, all piping and any part of an UST system that contains a regulated substance. By definition, any system having ten percent or more of the total tank volume below ground is considered to be an UST.

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3. Q. I reported a release from my farm UST to the Illinois Emergency Management Agency (IEMA). Is my UST regulated by the Illinois EPA's Leaking UST Program?

A. Yes, if your farm UST has a capacity of more than 1,100 gallons and contains petroleum (other than heating oil) or a hazardous substance. (See the question and answer below for information regarding heating oil tanks.) A farm UST must be located on land devoted to producing crops or raising livestock or fish; this land can include associated residences and structures.

A farm or residential tank of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes is exempt from the requirements of 35 Ill. Adm. Code 731, 732, and 734.

Soil core sampling

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4. Q. Is my residential heating oil tank regulated by the Illinois EPA's Leaking UST Program?

A. No, residential and farm heating oil tanks (that is, tanks used to store heating oil for consumptive use on the premises where stored and which serve a farm or residential unit) are not, by definition, USTs and, therefore, are not subject to the Leaking UST Program regulations.

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5. Q. My heating oil UST is used to store heating oil for resale. Is it regulated by the Illinois EPA's Leaking UST Program?

manufacturing process has the option to elect to proceed in accordance with Leaking UST Program regulations—so long as an order for removal and, if necessary, site investigation and corrective action has not been issued by the OSFM. Submittal of a **Heating Oil Underground Storage Tank Election** form is required.

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6. Q. If there is a release from my 100-gallon UST, am I required to follow the Leaking UST Program regulations?

A. No, any UST system whose capacity is 110 gallons or less is excluded from the Leaking UST Program requirements.

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7. Q. I have an aboveground storage tank (AST) on my property. Is it regulated by the Illinois EPA's Leaking UST Program?

A. No, ASTs are exempt from the Leaking UST Program requirements. The Office of the State Fire Marshal's (OSFM) Division of Fire Prevention regulates the operation and maintenance of ASTs.

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8. Q. My UST was taken out of operation sometime before 1974. Is it regulated by the Illinois EPA's Leaking UST Program?

A. Yes, the petroleum UST regulations apply to the release. However, the tank owner or operator may submit **Election to Proceed under 35 Ill. Adm. Code 734** and **Pre-1974 UST Notification** forms to notify the Illinois EPA that the release was from a **pre-1974 tank**and that an order for removal has not been issued by the OSFM. The owner or operator can then decide whether to perform corrective action under the Leaking UST Program regulations. Releases from USTs taken out of operation before January 2, 1974, are not subject to mandatory corrective action under the Leaking UST Program unless the OSFM issues an order for removal and, if necessary, site investigation and corrective action. Please note that the costs to remediate contamination from a release from a pre-1974 tank are not eligible for payment from the UST Fund.

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9. Q. What are early action activities?

A. After the release is reported to the IEMA, the tank owner or operator may conduct certain activities before submitting any plans or budgets to the Illinois EPA's Leaking UST Section. These early action activities include:

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- Preparation of the 20-Day Certification and 45-Day Report;
- Vapor abatement;
- Free product removal and preparation of the Free Product Removal Report;
- Unplanned UST removal or abandonment if the activity is in response to a tank release;
- The removal of up to four feet of visibly contaminated fill material and any groundwater in the excavation that exhibits a sheen;
- The disposal or ex-situ treatment of up to four feet of visibly contaminated fill material; and
- The collection and analysis of samples from the excavation limits (after removal of visibly contaminated fill material or after removal of the UST) or from areas surrounding the UST systems (if the system remains in place) to measure for the presence of a release.

For purposes of payment from the UST Fund, these activities must be completed within 45 days after initial notification to IEMA of a release plus 14 days. To obtain an extension, you must submit a request to the Illinois EPA in writing within the 45 days plus 14 days time frame.

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10. Q. What should I do if I need to remove free product beyond 45 days of discovery of free product?

A. Owners and operators may remove free product for up to 45 days after discovery without the requirement for an approved plan or budget. These activities are paid as an early action activity. If, within 45 days of discovery, free product is not reduced to one-eighth of an inch or less, the owner or operator must submit a free product removal plan and budget for additional recovery activities. Costs will be paid under the approved free product removal budget. Free product removal reports must be submitted quarterly.

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11. Q. What is site classification?

A. Site classification determines what, if any, additional corrective action is needed in response to the UST release after early action is completed. Site classification is required only of incidents

Methods One and Two classify the site into one of the following categories:

- No Further Action (in which no additional remediation is required after site classification is completed);
- Low Priority (in which three years of groundwater monitoring are required after site classification is completed); or
- High Priority (which requires additional corrective action, such as soil remediation, after site classification is completed).

Methods One and Two take into account the following site characteristics: geology, presence of groundwater contamination, potable wells in the area, Class III groundwater in the area, whether any surface bodies of water have been impacted by the release, and migration pathways. Methods One and Two generally require the advancement of one or more soil borings and may require the installation of monitoring wells for a groundwater investigation.

A third method, Classification by Exposure Pathway Exclusion, is based on 35 Ill. Adm. Code 742—Tiered Approach to Corrective Action Objectives (TACO). This method involves evaluation of the following TACO exposure routes (pathways): inhalation, soil ingestion, and groundwater ingestion. Initially, the contaminant levels at the site are compared with TACO Tier 1 remediation objectives for each specific exposure route. If any of the contaminant levels exceeds the TACO Tier 1 remediation objectives, it is necessary to determine if the specific route can be excluded from consideration. Defining the extent of soil and groundwater contamination is part of Classification by Exposure Pathway Exclusion.

Classification by Exposure Pathway Exclusion classifies sites as either:

- No Further Action (no additional remediation is required after site classification is completed), or
- High Priority (where additional corrective action in accordance with TACO would be required, such as soil removal or the placement of an engineered barrier, after site classification is completed).

This third method of classification was available to tank owners or operators who made the election prior to March 1, 2006. Owners or operators who wish to classify by this method must elect to proceed in accordance with 35 Ill. Adm. Code 734 and perform site investigation and corrective action in accordance with Part 734.

Installing a monitoring well

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12. Q. What is site investigation?

A. A site investigation, required only of incidents subject to 35 Ill. Adm. Code 734, is designed to determine the nature, concentration, direction of movement, rate of movement, and extent of contamination exceeding the most stringent TACO Tier 1 remediation objectives in the soil and groundwater. Generally, this requires the drilling of soil borings to collect soil samples and the installation of monitoring wells to collect groundwater samples from the subsurface.

Site investigation proceeds in three stages—Stages 1 and 2 to define the extent of contamination on-site and Stage 3 to define the extent of contamination off-site. If, after completion of any stage, the extent of contamination has been defined, the UST owner or operator must submit to the Illinois EPA for approval a site investigation completion report.

An UST owner or operator intending to seek payment from the UST Fund for site investigation activities must submit to the Illinois EPA for approval a site investigation budget with the corresponding plan. In order to receive payment from the Fund, actual costs of the previous stage of site investigation activities must be submitted with the subsequent plan or report.

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13. Q. What is the liability associated with my UST release, regardless of the applicable Leaking UST Programs regulation?

A. Any UST release is cause for concern. The environmental contamination caused by the leaking tank may subject you to other provisions of the Act. Furthermore, you may be liable for third-party lawsuits should a release from your tank harm human health or the environment. For more information about liability issues, see the fact sheet entitled " **Responsibility and Liability Issues**."

14. Q. If my UST release is not regulated by the Leaking UST Program, can I still get help from the Illinois EPA?

A. Yes. For a fee, you may voluntarily participate in the Site Remediation Program (SRP). Successful participation in this program will assure compliance with all applicable regulations and provide you with a No Further Remediation Letter upon completion of evaluation or cleanup activities. For more information, call 217-524-3300 or see the **SRP's Web page**.

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15. Q. Do I have to use the services of an Illinois EPA-approved consultant?

A. No. The Illinois EPA does not maintain a list of approved consultants. It should be noted that, in the Leaking UST Program, a Licensed Professional Engineer or a Licensed Professional Geologist registered in the State of Illinois must certify all reports, budgets, and applications for payment. However, only a Licensed Professional Engineer may certify the Corrective Action Completion Report.

When choosing a consultant, evaluate the consulting firm's qualifications, including but not limited to:

1. Experience and capability;
2. Willingness to explain leaking UST site cleanup options so owners and operators can make informed decisions;
3. Project timetable; and
4. Price.

The owner or operator of the UST should stay involved throughout the process, keep accurate records, save vouchers and invoices, and monitor all costs.

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16. Q. Do I have to use the Illinois EPA Budget and Billing Forms?

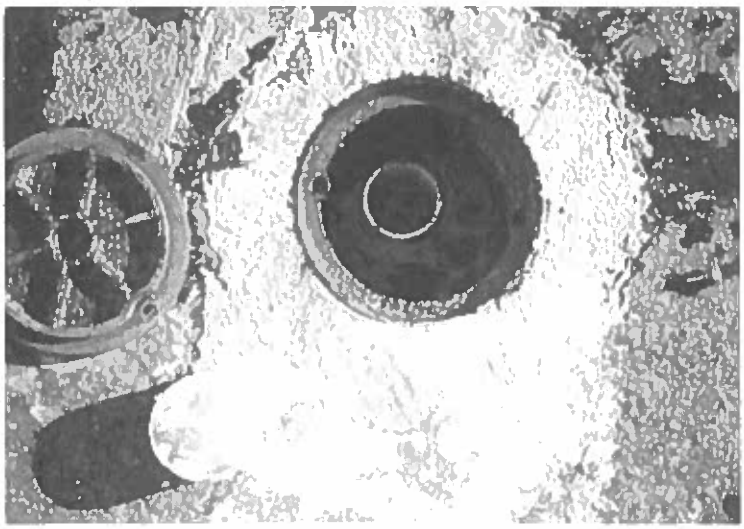
A. Yes. Illinois EPA **budget and billing forms** must be used. For assistance in completing the forms, follow the general and supplemental instructions.

17. Q. What early action activities are payable from the UST Fund?

A. The Illinois EPA reviews applications for payment from the UST Fund on a site-specific basis. However, the following activities are generally payable from the UST Fund if the costs are incurred within 45 days after initial notification to IEMA of a release plus 14 days and if the costs are reasonable and justified.

1. Costs associated with preparation of the 20-Day Certification and 45-Day Report;
2. Costs associated with vapor abatement;
3. Costs associated with free product removal and preparation of the Free Product Removal Report;
4. Costs for unplanned UST removal or abandonment if the activity is in response to a release;
5. Costs associated with the removal of up to four feet of visibly contaminated fill material and any groundwater in the excavation that exhibits a sheen;
6. Costs associated with the disposal or ex-situ treatment of up to four feet of visibly contaminated fill material; and
7. Costs associated with collection and analysis of samples from the excavation limits (after removal of visibly contaminated fill material or after removal of the UST) or from areas surrounding the UST systems (if the system remains in place). Sample analysis is limited to the indicator contaminants outlined in 35 Ill. Adm. Code 732.310 or 734.405.

Budgets are not required for early action activities. For purposes of payment from the UST Fund, these activities must be completed within 45 days after initial notification to IEMA of a release plus 14 days. To request an extension, you must submit it to the Illinois EPA in writing within the 45 days plus 14 days time frame.



18. Q. Why is my application for payment being returned?

A. Your application for payment may be incomplete. The following elements are needed for a payment request from a site subject to 35 Ill. Adm. Code 732 or 734:

1. Invoices and documentation in support of the claim;
2. A certification from a Licensed Professional Engineer or a Licensed Professional Geologist acknowledged by the owner or operator that the work performed has been in accordance with a technical plan approved by the Illinois EPA;
3. A statement of the amount approved in the corresponding budget and the amount actually requested for payment along with a certified statement by the owner or operator that the amount requested has been used according to the budget plan approved by the Illinois EPA;
4. A copy of the Illinois OSFM or Illinois EPA eligibility and deductible determination;
5. Proof that approval of the payment requested will not exceed the limitations set forth in 35 Ill. Adm. Code 732.604(a) and (b)(1) for sites subject to Part 732 or 734.620(a) and (b)(1) for sites subject to Part 734;
6. A Federal Taxpayer Identification Number and Legal Status Disclosure Certification;
7. A Private Insurance Coverage Questionnaire and Affidavit; and
8. A Women and Minority Business Enterprises form.

If your request for payment is returned, the Illinois EPA will send you a letter that details what information is missing.

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19. Q. Are costs for obtaining institutional controls or engineered barriers payable from the UST Fund?

A. Costs associated with obtaining an institutional control are payable from the UST Fund provided the institutional control is part of the approved corrective action plan and budget for the tank release and the costs are reasonable and justified. An institutional control is a legal mechanism for imposing a restriction on land use, such as a restriction to industrial/commercial land use.

engineered barrier is part of the approved corrective action plan and budget for the tank release and the costs are reasonable and justified. An engineered barrier limits exposure to or controls the migration of contaminants of concern. For instance, a barrier of asphalt paving can prevent the ingestion of contaminated soil.

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20. Q. If I do not own the UST, can I access the UST Fund?

A. Only the owner or operator of an UST can access the UST Fund. The OSFM registers an UST to its owner or operator, and UST registration is a requirement of UST Fund eligibility.

If the UST is still in the ground on a property you already own or intend to purchase, contact the OSFM to determine if you meet the eligibility requirements for the UST Fund. Be prepared to tell the OSFM if the UST is still in operation or provide the date the UST was taken out of service.

If an UST with a reported release was removed from the property, a future property owner may become the tank owner and access the UST Fund for cleanup of contamination caused by the removed UST—provided the OSFM eligibility criteria are met. Before submitting the **Election to Proceed as "Owner"** form, you should contact the OSFM to gather information about UST registration, eligibility to access the UST Fund, and the deductible amount.

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21. Q. Who reviews applications for payment from the UST Fund?

A. The Illinois EPA's Leaking UST Claims Unit reviews claims to determine eligible costs in accordance with environmental laws and regulations. Leaking UST Section project managers review the budgets for site classification, site investigation, and corrective action plans.

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22. Q. How do I find out the status of my application for payment?

A. Please contact the Illinois EPA's Leaking UST Claims Unit at 1-217-524-3300 to learn the status of your payment claim.

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23. Where to Direct Your UST and Leaking UST Questions

If you have questions concerning permits required for tank installations, upgrades or removals; leak prevention or detection requirements; financial responsibility requirements; or eligibility and deductible determinations for the UST Fund, contact:

R080402

Office of the State Fire Marshal

Division of Petroleum and Chemical Safety
1035 Stevenson Drive
Springfield, Illinois 62703
217-785-1020
www.state.il.us/osfm/PetroChemSaf/home.htm

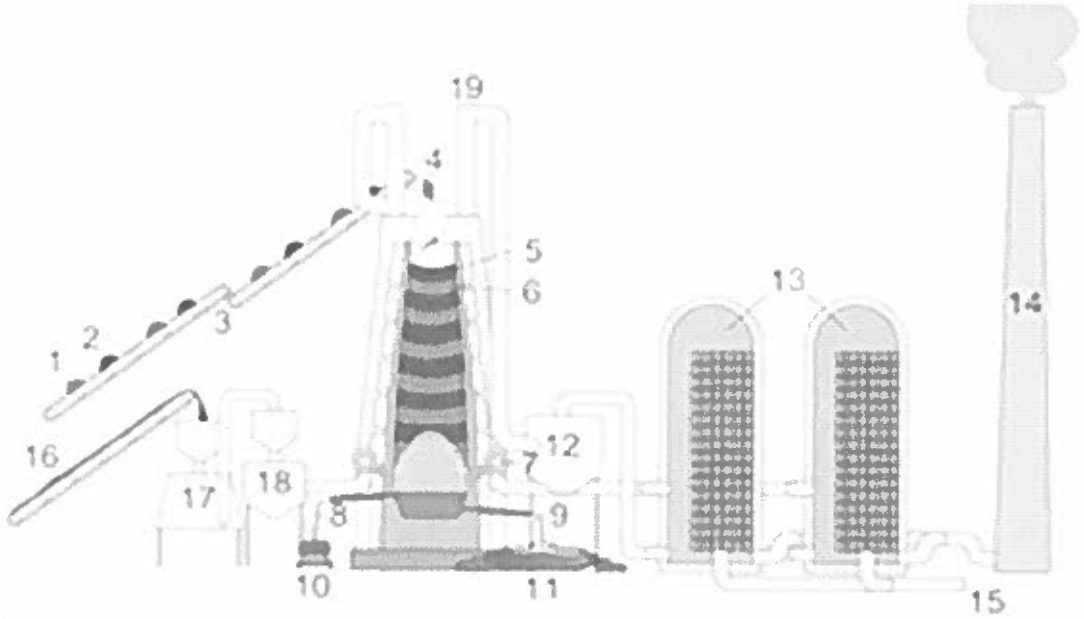
If you have questions concerning the review of budget plans and technical reports, or the status of applications for payment from the UST Fund, contact:

Illinois Environmental Protection Agency

Leaking Underground Storage Tank Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
217-524-3300

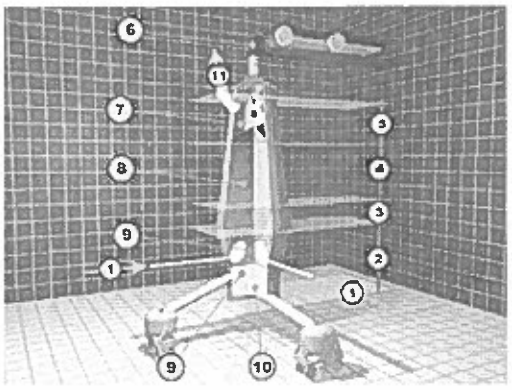
This publication is for general information only and is not intended to replace, interpret, or modify laws, rules, or regulations.

Modern process[edit]



Blast furnace placed in an installation

1. Iron ore + limestone sinter
2. Coke
3. Elevator
4. Feedstock inlet
5. Layer of coke
6. Layer of sinter pellets of ore and limestone
7. Hot blast (around 1200 °C)
8. Removal of slag
9. Tapping of molten pig iron
10. Slag pot
11. Torpedo car for pig iron
12. Dust cyclone for separation of solid particles
13. Cowper stoves for hot blast
14. Smoke outlet (can be redirected to carbon capture & storage (CCS) tank)
15: Feed air for Cowper stoves (air pre-heaters)
16. Powdered coal
17. Coke oven
18. Coke
19. Blast furnace gas downcomer



Blast furnace diagram

1. Hot blast from Cowper stoves
2. Melting zone (*bosh*)
3. Reduction zone of ferrous oxide (*barrel*)
4. Reduction zone of ferric oxide (*stack*)
5. Pre-heating zone (*throat*)
6. Feed of ore, limestone, and coke
7. Exhaust gases
8. Column of ore, coke and limestone
9. Removal of slag
10. Tapping of molten pig iron
11. Collection of waste gases

ILLINOIS POLLUTION CONTROL BOARD
February 4, 1993

CHEMREX, INCORPORATED,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 92-123
	)	(Underground Storage Tank
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	Fund Determination)
	)	
Respondent.	)	

TODD R. WIENER APPEARED ON BEHALF OF PETITIONER, AND

JAMES G. RICHARDSON APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by J. Anderson):

This matter is before the Board on a petition for review filed by Chemrex Incorporated (Chemrex) on August 31, 1992. Chemrex requests that the Board review the Illinois Environmental Protection Agency's (Agency) July 27, 1992 underground storage tank (UST) reimbursement determination. The Agency determined that five out of six of Chemrex's USTs were ineligible to access the State Fund (Fund) because they "...contained fuels that are exempt from Section 2a of the Motor Fuel Tax Law, according to Section 22.18b(a)(2), and 22.18b(a)(5) of the Illinois Environmental Protection Act." The Agency also determined that a $100,000 rather than a $15,000 deductible applied to the remaining UST because the UST was not registered with the State Fire Marshal prior to July 28, 1989.

On September 3, 1992, the Board determined that the Agency's decision was final as to the USTs deemed ineligible for the Fund and that Chemrex had properly filed a timely appeal of the Agency's denial of eligibility as to those USTs. The Board also determined that the deductible amount applied to the remaining UST, and appealed by Chemrex in its petition for review, was not ripe for review. Reichhold Chemical v. IEPA (July 9, 1992), PCB 92-98; Village of Lincolnwood v. IEPA (June 4, 1992), PCB 91-83, 133 PCB 33; Ideal Heating Co. v. IEPA (January 23, 1992), PCB 91-253. Accordingly, that issue is not before us at this time.

On October 26, 1992, hearing was held in this matter in Chicago, Cook County, Illinois. No members of the public were present at hearing. Chemrex and the Agency filed their post-hearing briefs on December 31, 1992.

The Board affirms the Agency's July 27, 1992 eligibility determination regarding Chemrex's five USTs.

BACKGROUND

At hearing the parties entered into a joint stipulation of facts. (Tr. 5-8; Joint Ex. 1.)

Chemrex owns property at 415 East 16th Street, Chicago Heights, Illinois. (Joint Ex. 1 par. 1; Pet. Br. Ex. A par. 1.) Chemrex had eight USTs on the property, all of which were registered with the State Fire Marshal. (Joint Ex. 1 par. 1; Pet. Br. Ex. A par. 1; Pet. Ex. B.) The eight USTs consisted of one gasoline UST, five unused, nonhazardous solvent USTs (i.e., three USTs containing virgin mineral spirits and two USTs containing virgin solvent naphtha [petroleum] light aromatic), and two xylene USTs. (Joint Ex. 1 par. 2; Pet. Br. Ex. A par. 2.)

On March 15, April 2, and April 3, 1991, Chemrex discovered and reported releases from the USTs to the Illinois Emergency Services and Disaster Agency (ESDA).[1] (Joint Ex. 1 par. 1; Pet. Br. Ex. A par. 1.) During the spring and summer of 1991, Chemrex performed remediation work at the site. In compliance with the Agency's Guidance Manual, Chemrex submitted a "22-Day Report", a "45-Day Product Action Report", and "Leaking Underground Storage Tank Investigation Plan and Health and Safety Plan" (Work Plan) to the Agency on April 22, 1991, May 16, 1991, and on June 21, 1992, respectively. (Joint Ex. 1 pars. 5, 6, 7 - Exs. B, C, D; Pet. Br. Ex. A pars. 5, 6, 7 - Exs. B, C, D.)

On October 4, 1991, Chemrex filed its application for reimbursement for remediation costs for the six USTs containing gasoline and unused solvents. (Joint Ex. 1 par. 8; Pet. Br. Ex. A par. 8; Agency Rec. 1-5.) On October 28, 1991, the Agency returned Chemrex's reimbursement application for incompleteness. (Pet. Ex. D; Agency Rec. 7-8.) Chemrex resubmitted its application on March 11, 1992. (Agency Rec. 9-10, 11-125.) On July 27, 1992, the Agency determined that only the one gasoline UST was eligible to access the Fund.[2] (Agency Rec. 139-140; Pet. Ex. A.)

The Agency stipulates that its eligibility determination as to the five USTs that contained unused, nonhazardous petroleum solvents was based on a September 6, 1991 amendment to the Environmental Protection Act, 415 ILCS 5/1 et seq.(1992 State Bar Edition). This amendment occurred after Chemrex notified the

---

[1]ESDA has been renamed the Emergency Management Agency.

[2]In its July 27, 1992 determination letter, the Agency incorrectly referred to this UST as a "1,000 gallon diesel tank". The UST is correctly referred to as a 1,000 gallon gasoline tank in Chemrex's reimbursement application and its petition for review.

Agency of the releases and after Chemrex submitted its Work Plan to the Agency.

APPLICABLE REGULATIONS

From the date Chemrex first discovered the releases to the date Chemrex submitted its Work Plan, Section 22.18b(a) of the Act, 415 ILCS 5/22.18b(a) (1992 State Bar Edition), provided that releases of non-hazardous petroleum products were eligible for reimbursement from the Fund. That section states, in part, as follows:

> a. [a]n owner or operator is eligible to receive money from the Underground Storage Tank fund for costs of corrective action or indemnification only if all the following requirements are satisfied:
>
> * * * *
>
> (2) the underground storage tank does not contain fuel which is exempt from the provisions of Section 2a of The Motor Fuel Tax Law;
>
> (3) the costs of corrective action...were incurred by an owner or operator as a result of a release of petroleum, but not including any hazardous substance from an underground storage tank;

Effective September 6, 1991, Public Act 87-323 amended Section 22.18b(a) of the Act, making owners or operators eligible to receive money from the Fund for costs of corrective action if their USTs contain certain specific substances other than petroleum solvents. 1991 Ill. Legis. Serv. 1822, 1826. Section 22b(a)(5) of the Act, 415 ILCS 5/22.18b(a)(5) (1992 State Bar Edition), specifically provides, in part, as follows:

> a. an owner or operator is eligible to receive money from the Underground Storage Tank fund for costs of corrective action or indemnification only if all the following requirements are satisfied:
>
> * * * *
>
> (5) The released petroleum is within one or more of the following categories:
>
> (A) Fuel, as that term is defined in Section 1.19 of the Motor fuel Tax Law.
>
> (B) Aviation fuels, heating oil, or kerosene.

(C) Used oil. For purposes of this Section, "used oil" means any oil that has been refined from crude oil used in a motor vehicle, as that term is defined in Section 1.3 of the Motor Fuel Tax Law, and that, as a result of that use, is contaminated by physical or chemical impurities.

The amendment at issue in this case thus excludes formerly eligible USTs containing petroleum solvents.

ARGUMENT

Chemrex argues that the applicable law in this case is the law in effect on the date that Chemrex notified ESDA of the release (i.e., March 15, April 2, and April 3, 1991). In support of this argument, Chemrex notes that such reports put the Agency on notice that there were releases. Chemrex adds that it provided the State with documentation showing registration. Accordingly, Chemrex asserts that the Agency was on notice of a reimbursable event in April 1991. Chemrex adds that all subsequent relevant events (i.e., the filing of the "20-day Report", "45-Day and Free Product Action Report", and the Work Plan) also occurred prior to the September 1991 amendment. Chemrex concludes that the Board has held that, where a statutory amendment involves prior activity or a certain course of conduct, the applicable law is that which is in effect at the time that the course of conduct occurred. Lynch v. IEPA (November 19, 1992), PCB 92-81 at 2-3.

Chemrex next argues that the application of Public Act 87-323 would be an unauthorized and impermissible retroactive application of the law. Specifically, Chemrex asserts that nothing in the September 1991 amendment, or its legislative history, indicates that it should be applied retroactively to releases occurring before the amendment. In fact, Chemrex points out that the Board has declined to apply regulations retroactively. Mandel v. Kulpaka (July 30, 1992), PCB 92-33.

Chemrex adds that the provision of the Act relating to deductible determinations demonstrates that the legislature knows how to make the date of application submittal a controlling date with respect to determining applicable deductibles. Section 1022.18b(d)(3)(G) of the Act, 415 ILCS 5/22.18b(d)(3)(G) (1992 State Bar Edition), specifically provides, "[t]he Agency shall determine the applicable deductible...based on the date that a complete application for eligibility determination...is received by the Agency." Chemrex notes that the Act does not have a comparable provision with respect to the issue of eligibility.

Chemrex further argues that the Agency's determination is an arbitrary and insupportable violation of its past practices and

procedures. Specifically, Chemrex notes that the Agency has admitted in this case that it approved a reimbursement applications that were submitted to the Agency on or after September 6, 1991, for USTs containing unused solvents or other non-fuel substances. (Agency admission in response to Chemrex's Request to Admit No. 4.) Specifically, Chemrex points to the MacLean-Fogg case involving releases from solvent (non-fuel) USTs. MacLean-Fogg v. IEPA PCB 92-11. In that case, the Agency initially denied MacLean-Fogg's reimbursement application because MacLean-Fogg did not submit its reimbursement application until September 6, 1991. MacLean-Fogg filed a petition before the Board to review the matter. Chemrex asserts that, before the Board could rule on the matter, the Agency determined that MacLean-Fogg's USTs were eligible for reimbursement from the Fund. Upon the Agency's revised determination and MacLean-Fogg's motion, the Board dismissed the matter. MacLean-Fogg (March 26, 1992), PCB 92-11.

Finally, Chemrex asserts that the Agency's eligibility determination deprives it of a right to reimbursement that it paid for (i.e., by registering and paying all fees) and relied on. 40 C.F.R. 280.90 et seq. requires owners and operators of USTs to meet certain financial responsibility requirements, such as the purchasing of adequate insurance. 40 C.F.R. 280.101 provides that an owner or operator may satisfy such requirements through its eligibility for reimbursement from state administered funds. Chemrex asserts that it did not secure private insurance for its USTs and that it relied on the Fund because the law clearly indicated that any UST release would be insured by the Fund.

Chemrex adds that the Agency's unauthorized retroactive application of the September 1991 amendment violates 40 CFR 280.101, which requires Illinois to submit to USEPA a description of the State Fund "along with a list of the classes of [USTs] to which the Fund may be applied." Chemrex notes that the Agency's Guidance Manual indicates that the USTs at issue were eligible for reimbursement and that Illinois submitted the Guidance Manual to USEPA in seeking approval of the Fund. Accordingly, Chemrex argues that the Agency cannot now retroactively narrow the categories of eligible USTs, effectively invalidating USEPA's approval of the Fund and leaving Chemrex and other UST owners without federally required insurance.

DISCUSSION

The only issue to be reviewed in this case is the Agency's eligibility determination for the five USTs. The resolution of this issue turns on the issue of whether Public Act 87-323 (effective September 6, 1991) is applicable to Chemrex. The Board finds that the Agency's eligibility determination was correct and that Public Act 87-323 applies to Chemrex's

application for reimbursement.

The Board has held that when determining whether UST removal costs are reimbursable as corrective action costs, the law to be applied is the definition of "corrective action" as it existed when the costs were incurred. Lynch v. IEPA (November 19, 1992), PCB 92-81 at 2-3; Galesburg Cottage Hospital v. IEPA (August 13, 1992), PCB 92-62 at 3-6; Pulitzer Community Newspapers, Inc. v. IEPA (December 20, 1990), PCB 90-142 at 4-5, 117 PCB 102-103, and (February 28, 1991) at 2, 119 PCB 31, 32. In other words, where a statutory amendment involves a prior activity or a certain course of conduct, the law to be applied is the provision in effect at the time that the course of conduct occurred. Lynch v. IEPA (November 19, 1992), PCB 92-81 at 2-3; Galesburg Cottage Hospital v. IEPA (August 13, 1992), PCB 92-62 at 3-6; Pulitzer Community Newspapers, Inc. v. IEPA (December 20, 1990), PCB 90-142 at 4-5, 117 PCB 102-103, and (February 28, 1991) at 2, 119 PCB 31, 32.

The statutory amendment at issue in this case, however, does not involve a particular activity or course of conduct. Rather, the amendment narrows the classes of USTs that are eligible to access the Fund.

The Board has held that when determining eligibility for reimbursement, as opposed to the issue of when corrective actions were taken, the applicable law is that which is in effect on the date of the filing of the application. Pulitzer Community Newspapers, Inc. v. IEPA (December 20, 1990), PCB 90-142 at 4-5, 117 PCB 102-103, and (February 28, 1991) at 2, 119 PCB 31, 32. (see also Miller v. IEPA (July 9, 1992), PCB 92-49 at 4; First Busey Trust and Investment Company v. IEPA (February 27, 1992), PCB 91-213 at 4-5, 130 PCB 287, 290-91; Marjorie B. Campbell v. IEPA (June 6, 1991), PCB 91-5 at 2, 123 PCB 25, 26, citing to Pulitzer.)

In this case, Chemrex initially filed its reimbursement application on October 4, 1991. Pursuant to the Agency's October 28, 1991 request for supplemental information, Chemrex sent an amended application to the Agency on March 11, 1992. Even if Chemrex's reimbursement application were considered complete on October 4, 1991, that date is past September 6, 1991. Accordingly, because Public Act 87-213 was in effect at the time that Chemrex filed its reimbursement application, Public Act 87-213 is not being applied retroactively as Chemrex argues. We also note that the legislature failed to include a provision in the Act that would "grandfather" Public Act 87-323 with respect to companies that notified ESDA and took remedial action prior to the amendment, but filed their reimbursement application after the amendment.

As for Chemrex's argument regarding the Agency's past

practices, we note that Chemrex has not alleged that it relied on the Agency's past practices or that it would have acted differently if the Agency had never previously approved reimbursement applications that were submitted to the Agency after September 6, 1991, for unused solvent or non-fuel USTs. Moreover, in response to Chemrex's request to admit, the Agency admitted that it only approved one reimbursement application (i.e., MacLean-Fogg) that was submitted on September 6, 1991.

In any event, even if Chemrex had alleged reliance, the Board agrees with the Agency's argument that "two wrongs do not make a right". In other words, the Board believes that the Agency is entitled to change its position, rather than maintain consistency with an incorrect eligibility determination, in light of the fact that there is no statutory provision, regulation, or case law that addresses the issue at hand.

The Board is not unsympathetic to Chemrex's argument regarding its loss of access to private insurance. We note, however, that Chemrex was placed on notice of the statutory amendment when it was first introduced before the legislature. More important, however, is the fact that the Act has been amended so as to remove the Board's authority to regulate financial assurance matters. As a result, the Board's scope of review with regard to financial assurance matter has been limited. Specifically, Public Act 86-1050 modified Section 22.4(d) of the Act, 415 ILCS 5/22.4(d) (1992 State Bar Edition), to limit the Board's authority to adopting only "regulations relating to corrective action". 1990 Ill. Legis. Serv. 211, 223. (see also Public Act 86-958, 1989 Ill. Legis. Serv. 5219; Public Act 86-1484, 1991 Ill. Legis. Serv. 3028; and Public Act 87-323, 1991 Ill. Legis. Serv. 1822.) The Board, in response, has amended its regulations to delete its prior regulations in the financial assurance area. In the Matter of: UST Update USEPA Regulations (1/1/91 - 6/30/91) (April 9, 1992) R91-14, 132 PCB 681.

With regard to Chemrex's assertion regarding the submission of the Agency's Guidance Manual to USEPA when seeking approval of the Fund, we note that the Agency's Guidance Manual has not been promulgated as a rule pursuant to the Illinois administrative Procedure Act. As a result, the Guidance Manual has no legal or regulatory effect in proceedings before the Board and the Board cannot enforce its provisions. Miller v. IEPA (July 9, 1992), PCB 92-49 at 5-6; Warren's Service v. IEPA (June 4, 1992), PCB 92-22 at 3, 134 PCB 41, 43; Strube v. IEPA (May 21, 1992), PCB 91-205 at 3, 133 PCB 477, 479); Platolene 500, Inc. v. IEPA (May 7, 1992), PCB 92-9 at 4-5, 133 PCB 234, 237-238. More importantly, the Board notes that the assertion also relates to the Board's lack of authorization with financial assurance matters and thus, is not directly relevant here.

Accordingly, the Board finds that the Agency's eligibility determination for Chemrex' five petroleum solvent USTs was proper.

This opinion constitutes the Board's findings of fact and conclusions of law in this matter

ORDER

For the reasons expressed in the accompanying opinion, the Board hereby affirms the Agency's July 27, 1992 determination regarding the non-reimbursibility of remediation costs incurred by Chemrex for its five petroleum solvent underground storage tanks.

Section 41 of the Environmental Protection Act, 415 ILCS 5/41 (1992 State Bar Edition), provides for appeal of final Orders of the Board within 35 days. The Rules of the Supreme Court of Illinois establish filing requirements. (But see also Castenada v. Illinois Human Rights Commission (1989), 132 Ill.2d 304, 547 N.E.2d 437).

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that on the 4th day of February, 1993, the above opinion and order was adopted by a vote of 6-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board

CARBON MONOXIDE AIR DISPERSION MODELING FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND CONSTRUCTION PERMIT REVISION FOR UNITED STATES STEEL GRANITE CITY WORKS

Prepared for:
United States Steel Corporation
Granite City Works
20th and State Streets
Granite City, IL 62040

Prepared by:
RTP Environmental Associates, Inc.
304A West Millbrook Road
Raleigh, North Carolina 27609

October 2022

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1.0 INTRODUCTION

This document presents the results of the air quality dispersion modeling analysis conducted for the United States Steel Corporation, Granite City Works ("US Steel") iron and steel making facility in Granite City, Illinois. The analysis has been conducted by RTP Environmental Associates, Inc. ("RTP Environmental") on behalf of US Steel.

The analysis evaluated the emissions of the criteria pollutant carbon monoxide ("CO") as regulated under the applicable provisions of the Prevention of Significant Deterioration ("PSD") regulations of 40 CFR § 52.21, incorporated by reference in the federally approved Illinois State Implementation Plan at 40 CFR § 52.738(b).[1] The criteria pollutant analysis was conducted to ensure that the proposed revisions to the CO emission limitations in the Prevention of Significant Deterioration ("PSD") and Construction Permit (Permit Number 95010001) ("1996 Construction Permit") do not cause or contribute to violation of a National Ambient Air Quality Standard (NAAQS).

As required by 40 CFR § 52.21(l), the analysis conforms with the modeling procedures outlined in the Guideline on Air Quality Models[1] promulgated by United States Environmental Protection Agency ("USEPA") (the "Guideline" or "Appendix W"). It also conforms to the Illinois Environmental Protection Agency's (IEPA) Prevention of Significant Deterioration Modeling Guidance[2], the modeling protocol submitted to the IEPA on February 3, 2020, and associated USEPA modeling policy and guidance.

[1] All citations to the PSD regulations herein are to the currently applicable provisions of 40 CFR § 52.21. The analysis also is designed to satisfy the parallel requirements of the currently pending Illinois PSD rule, 35 Ill. Adm. Code Part 204.

2.0 PROJECT DESCRIPTION

The 1996 Construction Permit authorized National Steel to increase iron and steel production limitations for the blast furnaces and basic oxygen furnace ("BOF") shop at the existing integrated iron and steel manufacturing facility in Granite City, in Madison County, Illinois. US Steel purchased the assets of National Steel in 2003, including Granite City Works. US Steel is proposing revisions to the 1996 Construction Permit that involve increases in the CO emission limitations that were established per the PSD requirements. Therefore, the proposed increases in the CO rates were evaluated for PSD requirements including compliance with the NAAQS for CO. No physical changes are proposed in conjunction with the requested revisions to the 1996 Construction Permit.

3.0 FACILITY AND SITE DESCRIPTION

The US Steel Granite City Works produces high-quality hot-rolled, cold-rolled and coated sheet steel products to customers in the construction, container, piping and tubing, service center, and automotive industries. Granite City Works has an annual raw steelmaking capability of 3.58 million net tons.

The facility occupies approximately 400 acres and is located approximately 12 miles east of Lambert, St. Louis International Airport. The approximate Universal Transverse Mercator (UTM) coordinates of the facility are 749,000m East and 4,287,000m North (NAD83, Zone 15). Figure 1 shows the general location of the facility. Figure 2 shows the specific facility location on a 7.5-minute U.S. Geological Survey ("USGS") topographic map.

The US Steel facility is classified under the regulations governing PSD and Title V as a major source. The area of Madison County where US Steel facility is located is classified as attainment or unclassifiable for all regulated pollutants except ozone. St. Louis is classified as marginal nonattainment for the 2015 8-hour ozone standard.

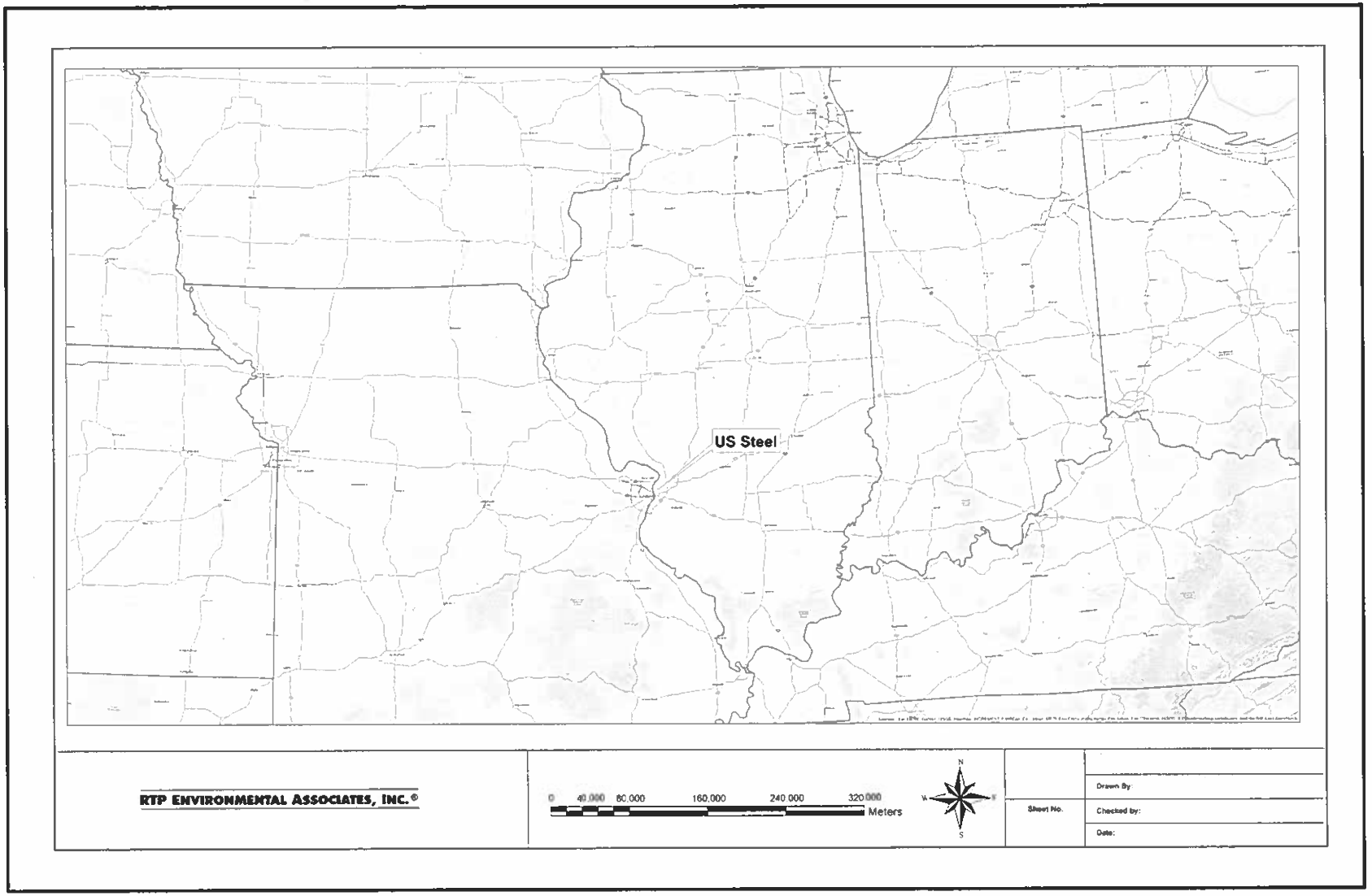

Figure 1. General Location of the US Steel Granite City Works

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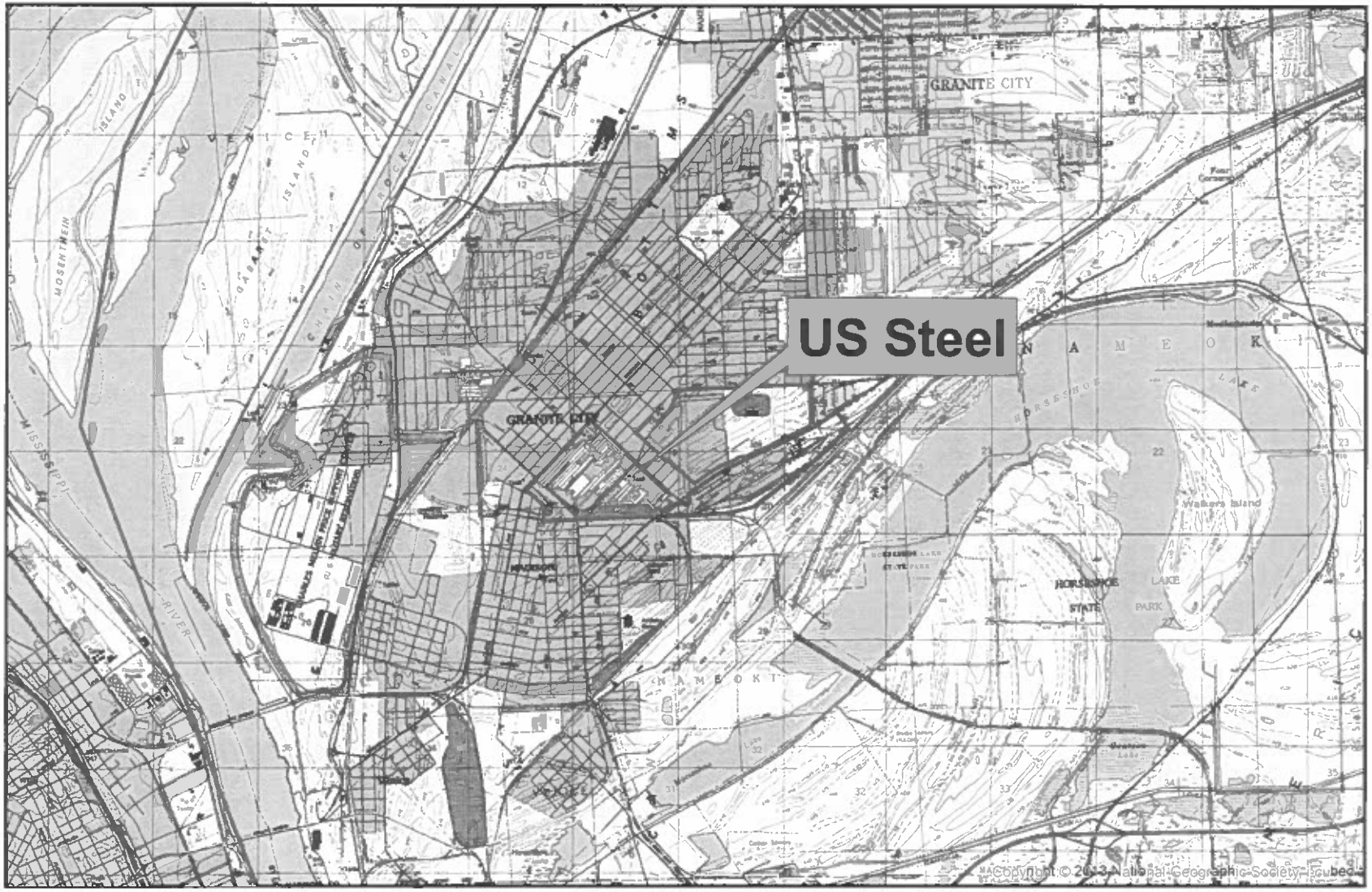

Figure 2. Specific Location of US Steel Granite City Works

R000419

4.0 MODEL SELECTION AND MODEL INPUT

4.1 Model Selection

The latest version of the AMS/EPA Regulatory Model (AERMOD, Version 22112) was used to conduct the dispersion modeling analysis. AERMOD is a Gaussian plume dispersion model that is based on planetary boundary layer principals for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions with the probability density function and the superposition of several Gaussian plumes. AERMOD is a modeling system with three components: AERMAP is the terrain preprocessor program, AERMET is the meteorological data preprocessor and AERMOD includes the dispersion modeling algorithms.

AERMOD is the required default model for calculating ambient concentrations near the US Steel facility based on the model's ability to incorporate multiple sources and source types. The model can also account for convective updrafts and downdrafts and meteorological data throughout the plume depth. The model also provides parameters required for use with up to date planetary boundary layer parameterization. The model also has the ability to incorporate building wake effects and to calculate concentrations within the cavity recirculation zone. All model options were selected as recommended in the USEPA Guideline on Air Quality Models.

Oris Solution's BEEST Graphical User Interface ("GUI") was used to run AERMOD. The GUI uses an altered version of the AERMOD code to allow for flexibility in the file naming convention. The dispersion algorithms of AERMOD are not altered. Therefore, a model equivalency evaluation pursuant to Section 3.2 of 40 CFR 51, Appendix W was not warranted.

4.2 Model Control Options and Land Use

AERMOD was run in the regulatory default mode for all pollutants with the default rural dispersion coefficients. These coefficients were used by the Illinois Environmental

Protection Agency ("IEPA") in its evaluation of the facility as part of the 1-hr sulfur dioxide ("SO2") Data Requirements Rule ("DRR").

4.3 Source Data

The modeling input data and modeled CO emission rates can be found in Appendix A of this report.

Source Characterization

The majority of modeled source input parameters were obtained from the IEPA's model conducted for the Data Requirements Rule ("DRR").

Point Sources

Most emission sources at the site vent to stacks with a well defined opening. These sources were modeled as point sources in AERMOD. Several other types of sources such as fugitive emissions also required evaluation.

Fugitive Emissions

Fugitive emissions are those that are not emitted from a well defined opening. These sources were modeled as volume sources. The initial dispersion coefficients (sigma y and sigma z) were provided by the IEPA and were calculated based upon the dimensions of the area of release and the equations contained in Table 3-1 of the AERMOD User's Guide.

Flares

The facility uses blast furnace gas flares to combust excess process gas. Emissions that occur only during periods of malfunction are not required to be modeled per 40 CFR Part 51 Appendix W. Non-malfunction emissions were modeled using the procedures outlined in the AERSCREEN Manual[3]. The effective stack height (H, in meters) was computed by the IEPA as a function of heat release rate according to the following equation, where Q is the heat release rate of the flare stack in caloriesper second:

$$H_{equivalent} = H_{actual} + 4.56x10^{-3} \times Q^{0.478}$$

The effective flare stack diameter (d, in meters) was computed as a function of heat release rate according to the following equation, where Q is the heat release rate of the flare in calories per second:

$$d_{equivalent} = 9.88x10^{-4} \times (Q \times 0.45)^{0.5}$$

An exit temperature of 1273K and velocity of 20 m/sec is assumed.

All source locations were based upon a NAD83, UTM Zone 15 projection.

Good Engineering Practice Stack Height Analysis

A Good Engineering Practice ("GEP") stack height evaluation was conducted to determine appropriate building dimensions to include in the model and to calculate the GEP formula stack height used to justify stack height credit for any stacks n excess of 65m. Procedures used are in accordance with those described in the USEPA Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations-Revised)[4]. GEP formula stack height, as defined in 40 CFR 51, is expressed as GEP = H_b + 1.5L, where H_b is the building height and L is the lesser of the building height or maximum projected width. Building/structure locations were determined from a facility plot plan. The structure locations and heights were obtained from the IEPA and were input to the USEPA's Building Profile Input Program (BPIP-PRIME) computer program to calculate the direction-specific building dimensions needed for AERMOD. The structures included in the GEP analysis are shown as the green blocks in Figure 3. All stacks and structures that are located near a stack were included in the BPIP runs.

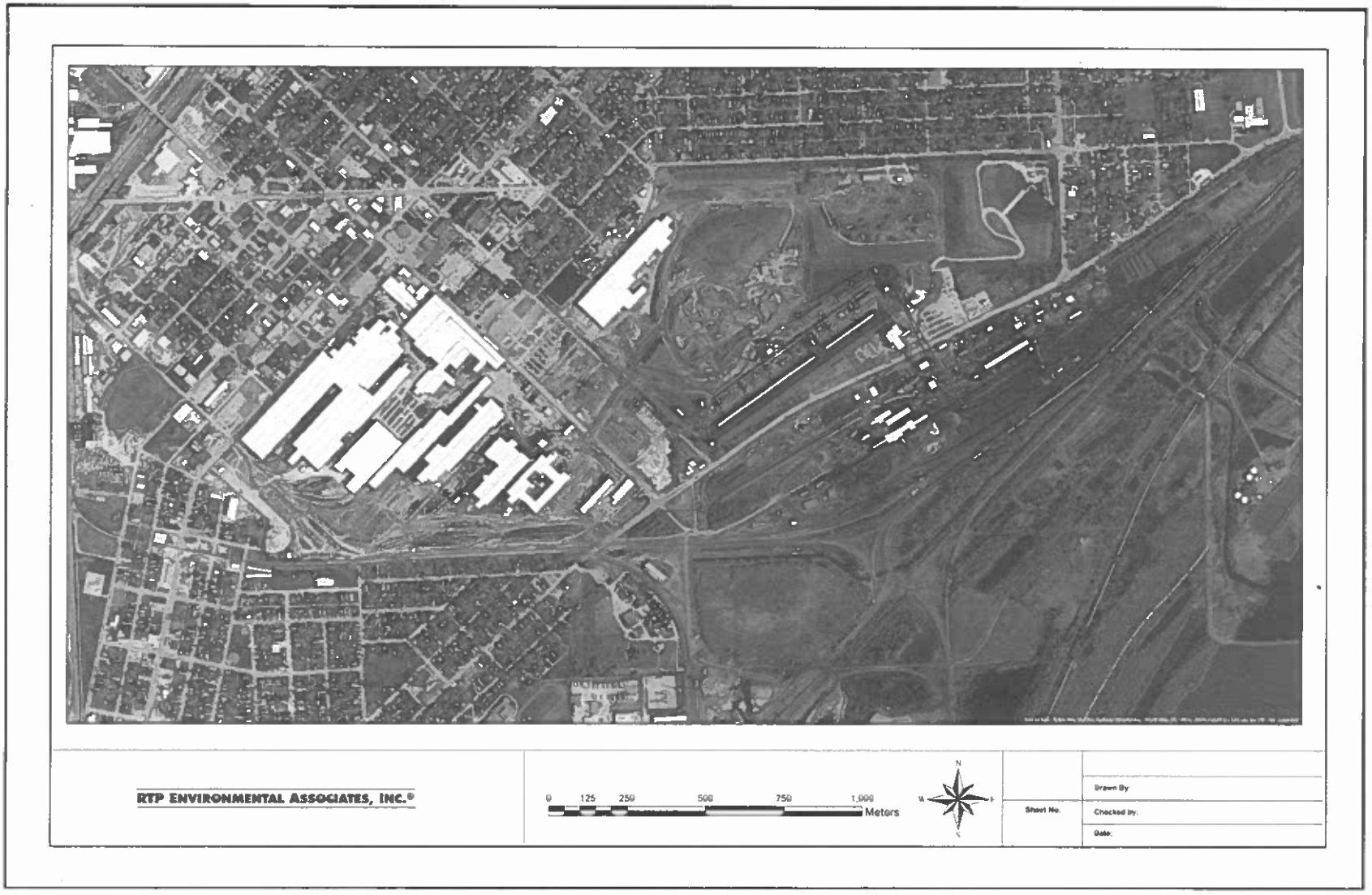

Figure 3. Structures Included in the US Steel GEP Analysis

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4.4 Monitored Background Data

Ambient, background pollutant concentrations are needed to establish a representative background concentration to complete the NAAQS portion of the *Source Impact Analysis* of 40 CFR § 52.21(k). The background concentrations are added to the modeled concentrations to assess NAAQS compliance. Ambient pollutant concentrations are also needed to fulfill the *Air Quality Analysis* requirement of 40 CFR § 52.21(m), as discussed in Section 5.0herein.

Pursuant to 40 CFR § 52.21(i)(5), requirements for ambient monitoring data may be waived by the permitting authority if projected increases in ambient concentrations due to the project are less than the Significant Monitoring Concentrations. However, in light of the decision of the D.C. Circuit Court of Appeals *Sierra Club v. EPA*,[5] US Steel has elected not to request such a waiver at this time.

The USEPA Monitoring Guidelines[6], other USEPA interpretive guidance, and USEPA administrative decisions clarify that representative, existing air quality monitoring data may be used to fulfill the PSD pre-construction monitoring requirements and establish background concentrations needed for assessing NAAQS compliance, in lieu of monitoring data. USEPA's Monitoring Guidelines suggest specific criteria to determine representativeness of off-site data: *quality of the data, currentness of the data, and monitor location*.

There are many existing ambient CO monitors within 100 miles in the facility (Figure 4). Existing monitoring data have been evaluated in relation to the criteria provided in USEPA's Ambient Monitoring Guidelines as being representative of the US Steel site.

We have used recently available, quality assured data (2016-2018) from the AQS monitor in East St. Louis, IL (AQS Site # 17-163-0010). 2018 is the latest year of complete, available data. The 4th quarter of 2019 is incomplete and data are not

Figure 4. Ambient Air Quality Monitors in the Vicinity of the US Steel Facility

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available for 2020-2021. This monitor best represents background concentrations near the facility as it is the closest monitor with current CO data and is in the vicinity of the site and therefore representative of conditions as the site. The background data are presented in Table 1.

Table 1. Proposed Background Concentrations 2016-2018

Pollutant	Averaging Time	Design Value (ppb)[µg/m^3]	Basis	AQS Site No.
CO	1-hour	(2,200) [2,515]	Maximum	17-163-0010 St. Louis
	8-hour	(1,440) [1,646]		

The existing monitoring data satisfy the criteria provided in USEPA's Ambient Monitoring Guidelines[7] as being representative of the site.

Monitor Location

Of the monitors available, the East St. Louis monitor represents background concentrations as it is the closest monitor with data for the pollutants of concern that is not also significantly influenced by the localized source impacts.

Data Quality

The monitor data were collected and quality assured by the IEPA.

Currentness of Data

The data were collected during 2016-2018, which represents the recently available, quality assured data available for use in assessing compliance.

4.5 Receptor Data

Modeled receptors were placed in all areas considered as "ambient air" pursuant to 40 CFR 50.1(e). Ambient air is defined as that portion of the atmosphere, external to buildings, to which the general public has access. Approximately 14,100 receptors were used in the AERMOD significant impacts analysis. The receptor grid consisted of three cartesian grids and receptors located at 50m intervals along the facility fence line.

The first cartesian grid extended to approximately 3.0km from the facility in all directions. Receptors in this region were spaced at 100m intervals. The second grid extended to 7.5km. Receptor spacing in this region were 250m. A third grid extended to 15km with a spacing of 500m. The receptor grid was designed such that maximum facility impacts fall within the 100m spacing of receptors. The receptor grid spacing is presented in Table 2.

Table 2. Receptor Grid Spacing

Receptor Spacing (m)	Distance from Facility (m)
100	3,000
250	5,000
500	15,000

The US Steel facility is located in southern Illinois. Terrain within 10km of the site is generally flat. Receptor elevations and hill height scale factors were calculated with AERMAP (18081). The elevation data were obtained from the USGS one arc second National Elevation Data (NED) obtained from the USGS. Locations were based upon a NAD83, UTM Zone 15 projection. The near-field receptor grid is presented in Figure 5.

4.6 Meteorological Data

The 2016-2020, 5-year sequential hourly surface meteorological data from the National Weather Service (NWS) at St. Louis Lambert Field (WBAN No. 13994) and upper air data from the NWS station in Lincoln, IL (WBAN No. 04833) were used in the analysis. These data were processed into a "model-ready" format using AERMET version 21112.

The AERMET meteorological processor requires estimates of the following surface characteristics: surface roughness length, albedo, and Bowen ratio. The surface roughness length is related to the height of obstacles to the wind flow. It is the height above the surface where the average wind speed is zero. The smoother the surface, the lower the roughness length. The surface roughness length influences the surface shear stress and is an important factor in calculating mechanical turbulence and stability. The albedo is the fraction of the total incident solar radiation reflected by the surface back to space without absorption.

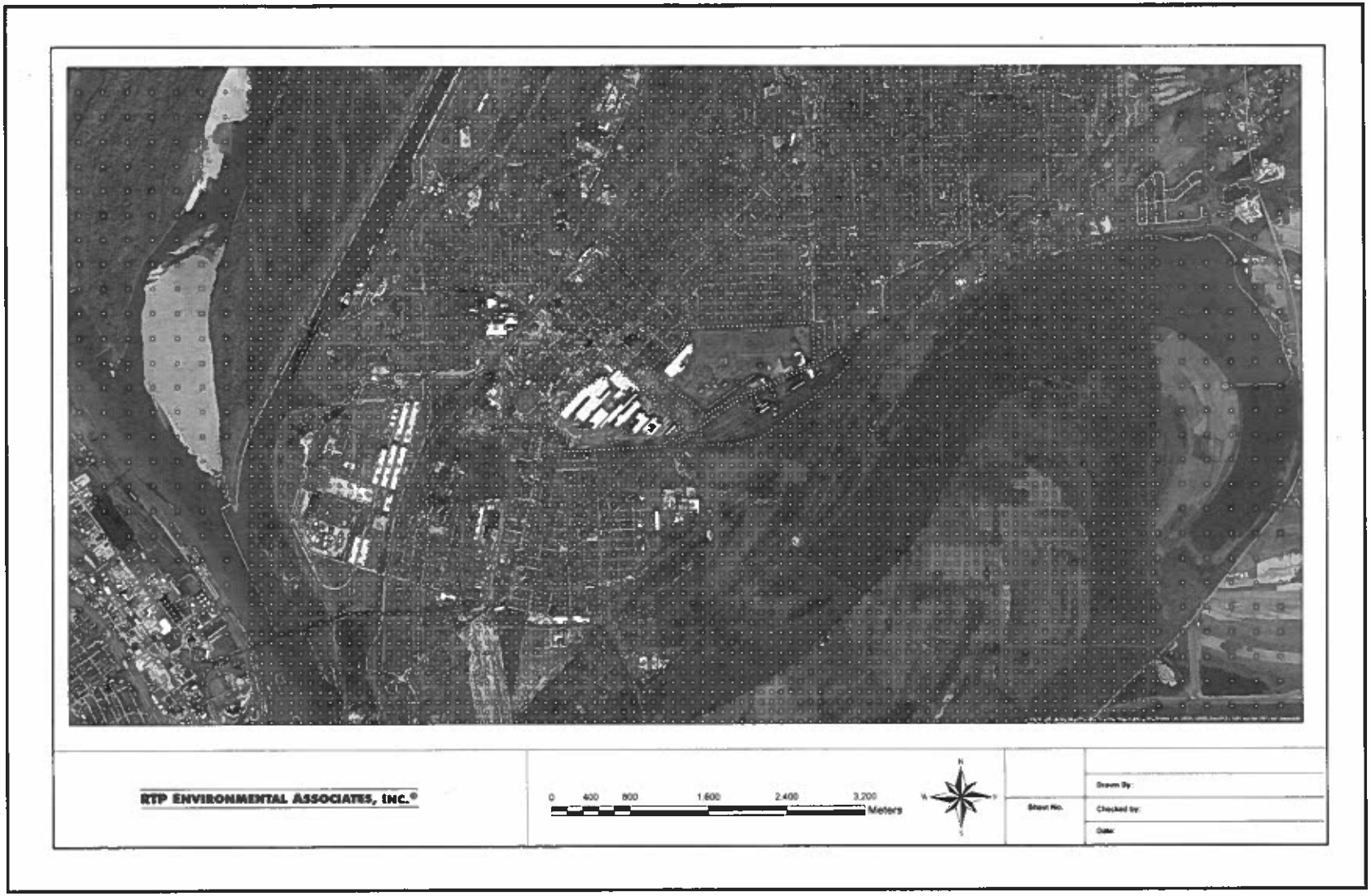

Figure 5. US Steel Facility Near-field Receptor Grid

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The Bowen ratio is an indicator of surface moisture and is the ratio of the sensible heat flux to the latent heat flux. The albedo and Bowen ratio are used for determining the planetary boundary layer parameters for convective conditions due to the surface sensible heat flux. Estimates of the surface characteristics were made by the IEPA using USEPA's AERSURFACE program (Version 13016) and provided to RTP Environmental. A 1km search radius was employed at the location of the meteorological tower. Twelve sectors of 30 degrees each and seasonal resolution were used in the AERSURFACE analysis. RTP employed the "ADJ_U*" option to allow for adjustments to the friction velocity under low wind speeds was employed.

The use of NWS meteorological data for dispersion modeling can often lead to a high incidence of calms and variable wind conditions if the data are collected by Automated Surface Observing Stations ("ASOS"), as are in use at most NWS stations since the mid-1990's. A calm wind is defined as a wind speed less than 3 knots and is assigned a value of 0 knots. In addition, variable wind observations may include wind speeds up to 6 knots, but the wind direction is reported as missing, if the wind direction varies more than 60 degrees during the 2-minute averaging period for the observation. The AERMOD model currently cannot simulate dispersion under calm or missing wind conditions. To reduce the number of calms and missing winds in the surface data, archived 1-minute winds for the ASOS stations were used to calculate hourly average wind speed and directions, which were used to supplement the standard archive of hourly observed winds processed in AERMET. The USEPA AERMINUTE program (Version 15272) was used for these calculations. A wind rose of the 5-year meteorological dataset is provided in Figure 6.

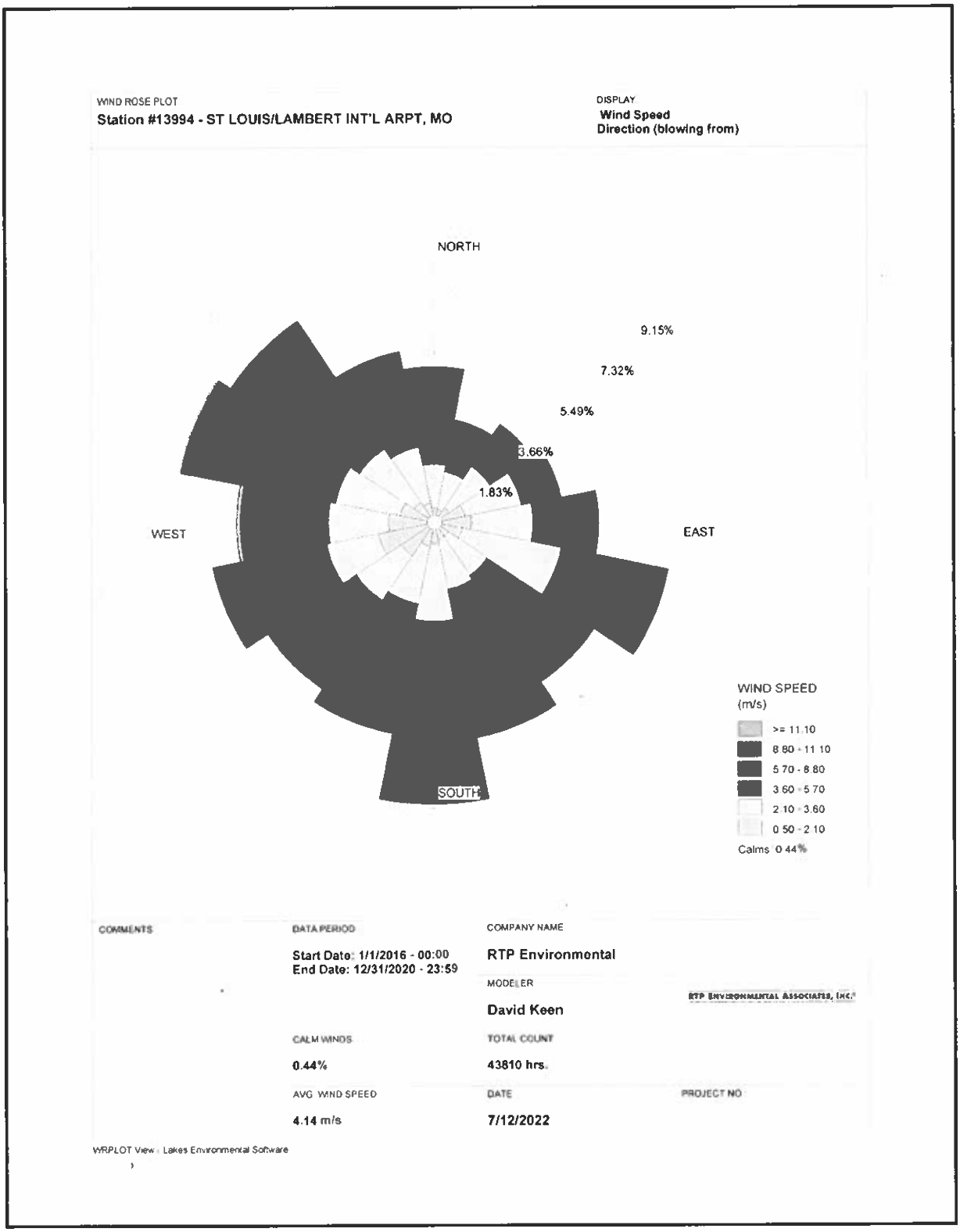

Figure 6. Lambert Field Windrose 2014-2018.

5.0 MODELING METHODOLOGY

5.1 Pollutants Subject to Review

USS Steel is proposing changes to the CO emission limitations in the 1996 Construction Permit that were established per the PSD requirements. Therefore, as requested by Illinois EPA, dispersion modeling of CO emissions have been evaluated and compared to the NAAQS.

5.2 Significant Impact Analysis

The air quality analysis was conducted in two phases: an initial or significant impact analysis, and a refined phase NAAQS analysis. In the significant impact analysis, the calculated maximum impacts due to the project were determined for CO.[b] These impacts determined the net change in air quality resulting from the proposed revision to modification permitted under the 1996 Construction Permit. Five years of meteorological data were used in the significant impact analysis. Maximum modeled CO concentrations were compared to the significance levels. The PSD Class II Significant Impact Levels for CO are listed in Table 3.

Table 3. PSD Class II Significant Impact Levels

Pollutant	Averaging Time	PSD Class II Significant Impact Levels ($\mu g/m^3$)
CO	1-hour	2,000
	8-hour	500

[b] For some of the affected emissions units, in place of project related emissions increases, we conservatively used the potential to emit of CO.

5.3 NAAQS Analysis

Following the determination of significant impacts, a refined air quality analysis to determine compliance with the CO NAAQS was conducted. In the NAAQS analysis, impacts from the US Steel facility were added to concentrations calculated from other nearby sources, plus a regional background concentration. The resultant total concentrations were compared to the NAAQS to assess compliance. The receptors modeled in the NAAQS analyses were limited to those showing a significant CO impact. Five years of meteorological data were again used in this analysis.

Nearby Source Inventory

Off-site sources were included in the NAAQS analysis. A 50km radius was used to define the screening area. A list of sources that are located within the screening area has been obtained from the IEPA as well as the Missouri Department of Natural Resources ("MDNR"). Section 8.3.3.b of Appendix W to 40 CFR Part 51 states that the number of nearby sources to be explicitly modeled is expected to be few, except in unusual situations. Appendix W further states that the sources to be included will usually be located within the first 10 to 20km from the source under consideration. In addition, it states that identification of nearby sources calls for the exercise of professional judgment by the appropriate reviewing authority. Further, USEPA's Guidance for PM2.5 Permit Modeling reiterates the Appendix W emphasis on a 10km screening radius for determining which nearby sources to include in the cumulative modeling analysis.

We conservatively included all sources provided by the IEPA and MDNR that are located within 50km of the US Steel facility. Total facility, potential emissions (i.e., all sources at a facility) were used in the NAAQS evaluation.

NAAQS Compliance Assessment

Ambient background concentrations (as discussed in more detail in Section 4.4) were then added to assess NAAQS compliance. The modeled and monitored values shown in Table 4 were used for this assessment.

Table 4. Monitored and Modeled Values Used to Assess NAAQS Compliance

Pollutant	Averaging Time	Monitored Value	Modeled Value
CO	1-hour & 8-hour	Maximum over 3 years	Highest, second high over 5 years

The NAAQS are shown in Table 5.

Table 5. National Ambient Air Quality Standards

Pollutant	Averaging Time	National Ambient Air Quality Standards ($\mu g/m^3$)	
		Primary	Secondary
CO	1-hour	40,000	--
	8-hour	10,000	--

6.0 RESULTS

Attachment B to this report provides the model summary output. AERMOD input and output files, including the BPIP-PRIME files, are included on the enclosed CD.

6.1 Significant Impact Analysis Results

The project results in CO impacts in excess of the 8-hour Significant Impact Level shown in Table 3. The significant impact analysis results are presented in Table 6. Based upon the results of the significant impacts analysis, a cumulative, NAAQS analysis was conducted.

6.2 NAAQS Analysis Results

Following the determination of significant impacts, an analysis was conducted to assess compliance with the CO NAAQS. The project resulted in insignificant 1-hr CO impacts, as a result the 1-hr average was not included in the NAAQS assessment. All sources located within 50km of the US Steel facility were modeled in conjunction with the US Steel facility in assessing compliance. Background concentrations were added to the model results to assess compliance. Evaluation of compliance with the CO short term standards was based upon the maximum of the highest-second-highest values from the five-year meteorological dataset.

The results of the NAAQS analysis are presented in Table 7. As can be seen, the model demonstrates compliance.

Table 6. Significant Impact Analysis Results

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	PSD Significant Class II Impact Level ($\mu g/m^3$)	Significant Monitoring Concentration ($\mu g/m^3$)	Maximum Distance to a Significant Impact (km)
CO	1-hr	1,157	2,000	N/A	NA
	8-hr	692	500	575	2.2

N/A – Not applicable, impacts calculated to be insignificant.

Table 7. NAAQS Analysis Results

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Comment
CO	8-hour	2,045	1,646	3,691	10,000	Compliant

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ATTACHMENT A
MODELING INPUT DATA

US Steel Granite City Point Source Model Input (NAD83, Zone 15)
Last Update (10-5-22)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	CO Potential Emissions (lb/hr)	CO Emissions Increase (lb/hr)
132833	DEFAULT	Blast Furnace A Stoves	749816.02	4286809.08	416.83	217.0	500.0	49.66	7.0	1604.52	1604.52
132838	DEFAULT	Blast Furnace B Stoves	749665.50	4286719.93	417.16	225.0	500.0	51.05	9.8	1837.76	1837.76
132837	DEFAULT	Blast Furnace Gas Flare #1	749777.33	4286841.02	418.21	221.8	1831.7	65.62	15.4	6280.99	6280.99
240479	DEFAULT	Blast Furnace Gas Flare #2	749865.93	4286920.23	416.24	221.8	1831.7	65.62	15.4	6280.99	0.00
132836	DEFAULT	Casthouse Baghouse	749616.61	4286732.18	417.75	63.0	150.0	63.88	11.0	63.77	21.68
132927	DEFAULT	Blast Furnace A and B Iron Spout Baghouse	749831.35	4286818.73	415.98	43.0	123.0	43.04	7.8	6.43	2.19
238459	DEFAULT	Cogeneration Boiler BFG-fired some NG-firing	749776.38	4287073.85	415.19	137.0	400.1	62.11	6.0	203.08	0.00
132867	DEFAULT	Boiler 11	749865.15	4286883.84	416.24	149.9	335.0	29.82	8.0	90.48	90.48
132872	DEFAULT	Boiler 12	749881.40	4286887.85	416.50	150.0	335.0	26.74	8.0	90.48	90.48
BOF	DEFAULT	BOF ESP	748415.00	4286681.00	416.57	125.0	400.0	50.00	15.0	4121.79	1274.01
BOF2ND	DEFAULT	BOF Secondary Baghouse	748625.57	4286763.99	413.00	160.0	275.0	38.55	17.0	19.69	19.69
132842	DEFAULT	Slab Reheat Furnace #1	747729.70	4286762.02	417.52	56.8	650.1	44.88	8.0	26.52	0.00
172532	DEFAULT	Slab Reheat Furnace #2	747715.25	4286747.05	416.47	56.8	650.1	44.88	8.0	26.52	0.00
172512	DEFAULT	Slab Reheat Furnace #3	747700.79	4286730.53	415.88	56.8	650.1	44.88	8.0	26.52	0.00
172514	DEFAULT	Slab Reheat Furnace #4	747700.27	4286714.00	416.08	146.0	736.1	26.94	13.7	40.76	0.00
132849	DEFAULT	Galvanizing line #8 - fume scrubber	748883.00	4287195.00	416.57	80.0	80.0	41.66	3.0	0.00	0.00
229337	DEFAULT	Galvanizing line #8 - space heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229338	DEFAULT	Galvanizing line #8 - drying oven and storage area heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229339	DEFAULT	Galvanizing line #8 - miscellaneous heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229601	DEFAULT	Emergency Generator (3500 HP)	749641.00	4286863.00	416.17	37.0	442.0	32.80	1.9	0.00	0.00
GTEWY1	DEFAULT	Gateway Energy & Coke Co., LLC - Coking (New Main Stack)	749279.00	4286984.00	415.78	199.9	293.1	48.249	13.0	2.62E+01	0.00
GTEWY2	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 2 of 6	749549.00	4287055.00	418.18	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY3	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 3 of 6	749433.00	4286972.00	418.93	26.0	299.9	68.093	4.5	6.64E-02	0.00
GTEWY4	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 4 of 6	749357.00	4286918.00	418.64	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY5	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 5 of 6	749278.00	4286861.00	418.44	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY6	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 6 of 6	749202.00	4286808.00	418.60	26.0	299.9	68.093	4.5	6.64E-02	0.00
GTEWY7	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 1 of 6	749624.00	4287108.00	418.50	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY8	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 1	749199.00	4286809.00	418.60	85.0	2000.0	74.653	9.0	7.30E-01	0.00
GTEWY9	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 1 of 6	749620.00	4287113.00	418.11	20.0	400.0	69.602	5.0	1.31E+00	0.00
GTEWY10	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 2	749274.00	4286862.00	418.31	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY11	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 3	749353.00	4286919.00	418.67	85.0	2000.0	74.653	9.0	7.30E-01	0.00
GTEWY12	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 4	749429.00	4286973.00	419.00	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY13	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 5	749545.00	4287055.00	418.27	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY14	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 6	749620.00	4287109.00	418.34	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY15	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 2 of 6	749545.00	4287060.00	418.24	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY16	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 3 of 6	749429.00	4286977.00	418.93	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY17	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 4 of 6	749352.00	4286923.00	418.57	20.0	400.0	69.602	5.0	1.31E+00	0.00
GTEWY18	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 5 of 6	749274.00	4286866.00	418.24	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY19	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 6 of 6	749198.00	4286813.00	418.77	20.0	400.0	69.602	5.0	1.32E+00	0.00

US Steel Granite City Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	CO Potential Emissions (lb/hr)	CO Emissions Increase (lb/hr)
26070	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748457.20	4286596.40	413.88	169.0	21.6	78.6	1.373	1.373
26080	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748466.60	4286606.00	413.98	169.0	21.6	78.6	1.373	1.373
26090	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748475.40	4286616.10	413.88	169.0	21.6	78.6	1.373	1.373
26100	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748483.60	4286624.10	413.85	169.0	21.6	78.6	1.029	1.029
26110	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748495.20	4286635.90	414.01	169.0	21.6	78.6	1.029	0.000
26120	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748504.10	4286646.00	414.37	169.0	21.6	78.6	1.029	0.000
26130	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748513.90	4286656.70	414.63	169.0	21.6	78.6	1.029	0.000
26570	Galv Line 8	748368.26	4287046.91	420.41	101.7	12.3	48.5	0.254	0.000
26580	Galv Line 8	748374.01	4287041.49	420.11	101.7	12.3	48.5	0.254	0.000
26590	Galv Line 8	748379.56	4287036.28	419.82	101.7	12.3	48.5	0.254	0.000
26600	Galv Line 8	748420.52	4286997.79	419.55	38.0	15.1	38.0	0.254	0.000
26610	Galv Line 8	748428.00	4286990.81	419.95	38.0	15.1	38.0	0.254	0.000
26620	Galv Line 8	748436.60	4286982.91	419.85	38.0	15.1	38.0	0.254	0.000
26630	Galv Line 8	748444.54	4286975.49	419.62	38.0	15.1	38.0	0.254	0.000
26640	Galv Line 8	748451.78	4286968.87	418.50	38.0	15.1	38.0	0.254	0.000
26650	Galv Line 8	748324.79	4287118.60	421.65	38.0	15.6	17.7	0.254	0.000
26660	Galv Line 8	748331.95	4287112.00	421.52	38.0	15.6	17.7	0.254	0.000
26670	Galv Line 8	748340.34	4287104.30	421.39	38.0	15.6	17.7	0.254	0.000
26680	Galv Line 8	748347.69	4287097.51	421.29	38.0	15.6	17.7	0.254	0.000
26690	Galv Line 8	748354.48	4287091.31	421.16	38.0	15.6	17.7	0.254	0.000
26700	Galv Line 8	748362.29	4287084.18	420.87	38.0	15.6	17.7	0.254	0.000
26710	Galv Line 8	748370.46	4287076.71	420.51	38.0	15.6	17.7	0.254	0.000
26720	Galv Line 8	748378.04	4287069.70	420.14	38.0	15.6	17.7	0.254	0.000
26730	Galv Line 8	748385.51	4287062.91	419.52	38.0	15.6	17.7	0.254	0.000
0126A_1	Slag Pit Volume 1	749691.91	4286762.44	418.70	53.0	29.0	17.7	0.000	0.000
0126A_2	Slag Pit Volume 2	749708.01	4286772.50	421.33	53.0	29.0	17.7	0.000	0.000
0126A_3	Slag Pit Volume 3	749724.24	4286782.31	420.44	53.0	29.0	17.7	0.000	0.000
0126A_4	Slag Pit Volume 4	749740.84	4286791.62	419.00	53.0	29.0	17.7	0.000	0.000
0126A_5	Slag Pit Volume 5	749757.20	4286801.31	418.86	53.0	29.0	17.7	0.000	0.000

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL131772	DEFAULT	Star Memorial Pet Crematory - Crematory	749244.00	4324486.00	641.44	16.0	800.0	27.585	1.0	2.70E+00	0.00E+00	0.00E+00
IL131841	DEFAULT	Alton Steel Inc. - Electric arc furnaces	747753.00	4307832.00	433.07	100.0	250.1	31.029	24.2	2.25E+02	7.07E+01	7.07E+01
IL131845	DEFAULT	Alton Steel Inc. - 14 inch rolling mill reheat furnace	747645.00	4307692.00	432.64	106.0	200.0	2.394	16.0	2.40E+01	0.00E+00	0.00E+00
IL131945	DEFAULT	Alton Memorial Hospital - 3 Boilers	746364.00	4309470.00	521.36	89.0	389.9	24.108	3.0	0.00E+00	1.28E+01	1.28E+01
IL132052	DEFAULT	Olin Winchester, LLC - Package Boiler (B-4)	750887.00	4308614.00	435.63	35.0	400.0	84.854	2.0	0.00E+00	4.57E+00	4.57E+00
IL132062	DEFAULT	Olin Winchester, LLC - Package Boiler (B-3)	750891.00	4308619.00	435.89	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132063	DEFAULT	Olin Winchester, LLC - Package Boiler (B-2)	750892.00	4308613.00	435.53	35.0	400.0	84.854	2.0	0.00E+00	4.57E+00	4.57E+00
IL132064	DEFAULT	Olin Winchester, LLC - Package Boiler (B-1)	750888.00	4308609.00	435.30	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132065	DEFAULT	Olin Winchester, LLC - Package Boiler (B-5)	750883.00	4308610.00	435.27	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132148	DEFAULT	Amsted Rail Co., Inc. - Electric Arc Furnace #1 (EF-1)	747122.00	4287625.00	425.26	55.0	250.1	54.087	6.2	3.84E+01	4.07E+00	4.07E+00
IL132149	DEFAULT	Amsted Rail Co., Inc. - Electric Arc Furnace #2 (EF-2)	747147.00	4287625.00	425.20	44.0	250.1	42.443	7.0	3.84E+01	4.07E+00	4.07E+00
IL132193	DEFAULT	Velocity Services, LLC. - North American Boiler	748928.00	4286192.00	416.21	27.0	450.1	24.305	2.3	2.36E+00	0.00E+00	0.00E+00
IL132194	DEFAULT	Velocity Services, LLC. - Cleaver Brooks boiler	748928.00	4286192.00	416.21	29.0	440.0	39.590	2.0	2.36E+00	0.00E+00	0.00E+00
IL132225	DEFAULT	Gateway Regional Medical Center - Boiler #3	748587.00	4287448.00	426.05	48.0	600.0	41.131	4.5	1.53E+00	1.28E+01	1.28E+01
IL132226	DEFAULT	Gateway Regional Medical Center - Boilers #1 and 2	748592.00	4287452.00	425.95	48.0	600.0	38.966	4.5	3.07E+00	2.57E+01	2.57E+01
IL132247	DEFAULT	Prairie Farms Dairy, Inc. - Boiler #1	747505.00	4287550.00	424.64	75.0	375.0	30.078	2.5	1.30E-01	0.00E+00	0.00E+00
IL132248	DEFAULT	Prairie Farms Dairy, Inc. - Boiler #2	747505.00	4287550.00	424.64	25.0	375.0	65.010	2.5	2.40E-01	1.19E+00	1.19E+00
IL132324	DEFAULT	Precoat Metals - Afterburner AB1 and AB2	749469.00	4292538.00	424.97	34.0	1000.0	64.518	4.0	3.23E+00	0.00E+00	0.00E+00
IL132424	DEFAULT	Highland Electric Light Plant - Engine IC-5	788126.93	4293320.17	534.65	28.0	612.1	84.854	2.0	2.07E+01	0.00E+00	0.00E+00
IL132425	DEFAULT	Highland Electric Light Plant - Engine IC-7	788126.93	4293320.17	534.65	57.0	734.1	6.265	11.4	2.51E-01	0.00E+00	0.00E+00
IL132496	DEFAULT	ConocoPhillips Co. - Catalytic reformer #1 (STK12-4)	754869.00	4302625.00	442.55	349.9	600.0	56.810	15.0	6.28E+01	9.53E+01	9.53E+01
IL132510	DEFAULT	ConocoPhillips Co. - Distilling unit: HTR-DU1-F301 (STK5-2)	754327.00	4303077.00	444.69	185.0	319.0	21.878	8.0	1.21E+01	0.00E+00	0.00E+00
IL132511	DEFAULT	ConocoPhillips Co. - Distilling unit: HTR-DU1-F302 (STK5-1)	754326.00	4303100.00	444.49	150.0	150.0	11.677	8.5	1.57E+01	5.29E+00	5.29E+00
IL132512	DEFAULT	ConocoPhillips Co. - Steam methane reformer: SMR Heater (HTR-SMR - STK12-8)	754873.00	4302750.00	443.04	199.9	749.9	36.638	12.0	4.75E+01	6.82E+01	6.82E+01
IL132516	DEFAULT	ConocoPhillips Co. - Rectified absorption unit: Reboiler heater (HTR-RAU-DEBUT - STK5-5)	754470.00	4302943.00	444.98	75.0	850.0	34.440	5.0	7.14E+00	0.00E+00	0.00E+00
IL132517	DEFAULT	ConocoPhillips Co. - Rectified absorption system to RFG	754240.00	4303144.00	443.47	150.0	710.0	26.338	6.0	0.00E+00	1.20E+02	1.20E+02
IL132519	DEFAULT	ConocoPhillips Co. - Cracked absorption unit (HTR-CAU-ROSTILL - STK5-4)	754468.00	4302963.00	445.41	85.0	800.0	22.173	7.2	6.72E+00	0.00E+00	0.00E+00
IL132526	DEFAULT	ConocoPhillips Co. - CCU-1 Startup heater B-1	754240.00	4303144.00	443.47	212.0	500.1	86.953	4.5	0.00E+00	3.55E+01	3.55E+01
IL132535	DEFAULT	ConocoPhillips Co. - Catalytic cracking unit #2 (STK6-3)	754848.00	4302895.00	443.27	199.9	175.0	49.954	11.0	4.72E+01	2.17E+03	2.17E+03
IL132551	DEFAULT	ConocoPhillips Co. - Alkylation unit: HTR-ALKY-HM2 (STK6-6)	754930.00	4303043.00	442.59	150.9	475.1	12.398	5.7	4.32E+00	0.00E+00	0.00E+00
IL132556	DEFAULT	ConocoPhillips Co. - Utility boiler #15 (STK12-15)	754859.00	4302776.00	443.44	132.0	425.0	43.165	7.0	2.65E+01	1.62E+01	1.62E+01
IL132557	DEFAULT	ConocoPhillips Co. - Utility boiler #16 (STK12-16)	754875.00	4302778.00	443.21	132.0	425.0	43.165	7.0	2.78E+01	1.41E+01	1.41E+01
IL132558	DEFAULT	ConocoPhillips Co. - Utility boiler 17 (STK12-17)	754902.00	4302784.00	442.91	150.0	317.0	52.218	10.0	3.60E+01	1.82E+01	1.82E+01
IL132559	DEFAULT	ConocoPhillips Co. - Utility boiler 18 (STK6-9)	754919.00	4302809.00	442.52	100.0	325.0	14.465	6.2	3.00E+01	6.61E+00	6.61E+00
IL132561	DEFAULT	ConocoPhillips Co. - Hydrodesulfurization unit #1: Charge heater (HTR-HDU-1 - STK13-1)	755217.00	4302588.00	442.16	150.0	790.1	32.144	5.0	5.60E+00	0.00E+00	0.00E+00
IL132564	DEFAULT	ConocoPhillips Co. - Hydrodesulfurization unit #2: Charge heater (HTR-HDU-2 - STK12-14)	755022.00	4302530.00	442.95	150.0	900.1	31.422	5.8	4.90E+00	0.00E+00	0.00E+00
IL132565	DEFAULT	ConocoPhillips Co. - Cat reformer #3: Stabilizer reboiler (HTR-CR3-H2 - STK12-9)	755014.00	4302580.00	442.62	150.0	950.1	7.019	7.8	4.79E+00	0.00E+00	0.00E+00
IL132567	DEFAULT	ConocoPhillips Co. - Catalytic reformer unit #3: Charge heater (HTR-CR3 -H4)	755019.00	4302571.00	442.65	150.0	800.0	28.766	7.8	1.75E+01	8.04E+00	8.04E+00
IL132568	DEFAULT	ConocoPhillips Co. - Catalytic reformer unit #3: First interreactor heater (HTR-CR3-HS)	755019.00	4302548.00	442.78	150.0	749.9	26.929	7.8	2.11E+01	6.93E+00	6.93E+00
IL132569	DEFAULT	ConocoPhillips Co. - Cat reformer #3: Second interreactor heater (HTR-CR3-H6 - STK12-12)	755019.00	4302559.00	442.72	150.0	749.9	14.006	7.8	5.55E+00	0.00E+00	0.00E+00
IL132594	DEFAULT	ConocoPhillips Co. - Sulfuric acid tank	755114.00	4302829.00	441.93	40.0	186.0	26.273	2.0	1.78E+00	2.35E+00	2.35E+00
IL132598	DEFAULT	ConocoPhillips Co. - CCU-2 Startup heater B-1	754240.00	4303144.00	443.47	16.0	509.1	32.964	3.2	4.40E-01	0.00E+00	0.00E+00
IL132599	DEFAULT	Airgas USA, LLC - Liquified carbon dioxide plant	756314.00	4302509.00	435.93	30.0	70.1	79.573	0.2	4.10E-01	0.00E+00	0.00E+00
IL132701	DEFAULT	Kinder Morgan Liquids Terminals, LLC - New Truck loading rack	752998.00	4303578.00	435.63	20.0	70.1	0.262	2.2	4.87E+00	0.00E+00	0.00E+00
IL132739	DEFAULT	National Maintenance and Repair - Cleaver Brooks boiler (Stack 1 of 2)	750915.00	4300904.00	402.46	34.0	450.1	23.321	2.0	1.90E+00	5.00E+00	5.00E+00
IL132777	DEFAULT	Elias Kallal & Schaaf Funeral Home & Crematory - Crematorium	742098.00	4312210.00	627.20	30.0	1400.1	18.368	1.7	3.00E+00	0.00E+00	0.00E+00
IL132781	DEFAULT	Christ Bros Products, LLC - Baghouse	754160.00	4283243.00	419.46	32.0	240.0	83.706	3.9	5.56E+01	2.48E+01	2.48E+01
IL132928	DEFAULT	Enable Mississippi River Transmission, LLC - Engine SN-02	782556.00	4285336.00	492.29	30.0	1000.0	9.414	2.6	1.36E+01	0.00E+00	0.00E+00
IL133625	DEFAULT	Waterloo City Light Plant - Engine #1	748326.00	4246769.00	640.45	29.0	749.9	13.579	2.3	4.00E+01	1.35E+00	1.35E+00
IL133627	DEFAULT	Waterloo City Light Plant - Engine #9	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL133628	DEFAULT	Waterloo City Light Plant - Engine #10	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL135983	DEFAULT	Lakeview Memorial Gardens - Crematory	762896.00	4273894.00	579.89	16.0	895.0	26.666	2.6	8.40E+00	0.00E+00	0.00E+00
IL136012	DEFAULT	Breckenridge of IL - Natural gas combustion	756461.00	4277782.00	423.82	38.0	341.0	25.781	2.7	3.94E+00	0.00E+00	0.00E+00
IL136014	DEFAULT	Touchette Regional Hospital - 2 Boilers	751890.00	4273014.00	415.94	39.0	800.0	6.560	3.7	2.26E+00	0.00E+00	0.00E+00
IL136018	DEFAULT	Upchurch Ready Mix Concrete Company - Boiler	749859.00	4276616.00	418.44	30.0	376.1	29.684	3.7	0.00E+00	3.00E-01	3.00E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL136098	DEFAULT	Safety Kleen Systems, Inc. - Pipe still (heat exchanger)	749786.00	4276425.00	420.28	15.0	170.0	0.295	1.0	0.00E+00	1.38E+00	1.38E+00
IL136125	DEFAULT	Milam Recycling and Disposal Facility - Open flare	750434.00	4282812.00	420.54	42.0	1800.1	10.070	1.0	1.83E+01	6.00E+00	6.00E+00
IL136129	DEFAULT	Village of Freeburg - Engine #6	769352.00	4257578.00	509.42	24.0	749.9	24.239	1.8	3.93E+00	0.00E+00	0.00E+00
IL136130	DEFAULT	Village of Freeburg - Engine #4	769352.00	4257578.00	509.42	25.0	550.0	87.871	1.3	9.60E+00	0.00E+00	0.00E+00
IL136131	DEFAULT	Village of Freeburg - Engine #7	769352.00	4257578.00	509.42	22.0	900.1	18.926	2.7	4.50E+01	4.43E+00	4.43E+00
IL136169	DEFAULT	Darling Ingredients, Inc. - Continuous rendering process	747472.00	4281438.00	414.93	44.0	74.9	84.854	4.0	6.67E+00	1.43E+00	1.43E+00
IL136187	DEFAULT	Asphalt Sales & Products Inc. - Drum mix asphalt plant	772959.00	4275690.00	514.30	33.0	325.0	47.134	4.5	6.49E+01	2.90E+01	2.90E+01
IL136486	DEFAULT	Cerro Flow Products, LLC. - Piercing Mill Furnace #2	746228.00	4275272.00	407.32	25.0	299.9	38.901	2.0	8.65E-01	0.00E+00	0.00E+00
IL136547	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	747162.00	4269805.00	448.72	36.0	315.1	86.592	3.5	1.34E+01	5.91E+00	5.91E+00
IL142809	DEFAULT	Magnesium Elektron North America - Combustion units	746452.00	4285724.00	415.49	60.0	450.1	30.537	2.0	1.02E+01	4.44E+00	4.44E+00
IL143317	DEFAULT	Waterloo City Light Plant - Engine #11	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL143319	DEFAULT	Waterloo City Light Plant - Engine #7	748326.00	4246769.00	640.45	33.0	749.9	84.854	2.0	3.41E+01	0.00E+00	0.00E+00
IL143320	DEFAULT	Waterloo City Light Plant - Engine #8	748326.00	4246769.00	640.45	27.0	680.1	84.230	2.3	1.87E+01	1.36E+00	1.36E+00
IL145809	DEFAULT	ConocoPhillips Co. - Crude heaters (STK5-3)	754415.00	4303016.00	445.93	311.9	530.0	87.970	14.0	7.81E+01	1.98E+01	1.98E+01
IL145820	DEFAULT	ConocoPhillips Co. - Sulfur recovery unit #1 (STK3-1)	752928.00	4303077.00	428.41	125.0	965.9	17.712	7.2	0.00E+00	4.05E+01	4.05E+01
IL145826	DEFAULT	ConocoPhillips Co. - Supplemental air compressor engine CCU-1	754240.00	4303144.00	443.47	15.0	117.1	20.369	1.5	7.10E-01	1.74E+00	1.74E+00
IL145838	DEFAULT	ConocoPhillips Co. - Sulfur recovery unit #2 (STK3-2)	752929.00	4303071.00	428.38	125.0	965.9	17.712	7.2	0.00E+00	4.05E+01	4.05E+01
IL145850	DEFAULT	ConocoPhillips Co. - Flare for major effluent treatment project	754240.00	4303144.00	443.47	30.0	78.0	14.006	9.2	4.51E+00	0.00E+00	0.00E+00
IL147845	DEFAULT	Mayco Mfg, LLC - Britt kettles combustion stack	747189.00	4286970.00	421.78	34.0	250.1	2.362	1.1	2.00E-01	0.00E+00	0.00E+00
IL147846	DEFAULT	Mayco Mfg, LLC - Mixed metals A-II dross baghouse discharge stack	747189.00	4286970.00	421.78	30.0	95.1	52.611	5.0	5.77E-01	0.00E+00	0.00E+00
IL148354	DEFAULT	ConocoPhillips Co. - Catalytic cracking unit #1 (STK6-2)	754864.00	4302895.00	442.88	199.9	175.0	49.954	11.0	2.32E+01	3.84E+01	3.84E+01
IL149873	DEFAULT	City of Alton - Incinerator	749456.00	4310990.00	446.33	25.0	1400.1	53.038	1.0	1.40E+00	0.00E+00	0.00E+00
IL149908	DEFAULT	Charles E. Mahoney - Drum mix asphalt plant	749517.00	4309892.00	443.14	25.0	295.1	66.289	4.0	5.74E+01	2.56E+01	2.56E+01
IL154190	DEFAULT	Milam Recycling and Disposal Facility - Engine #1	750544.00	4282853.00	411.88	26.0	820.0	86.231	0.8	6.93E+00	1.78E+00	1.78E+00
IL154191	DEFAULT	Milam Recycling and Disposal Facility - Engine #2	750538.00	4282852.00	412.01	26.0	820.0	86.231	0.8	6.93E+00	1.78E+00	1.78E+00
IL154192	DEFAULT	Milam Recycling and Disposal Facility - Engine #3	750548.00	4282855.00	411.81	26.0	820.0	86.231	0.8	7.14E+00	1.84E+00	1.84E+00
IL155302	DEFAULT	Alton Steel Inc. - Ladle Furnace	747753.00	4307832.00	433.07	74.0	275.1	87.215	3.0	2.24E+01	1.12E+01	1.12E+01
IL155304	DEFAULT	Precoat Metals - Boiler B1	749469.00	4292538.00	424.97	24.0	700.1	20.730	1.6	8.80E-01	0.00E+00	0.00E+00
IL155305	DEFAULT	Granite City Pickling & Warehousing - Boiler	746973.00	4286890.00	422.41	50.0	331.1	15.449	2.7	7.06E-01	0.00E+00	0.00E+00
IL155307	DEFAULT	Kraft Heinz Co. - Boiler B	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL155437	DEFAULT	Southwestern Illinois Correctional Center - 2 Boilers	753202.00	4278290.00	421.46	32.0	450.1	15.285	1.5	7.06E-01	0.00E+00	0.00E+00
IL155441	DEFAULT	Asphalt Sales & Products Inc. - Asphalt heaters and boilers	772959.00	4275690.00	514.30	33.0	341.0	18.368	3.2	0.00E+00	2.80E+00	2.80E+00
IL156624	DEFAULT	US Air Force/Scott Air Force Base - Boilers and Heaters	774337.00	4270862.00	440.32	30.0	331.1	23.288	2.2	4.81E+00	0.00E+00	0.00E+00
IL156970	DEFAULT	Olin Winchester, LLC - Package Boiler (B-6)	750906.00	4308625.00	436.06	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL159940	DEFAULT	Afton Chemical Corp. - 258 Sulfonation Stack	746513.00	4276305.00	407.05	158.0	70.1	41.820	1.0	0.00E+00	5.59E+00	5.59E+00
IL159942	DEFAULT	Afton Chemical Corp. - Unit 266: Flare 36-0011/36-0610	746653.00	4276356.00	410.10	100.0	700.1	59.368	0.7	8.55E+00	4.90E+01	4.90E+01
IL159965	DEFAULT	Afton Chemical Corp. - Flare 36-0219	746513.00	4276305.00	407.05	146.0	1000.0	42.837	0.4	3.84E+00	2.74E+01	2.74E+01
IL160741	DEFAULT	Brady McCasland, Inc. - Compaction plant	748518.00	4276987.00	413.75	17.0	1521.1	65.469	1.8	5.20E-01	0.00E+00	0.00E+00
IL160742	DEFAULT	Darling Ingredients, Inc. - Kewanee boiler	747472.00	4281438.00	414.93	35.0	450.1	54.448	2.6	1.96E+00	1.51E+01	1.51E+01
IL160799	DEFAULT	ConocoPhillips Co. - Supplemental air compressor engine CCU-2	754240.00	4303144.00	443.47	48.0	117.1	20.369	1.5	0.00E+00	1.74E+00	1.74E+00
IL160898	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0110	746653.00	4276489.00	405.22	45.0	350.0	17.318	7.0	4.89E+00	0.00E+00	0.00E+00
IL165120	DEFAULT	BFI Waste Systems of North America, Inc. - Flare	758882.00	4264336.00	574.97	35.0	1600.1	23.485	0.8	6.80E+00	0.00E+00	0.00E+00
IL166479	DEFAULT	Union Electric Co. - Turbine CT02A	745573.00	4283620.00	420.60	30.0	850.0	18.860	11.4	7.73E+01	2.73E+01	2.73E+01
IL166491	DEFAULT	Enable Mississippi River Transmission, LLC - Turbine SN-03	782556.00	4285336.00	492.29	30.0	749.9	86.854	2.5	9.56E+00	0.00E+00	0.00E+00
IL167781	DEFAULT	Amsted Rail Co., Inc. - Pouring and casting (PR/CST-1)	747025.00	4287611.00	424.80	101.0	251.0	34.768	9.7	0.00E+00	6.70E-01	6.70E-01
IL167787	DEFAULT	Amsted Rail Co., Inc. - Ladle Preheater (LDP-1)	747039.00	4287611.00	424.93	82.0	505.0	31.488	6.1	6.50E+00	2.20E-01	2.20E-01
IL167858	DEFAULT	ConocoPhillips Co. - Scot unit	754240.00	4303144.00	443.47	16.0	115.1	15.580	9.0	0.00E+00	1.72E+02	1.72E+02
IL169226	DEFAULT	Messer, LLC - 2 Boilers	752309.00	4301220.00	434.42	15.0	800.0	0.525	1.4	2.52E+00	0.00E+00	0.00E+00
IL172707	DEFAULT	St. Anthony's Hospital - Boiler #4	745097.00	4310364.00	584.58	64.0	400.0	58.614	2.3	0.00E+00	6.02E+00	6.02E+00
IL179611	DEFAULT	Highland Electric Light Plant - Engine IC-1	788126.93	4293320.17	534.65	12.0	656.0	86.920	1.2	1.44E+01	0.00E+00	0.00E+00
IL179671	DEFAULT	Village of Freeburg - Engine #1	769352.00	4257578.00	509.42	30.0	500.1	40.311	1.0	8.55E+00	8.25E-01	8.25E-01
IL179672	DEFAULT	Village of Freeburg - Engine #2	769352.00	4257578.00	509.42	30.0	500.1	40.311	1.0	8.55E+00	8.25E-01	8.25E-01
IL179673	DEFAULT	Village of Freeburg - Engine #3a	769352.00	4257578.00	509.42	25.0	500.1	55.170	1.0	5.92E+00	0.00E+00	0.00E+00
IL181173	DEFAULT	ConocoPhillips Co. - Loading rack	752292.00	4299987.00	429.92	40.0	1800.1	87.510	2.0	1.53E+00	0.00E+00	0.00E+00
IL183733	DEFAULT	Veolia ES Technical Solutions, LLC - Hazardous waste incinerator #4 (rotary kiln)	745532.00	4275942.00	414.76	57.0	650.9	32.570	2.8	3.17E+00	1.16E+01	1.16E+01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL189069	DEFAULT	US Air Force/Scott Air Force Base - Diesel generators	774337.00	4270862.00	440.32	37.0	402.0	29.389	1.3	5.83E+01	0.00E+00	0.00E+00
IL190090	DEFAULT	Contract Services, LLC - 3 Boilers	746767.00	4275755.00	417.81	40.0	310.0	50.381	4.2	8.53E+00	5.14E+00	5.14E+00
IL192953	DEFAULT	Midwest Metal Coatings, LLC - Chemical coater/infrared oven (CC/IRO)	748281.00	4290395.00	423.88	34.0	110.0	18.926	3.0	2.90E-01	0.00E+00	0.00E+00
IL192964	DEFAULT	Midwest Metal Coatings, LLC - Afterburner	748281.00	4290395.00	423.88	34.0	900.1	23.780	5.0	3.28E-01	0.00E+00	0.00E+00
IL192967	DEFAULT	Midwest Metal Coatings, LLC - Boiler (B1)	748281.00	4290395.00	423.88	34.0	400.0	67.338	1.5	2.12E+00	0.00E+00	0.00E+00
IL198552	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	778702.00	4276345.00	439.34	35.0	297.1	62.254	3.8	2.95E+01	1.32E+01	1.32E+01
IL201652	DEFAULT	Empire Comfort Systems - Stack	763529.00	4266192.00	477.26	25.0	800.0	14.334	1.0	2.69E+00	0.00E+00	0.00E+00
IL204833	DEFAULT	Milam Recycling and Disposal Facility - 3 Passive solar flares	750550.00	4282537.00	594.06	20.0	1800.1	57.138	0.7	4.23E+00	4.38E+00	4.38E+00
IL207740	DEFAULT	Chemtrade Solutions, LLC - Scrubber C007	753339.00	4281367.00	422.21	30.0	70.1	0.394	0.3	0.00E+00	2.00E-01	2.00E-01
IL208343	DEFAULT	Center Point Terminal Co. - Asphalt and polymer modified blend tank (T-9)	746361.00	4289240.00	416.44	33.0	185.1	0.951	1.5	1.00E-01	0.00E+00	0.00E+00
IL209238	DEFAULT	Concrete Supply, LLC - Natural gas combustion	757768.00	4302270.00	444.69	20.0	341.0	25.781	2.7	9.69E-01	0.00E+00	0.00E+00
IL209433	DEFAULT	Alton Water Treatment Facility - Stack	742583.00	4309460.00	488.98	22.0	400.0	85.083	0.7	0.00E+00	5.50E-01	5.50E-01
IL211274	DEFAULT	Kienstra-Illinois, LLC - Natural gas combustion	764550.00	4296982.00	575.95	20.0	341.0	25.781	2.7	7.68E-01	0.00E+00	0.00E+00
IL211772	DEFAULT	Center Point Terminal Co. - Incinerator/waste heat boiler	746361.00	4289240.00	416.44	18.0	650.0	7.970	2.0	1.83E-01	1.05E+00	1.05E+00
IL212692	DEFAULT	Chain of Rocks Recycling & Disposal - Open flare	746945.00	4293274.00	431.59	20.0	1400.1	47.265	0.7	6.92E+00	1.06E+00	1.06E+00
IL212881	DEFAULT	Koch Fertilizer, LLC - Ammonia heater	750008.00	4305316.00	428.15	25.0	250.1	42.443	1.0	2.43E+00	5.30E-01	5.30E-01
IL213573	DEFAULT	Illinois Department of Transportation - R and K model 367-1 incinerator	732106.00	4332182.00	623.79	15.0	736.1	30.865	2.8	2.88E+00	0.00E+00	0.00E+00
IL213834	DEFAULT	Darling Ingredients, Inc. - Johnson boiler	747472.00	4281438.00	414.93	33.0	450.1	46.937	2.8	1.96E+00	1.51E+01	1.51E+01
IL213854	DEFAULT	Solvay Fluorides, LLC - Boiler	750245.00	4276115.00	419.72	30.0	361.0	7.314	2.8	1.44E+00	0.00E+00	0.00E+00
IL215315	DEFAULT	Madison County Sand, LLC - Drum mix asphalt plant	758921.00	4289026.00	422.01	32.0	245.0	64.452	4.1	1.63E+01	5.00E-01	5.00E-01
IL217756	DEFAULT	Phillips 66 Pipeline, LLC - Truck loading racks	744935.00	4274152.00	407.25	20.0	70.1	10.594	2.0	1.10E+01	0.00E+00	0.00E+00
IL218530	DEFAULT	ConocoPhillips Co. - North property ground flare (FLR1-2)	754486.00	4303322.00	445.08	195.0	1800.1	2.394	3.0	1.41E+01	0.00E+00	0.00E+00
IL218537	DEFAULT	Custom Steel Processing - Scrubber	746335.00	4286043.00	416.99	55.0	70.1	49.036	4.2	0.00E+00	1.00E-01	1.00E-01
IL218539	DEFAULT	Custom Steel Processing - Sulfuric acid storage tank	746335.00	4286043.00	416.99	35.0	127.0	0.000	2.4	0.00E+00	1.00E-01	1.00E-01
IL218569	DEFAULT	Contract Services, LLC - Boiler #4	746767.00	4275755.00	417.81	40.0	310.0	49.036	3.7	1.30E+01	1.64E+00	1.64E+00
IL218687	DEFAULT	ConocoPhillips Co. - Gas plant sour water stripper	754240.00	4303144.00	443.47	15.0	128.9	11.382	2.9	1.06E+00	0.00E+00	0.00E+00
IL218995	DEFAULT	Asphalt Sales & Products Inc. - Asphalt silos and truck loadout	772959.00	4275690.00	514.30	32.0	86.1	84.854	1.5	1.26E+00	0.00E+00	0.00E+00
IL219420	DEFAULT	Crown Textile Services - Boiler	744287.00	4259382.00	466.40	24.0	450.1	35.227	1.7	1.03E+00	0.00E+00	0.00E+00
IL220266	DEFAULT	American Colloid Co. - Sand drying	746862.00	4287239.00	419.91	72.0	491.1	28.766	3.3	1.29E+00	0.00E+00	0.00E+00
IL220267	DEFAULT	American Colloid Co. - Space Heaters	746862.00	4287239.00	419.91	35.0	198.1	21.484	1.4	2.30E-01	0.00E+00	0.00E+00
IL220618	DEFAULT	Asphalt Sales & Products Inc. - Drum mix asphalt plant	757560.00	4299901.00	441.63	32.0	280.0	68.322	4.3	7.61E+01	3.40E+01	3.40E+01
IL220849	DEFAULT	ConocoPhillips Co. - Alkylation unit flare (FLR6-1)	755035.00	4303081.00	442.55	199.9	1800.1	2.034	2.5	1.85E+01	0.00E+00	0.00E+00
IL222033	DEFAULT	Waterloo City Light Plant - Dual fuel-fired Turbine GT1	748326.00	4246769.00	640.45	39.0	612.1	41.590	4.8	1.77E+01	0.00E+00	0.00E+00
IL222134	DEFAULT	Asphalt Sales & Products Inc. - Asphalt silo loading	757560.00	4299901.00	441.63	26.0	123.0	4.986	1.7	7.00E-01	0.00E+00	0.00E+00
IL222135	DEFAULT	Asphalt Sales & Products Inc. - Asphalt heaters and boilers	757560.00	4299901.00	441.63	35.0	361.0	26.896	3.7	0.00E+00	2.80E+00	2.80E+00
IL222988	DEFAULT	Apex Oil Co., Inc. - Thermal oxidizers	752471.00	4302667.00	431.07	18.0	820.0	43.985	2.3	2.98E+00	0.00E+00	0.00E+00
IL223796	DEFAULT	Union Electric Co. - Turbine CT03	745735.00	4282930.00	420.96	38.0	603.1	74.948	3.4	4.90E+01	1.30E+00	1.30E+00
IL223797	DEFAULT	Union Electric Co. - Turbine CT04	745776.00	4282947.00	421.16	38.0	603.1	74.948	3.4	4.90E+01	1.30E+00	1.30E+00
IL223798	DEFAULT	Union Electric Co. - Turbine CT05	745538.00	4283620.00	420.90	38.0	603.1	74.948	3.4	6.90E+01	9.00E-01	9.00E-01
IL224167	DEFAULT	Interurban ILAWC - Emergency generator	757265.00	4276109.00	482.38	29.0	880.1	51.463	1.3	1.10E+01	4.60E+00	0.00E+00
IL224416	DEFAULT	Belleville Landfill, Inc. - Flare	760402.00	4264040.00	571.88	35.0	1600.1	8.659	0.8	1.22E+01	0.00E+00	0.00E+00
IL224592	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	755685.00	4299823.00	431.10	32.0	251.0	53.628	4.1	3.09E+01	1.38E+01	1.38E+01
IL224594	DEFAULT	Christ Bros Products, LLC - Asphalt tank heaters and boilers	755701.00	4299841.00	427.46	10.0	416.0	42.443	1.0	1.18E+00	2.80E+00	2.80E+00
IL224838	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-01	750039.00	4285426.00	410.47	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224839	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-02	750044.00	4285416.00	410.24	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224840	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-03	750049.00	4285406.00	410.37	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224841	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-04	750054.00	4285397.00	410.30	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224901	DEFAULT	Premcor Refining Group, Inc. - Thermal oxidizer	752775.00	4302414.00	429.95	20.0	342.1	49.462	0.8	7.40E-01	0.00E+00	0.00E+00
IL225166	DEFAULT	Metro Crematory - Crematory	754120.00	4290785.00	417.29	18.0	736.1	84.854	1.0	1.50E+00	0.00E+00	0.00E+00
IL225832	DEFAULT	ConocoPhillips Co. - Startup/malfunction/breakdown	754240.00	4303144.00	443.47	103.0	623.9	21.681	4.6	2.86E+01	1.91E+02	1.91E+02
IL225843	DEFAULT	City of O'Fallon - 400 kW (591 HP) Diesel generator	774612.00	4277280.00	434.42	13.0	500.1	86.592	0.7	3.37E+00	0.00E+00	0.00E+00
IL225844	DEFAULT	City of O'Fallon - 900 kW (1 322 HP) Diesel generator	774612.00	4277280.00	434.42	17.0	500.1	86.592	0.7	7.55E+00	0.00E+00	0.00E+00
IL225960	DEFAULT	Waterloo City Light Plant - Engine #4	748326.00	4246769.00	640.45	37.0	680.1	87.904	2.5	3.32E+01	0.00E+00	0.00E+00
IL226013	DEFAULT	Milam Recycling and Disposal Facility - 325 HP Tub grinder	750550.00	4282537.00	594.06	7.0	627.0	74.030	0.3	2.20E+00	8.00E-01	8.00E-01
IL226014	DEFAULT	Milam Recycling and Disposal Facility - Enclosed flare	750476.00	4282825.00	419.62	55.0	1400.1	0.656	12.0	2.40E+01	6.08E+00	6.08E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL226015	DEFAULT	Milam Recycling and Disposal Facility - 760 HP Tub grinder	750550.00	4282537.00	594.06	8.0	627.0	70.881	0.7	5.10E+00	1.90E+00	1.90E+00
IL226184	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - 1F Mix muller (MM-3) Low profile turbine (LF-1) and Induction form sta	750075.00	4306259.00	432.32	41.0	209.9	36.080	2.1	2.00E+00	0.00E+00	0.00E+00
IL226204	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #4 (SA-4)	750150.00	4308388.00	431.10	90.0	350.0	41.426	1.6	9.33E+01	0.00E+00	0.00E+00
IL226256	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip Anneal #3 (SA-3)	750439.00	4308328.00	433.83	100.0	350.0	62.746	1.3	9.83E+01	0.00E+00	0.00E+00
IL226257	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - #7 Strip Anneal (SA-7)	750222.00	4308335.00	433.20	89.0	850.0	38.671	1.5	1.18E+02	0.00E+00	0.00E+00
IL226352	DEFAULT	Olin Winchester, LLC - Hammermill 1 2 and 3 (HM-1 HM-2 and HM-3)	750495.00	4308287.00	434.42	21.0	160.1	19.647	1.8	8.03E+00	0.00E+00	0.00E+00
IL226612	DEFAULT	Solutia Inc. - Santoflex process: Thermal oxidizer 2770934	746325.00	4275822.00	405.12	112.0	865.0	16.794	12.6	1.50E+01	0.00E+00	0.00E+00
IL226783	DEFAULT	Schildknecht Funeral Home, Inc. - Crematory	769033.00	4275796.00	549.57	17.0	1241.0	13.612	1.7	1.20E+00	0.00E+00	0.00E+00
IL227030	DEFAULT	ConocoPhillips Co. - #4 Crude unit heater H-24 (STK9-5)	753051.00	4302413.00	428.81	179.9	550.0	26.207	8.5	2.27E+01	0.00E+00	0.00E+00
IL227032	DEFAULT	ConocoPhillips Co. - Hydrogen plant #1 flare (FLR12-2)	755194.00	4302793.00	443.67	130.0	1800.1	7.970	1.7	1.62E+01	0.00E+00	0.00E+00
IL227034	DEFAULT	ConocoPhillips Co. - Sulfur operation	754240.00	4303144.00	443.47	158.0	590.1	37.753	3.4	0.00E+00	3.00E+01	3.00E+01
IL227035	DEFAULT	ConocoPhillips Co. - Process heater HP-1 (STK12-6)	755194.00	4302793.00	443.67	127.0	360.1	27.093	7.5	6.97E+00	0.00E+00	0.00E+00
IL227038	DEFAULT	ConocoPhillips Co. - SZU Charge heater H-3	755219.00	4302667.00	442.29	150.0	567.1	25.518	5.0	5.75E+00	0.00E+00	0.00E+00
IL227333	DEFAULT	Waterloo City Light Plant - Engine SG5	750635.00	4249410.00	628.97	8.0	924.0	61.172	0.7	1.40E+00	0.00E+00	0.00E+00
IL227400	DEFAULT	Collinsville Wastewater Treatment Plant - Emergency diesel generator (2922 HP/2180 kW)	758289.00	4283982.00	419.36	36.0	692.0	67.371	2.0	1.72E+01	1.20E+00	0.00E+00
IL227432	DEFAULT	Totall Metal Recycling, Inc. - Safety certification unit	748030.00	4289120.00	422.74	6.0	587.0	8.069	1.2	1.00E-01	0.00E+00	0.00E+00
IL227590	DEFAULT	Illinois Electric Works - 3 Burn off ovens	747872.00	4288124.00	423.20	46.0	250.1	41.230	2.4	1.17E+00	6.90E-02	6.90E-02
IL227679	DEFAULT	Union Electric Co. - Diesel generator	745516.00	4283326.00	430.38	26.0	490.0	60.811	1.4	1.30E+00	1.60E-01	1.60E-01
IL228119	DEFAULT	St. Clair Crematory - Human crematory	773291.00	4275644.00	507.28	17.0	1241.0	13.612	1.7	1.20E+00	0.00E+00	0.00E+00
IL228260	DEFAULT	Center Ethanol Co. - West boiler	745888.00	4275662.00	412.66	75.0	428.1	43.460	3.0	3.23E+00	0.00E+00	0.00E+00
IL228262	DEFAULT	Center Ethanol Co. - East boiler	745888.00	4275662.00	412.66	75.0	428.1	45.428	3.0	3.23E+00	0.00E+00	0.00E+00
IL228263	DEFAULT	Center Ethanol Co. - RTO	745888.00	4275662.00	412.66	50.0	310.0	70.684	5.5	6.85E+00	0.00E+00	0.00E+00
IL228294	DEFAULT	ConocoPhillips Co. - Distilling west refinery flare (FLR10-1)	753647.00	4302546.00	430.31	197.0	1800.1	6.626	3.0	2.51E+01	0.00E+00	0.00E+00
IL228295	DEFAULT	ConocoPhillips Co. - SZU Regenerator vent	755209.00	4302720.00	442.32	44.0	135.1	32.341	2.0	1.78E+00	2.35E+00	2.35E+00
IL229921	DEFAULT	Christ Bros Products, LLC - 8 Heaters and boilers	754160.00	4283243.00	419.46	37.0	400.0	20.664	1.8	1.18E+00	2.80E+00	2.80E+00
IL229922	DEFAULT	Christ Bros Products, LLC - Silo filling	754160.00	4283243.00	419.46	25.0	74.0	0.262	0.4	5.10E-01	0.00E+00	0.00E+00
IL229923	DEFAULT	Christ Bros Products, LLC - Truck loading	754160.00	4283243.00	419.46	29.0	135.1	48.052	2.0	5.80E-01	0.00E+00	0.00E+00
IL230300	DEFAULT	Afton Chemical Corp. - Flare 36-0090	746478.00	4276293.00	407.28	45.0	1600.1	0.656	8.0	2.20E+00	0.00E+00	0.00E+00
IL230350	DEFAULT	Village of Freeburg - Engine #10	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL230355	DEFAULT	Asphalt Sales & Products Inc. - Truck loadout	757560.00	4299901.00	441.63	28.0	135.1	43.198	1.9	7.90E-01	0.00E+00	0.00E+00
IL231259	DEFAULT	Village of Freeburg - Engine #11	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL231260	DEFAULT	Village of Freeburg - Engine #12	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL231291	DEFAULT	Kurrus Funeral Home - 2 Crematories	759066.00	4271234.00	547.11	18.0	787.0	13.186	1.1	2.70E+00	0.00E+00	0.00E+00
IL232739	DEFAULT	ConocoPhillips Co. - Benzene extraction unit #3 (STK6-4)	754923.00	4302930.00	442.59	185.0	470.0	16.138	9.7	1.22E+01	0.00E+00	0.00E+00
IL232785	DEFAULT	Roxana Landfill, Inc. - Enclosed flare	759153.00	4301368.00	619.62	35.0	1600.1	20.008	12.0	2.31E+01	1.76E+00	1.76E+00
IL233294	DEFAULT	Gateway Terminals, LLC. - Marine vapor combustion unit (MVCU)	744607.00	4275093.00	422.70	74.0	514.0	25.158	3.3	1.69E+01	0.00E+00	0.00E+00
IL233295	DEFAULT	Gateway Terminals, LLC. - Truck/Rail vapor destruction unit (TRCU)	744607.00	4275093.00	422.70	74.0	514.0	25.158	3.3	8.39E+00	0.00E+00	0.00E+00
IL235261	DEFAULT	Gulfstream Aerospace Services Corp. - Make-up air unit 19-3	747629.00	4273560.00	410.10	42.0	577.0	29.356	2.5	1.63E+00	0.00E+00	0.00E+00
IL235939	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #5 (SA-5)	750151.00	4308373.00	430.91	90.0	450.1	54.087	1.4	1.07E+02	0.00E+00	0.00E+00
IL235940	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #6 (SA-6)	750207.00	4308390.00	431.82	110.0	580.0	62.779	1.3	1.07E+02	0.00E+00	0.00E+00
IL236260	DEFAULT	Bunge-SF Grain, LLC. - Grain Dryer	746158.00	4281045.00	417.55	96.0	105.0	87.904	8.2	5.06E+00	1.71E+01	1.71E+01
IL236359	DEFAULT	City of Belleville - 2 Emergency generators (1500 kW each)	763544.00	4265595.00	474.70	28.0	627.0	73.767	1.2	2.57E+01	1.84E+00	0.00E+00
IL236927	DEFAULT	Kraft Heinz Co. - Boiler C	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236928	DEFAULT	Kraft Heinz Co. - Boiler D	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236929	DEFAULT	Kraft Heinz Co. - Boiler E	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236930	DEFAULT	National Maintenance and Repair - Cleaver Brooks boiler (Stack 2 of 2)	750920.00	4300904.00	402.46	34.0	450.1	23.321	2.0	1.90E+00	5.00E+00	5.00E+00
IL237099	DEFAULT	Union Electric Co. - Turbine CT02B	745573.00	4283613.00	419.69	30.0	850.0	18.860	11.4	7.74E+01	2.73E+01	2.73E+01
IL237182	DEFAULT	Highland Electric Light Plant - Engine IC-6	788126.93	4293320.17	534.65	28.0	612.1	84.854	2.0	1.32E+01	0.00E+00	0.00E+00
IL237183	DEFAULT	Highland Electric Light Plant - Engine IC-8	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	2.57E+01	0.00E+00	0.00E+00
IL237340	DEFAULT	Charles E. Mahoney - Asphalt silo filling	749517.00	4309892.00	443.14	25.0	74.0	0.262	0.4	5.30E-01	0.00E+00	0.00E+00
IL237341	DEFAULT	Charles E. Mahoney - Truck loadout	749517.00	4309892.00	443.14	27.0	136.0	42.050	1.9	6.00E-01	0.00E+00	0.00E+00
IL237362	DEFAULT	Charles E. Mahoney - Asphalt heaters and boilers	749517.00	4309892.00	443.14	10.0	350.0	69.995	1.0	1.18E+00	2.80E+00	2.80E+00
IL237659	DEFAULT	Green Plains Madison, LLC - Boiler #1	745256.00	4285477.00	414.14	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL237660	DEFAULT	Green Plains Madison, LLC - Fire Pump back-up Engine (460 HP)	745191.00	4285409.00	413.85	13.0	627.0	86.231	0.8	4.80E-01	9.40E-01	0.00E+00
IL237661	DEFAULT	Green Plains Madison, LLC - Electrical system backup Engine (1495 HP)	745144.00	4285537.00	415.88	28.0	627.0	73.767	1.2	3.54E+00	1.21E+01	0.00E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL237679	DEFAULT	Green Plains Madison, LLC - Indirect dryer #1	745191.00	4285468.00	415.12	71.0	387.1	12.136	4.6	7.97E+00	4.10E-01	4.10E-01
IL237866	DEFAULT	Amsted Rail Co., Inc. - Curing oven	746913.00	4287625.00	419.23	39.0	258.0	27.978	1.9	2.52E-01	0.00E+00	0.00E+00
IL237899	DEFAULT	Center Ethanol Co. - Emergency generator	745888.00	4275662.00	412.66	28.0	627.0	73.767	1.2	3.30E+00	0.00E+00	0.00E+00
IL237903	DEFAULT	Center Ethanol Co. - Ethanol loadout Rack	745888.00	4275662.00	412.66	19.0	99.1	7.806	0.7	8.86E-01	0.00E+00	0.00E+00
IL238199	DEFAULT	Solutia Inc. - An in-situ soil vapor extraction system	746325.00	4275822.00	405.12	15.0	70.1	73.406	0.2	4.00E-01	0.00E+00	0.00E+00
IL238839	DEFAULT	Waterloo City Light Plant - Turbine Generator (GT2)	748326.00	4246769.00	640.45	39.0	965.9	87.937	4.8	1.78E+01	0.00E+00	0.00E+00
IL238942	DEFAULT	ConocoPhillips Co. - Rental Boiler #3	754240.00	4303144.00	443.47	20.0	550.0	46.412	4.0	1.65E+00	0.00E+00	0.00E+00
IL239395	DEFAULT	Amsted Rail Co., Inc. - Sand dryer	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	1.24E+00	0.00E+00	0.00E+00
IL239396	DEFAULT	Amsted Rail Co., Inc. - Thermal sand reclaimer	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	3.70E-01	0.00E+00	0.00E+00
IL239899	DEFAULT	Shell Oil Products US - RTO	753758.00	4303650.00	442.59	19.0	200.0	33.948	2.5	0.00E+00	8.47E-01	8.47E-01
IL240053	DEFAULT	Westwood Lands, Inc. - Process heater DFH-1	748864.00	4285684.00	412.99	39.0	284.1	23.157	2.0	8.30E-01	0.00E+00	0.00E+00
IL240359	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0210	746660.00	4276488.00	405.74	45.0	350.0	17.318	7.0	4.89E+00	0.00E+00	0.00E+00
IL240360	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0310	746674.00	4276485.00	407.25	45.0	350.0	17.318	7.0	4.91E+00	0.00E+00	0.00E+00
IL241300	DEFAULT	ConocoPhillips Co. - VOC Flare (West - FLR4-1)	753428.00	4303073.00	428.81	30.0	1800.1	26.174	0.7	1.43E+00	0.00E+00	0.00E+00
IL241301	DEFAULT	ConocoPhillips Co. - VOC Flare (East - FLR4-2)	753441.00	4303073.00	428.77	30.0	1800.1	26.174	0.7	1.43E+00	0.00E+00	0.00E+00
IL241302	DEFAULT	ConocoPhillips Co. - Coker north flare (FLR1-3)	754947.00	4303684.00	444.23	139.0	911.0	26.535	5.4	0.00E+00	3.08E+01	3.08E+01
IL241303	DEFAULT	ConocoPhillips Co. - VF-5 Heater (H350H4 - STK1-1)	754937.00	4303459.00	444.98	150.0	650.0	26.765	12.0	0.00E+00	1.35E+01	1.35E+01
IL241304	DEFAULT	ConocoPhillips Co. - Coker north heater (H351H2 - STK1-2)	754953.00	4303305.00	444.85	150.0	500.1	22.304	10.0	0.00E+00	7.37E+00	7.37E+00
IL241305	DEFAULT	ConocoPhillips Co. - Coker north heater (H351H1 - STK1-3)	754986.00	4303306.00	444.82	150.0	500.1	22.304	10.0	0.00E+00	7.38E+00	7.38E+00
IL241312	DEFAULT	ConocoPhillips Co. - Heater HP-2 (STK7-1)	755263.00	4302920.00	443.86	118.0	400.0	45.002	10.8	0.00E+00	2.87E+01	2.87E+01
IL241405	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #1	756504.00	4295421.00	425.00	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL241449	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #2	756494.00	4295735.00	424.74	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL242126	DEFAULT	Center Point Terminals Co. - Tank Heater	746359.00	4289027.00	411.84	49.0	331.1	32.144	2.5	1.03E+00	0.00E+00	0.00E+00
IL245579	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #3	756198.00	4295409.00	424.97	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL245580	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #4	756182.00	4295721.00	424.77	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL245839	DEFAULT	Milam Recycling and Disposal Facility - Landfill gas conversion plant	750666.00	4282895.00	413.09	55.0	70.1	0.000	4.5	3.80E+00	9.00E-01	9.00E-01
IL246759	DEFAULT	Stookey Township WWTP - 2000 kW Emergency generator	756253.00	4269975.00	518.86	28.0	627.0	73.767	1.2	1.54E+01	0.00E+00	0.00E+00
IL246761	DEFAULT	Omega Partners Hartford, LLC - Truck Rail Marine racks loadout and VCUs	752232.00	4300866.00	430.74	33.0	69.5	0.328	0.3	6.60E+00	0.00E+00	0.00E+00
IL246762	DEFAULT	Omega Partners Hartford, LLC - Boiler 1 and 2	752273.00	4300698.00	430.18	58.0	436.0	27.650	3.4	3.83E+00	0.00E+00	0.00E+00
IL248060	DEFAULT	Kraft Heinz Co. - Boiler F	748105.00	4289580.00	423.56	26.0	380.0	34.407	2.0	1.44E+00	0.00E+00	0.00E+00
IL248262	DEFAULT	Olin Winchester, LLC - New Rotary retort process (RDR-2)	750495.00	4308287.00	434.42	16.0	119.9	26.634	1.7	9.62E+00	0.00E+00	0.00E+00
IL248799	DEFAULT	Gateway Terminals, LLC. - 600 HP Boiler	744607.00	4275093.00	422.70	26.0	440.0	39.557	2.2	2.11E+00	0.00E+00	0.00E+00
IL249480	DEFAULT	Highland Electric Light Plant - Engine IC-2	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.44E+01	0.00E+00	0.00E+00
IL249481	DEFAULT	Highland Electric Light Plant - Engine IC-3	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.25E+01	0.00E+00	0.00E+00
IL249482	DEFAULT	Highland Electric Light Plant - Engine IC-9	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.50E+01	0.00E+00	0.00E+00
IL249483	DEFAULT	Highland Electric Light Plant - Engine IC-10	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.50E+01	0.00E+00	0.00E+00
IL249499	DEFAULT	Roxana Landfill, Inc. - Zink ultra-Low emissions (Zule) Flare	759153.00	4301368.00	619.62	60.0	1800.1	46.838	13.0	1.25E+01	1.55E+01	1.55E+01
IL250343	DEFAULT	Mayco Mfg, LLC - Natural gas combustion	747189.00	4286970.00	421.78	39.0	284.1	23.157	2.0	1.74E+00	0.00E+00	0.00E+00
IL250892	DEFAULT	ConocoPhillips Co. - Lift station pump (21028)	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	1.40E+00	4.90E-01	4.90E-01
IL250893	DEFAULT	ConocoPhillips Co. - Lift station pump (21029)	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	1.30E+00	4.60E-01	4.60E-01
IL250894	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #1	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250895	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #2	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250896	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #3	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	5.98E+00	2.10E+00	2.10E+00
IL250897	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #4	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250898	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #5	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250899	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #6	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	5.98E+00	2.10E+00	2.10E+00
IL251099	DEFAULT	Amsted Rail Co., Inc. - Annealing Furnace 18	747071.00	4287670.00	426.02	39.0	284.1	23.157	2.0	1.12E+00	1.00E-01	1.00E-01
IL251286	DEFAULT	Premcor Refining Group, Inc. - Vapor Combustion Unit	752775.00	4302414.00	429.95	53.0	289.0	24.830	2.9	1.00E+01	0.00E+00	0.00E+00
IL251735	DEFAULT	ConocoPhillips Co. - Diesel engine (605 HP)	754240.00	4303144.00	443.47	15.0	69.5	0.328	0.3	3.50E+00	0.00E+00	0.00E+00
IL251754	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #1	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL253107	DEFAULT	Allnex USA, Inc. - Natural gas combustion	749698.00	4276478.00	418.37	58.0	436.0	27.650	3.4	3.26E+00	0.00E+00	0.00E+00
IL253166	DEFAULT	Cerro Flow Products, LLC. - Generators	746228.00	4275272.00	407.32	26.0	490.0	60.811	1.4	9.23E-01	2.82E-01	2.82E-01
IL253167	DEFAULT	City of Belleville - Emergency diesel generator (1500 kW)	762469.00	4266351.00	468.70	26.0	490.0	60.811	1.4	1.16E+01	0.00E+00	0.00E+00
IL253300	DEFAULT	Phillips 66 Pipeline, LLC - Engines (insignificant activities)	744935.00	4274152.00	407.25	26.0	490.0	60.811	1.4	9.23E-01	0.00E+00	0.00E+00
IL253361	DEFAULT	Amsted Rail Co., Inc. - Sand regeneration process (combustion)	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	2.80E-01	2.80E-01	2.80E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL253367	DEFAULT	Green Plains Madison, LLC - Boiler #2	745258.00	4285486.00	414.27	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253368	DEFAULT	Green Plains Madison, LLC - Boiler #3	745260.00	4285491.00	414.24	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253369	DEFAULT	Green Plains Madison, LLC - Boiler #4	745262.00	4285500.00	414.21	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253370	DEFAULT	Green Plains Madison, LLC - Indirect dryer #2	745164.00	4285430.00	414.60	81.0	387.1	8.430	5.5	7.97E+00	4.10E-01	4.10E-01
IL253386	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Engines (insignificant activities)	750423.00	4308352.00	434.28	26.0	490.0	60.811	1.4	9.23E-01	0.00E+00	0.00E+00
IL253738	DEFAULT	Milam Recycling and Disposal Facility - 2000 scfm Utility Flare	750550.00	4282537.00	594.06	36.0	852.0	18.565	4.6	1.83E+01	7.32E+00	7.32E+00
IL253769	DEFAULT	Veolia ES Technical Solutions, LLC - 2 Emergency generators	745532.00	4275942.00	414.76	26.0	490.0	60.811	1.4	7.41E-01	0.00E+00	0.00E+00
IL254175	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #2	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254176	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #3	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254177	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #4	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254178	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #5	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254179	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #6	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254699	DEFAULT	HSHS St. Elizabeth's Hospital - 2 Emergency generators	767237.00	4275111.00	541.01	28.0	627.0	73.767	1.2	1.93E+01	0.00E+00	0.00E+00
IL255341	DEFAULT	Roxana Landfill, Inc. - New open flare	759153.00	4301368.00	619.62	45.0	1800.1	61.434	1.3	3.77E+01	8.17E+00	8.17E+00
IL255527	DEFAULT	Magnesium Elektron North America - Natural gas combustion	746452.00	4285724.00	415.49	39.0	284.1	23.157	2.0	4.20E-01	0.00E+00	0.00E+00
IL255741	DEFAULT	ConocoPhillips Co. - Utility Boiler #19 (BLR-19)	754755.00	4302798.00	442.16	132.0	304.1	46.281	7.0	0.00E+00	1.54E+01	1.54E+01
IL255816	DEFAULT	Mayco Mfg, LLC - Expansion: Natural gas combustion	747189.00	4286970.00	421.78	39.0	284.1	23.157	2.0	1.94E+00	0.00E+00	0.00E+00
IL255953	DEFAULT	Moore Recycling Concrete & Asphalt, LLC. - Drum mix asphalt plant	762178.00	4246660.00	463.19	35.0	251.0	56.908	4.0	1.32E+01	0.00E+00	0.00E+00
IL256624	DEFAULT	PBT Acquisition, LLC - ASR Dryer	748704.00	4280830.00	418.77	32.0	305.0	19.483	1.5	2.53E+00	0.00E+00	0.00E+00
IL257535	DEFAULT	Marathon Ashland Pipe Line, LLC - Marine vapor combustion unit	751239.00	4302663.00	402.85	51.0	810.1	27.749	7.4	2.71E+01	0.00E+00	0.00E+00
SJEFF1	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	410.0	370.0	54.081	19.0		1.44E+02	1.44E+02
SJEFF2	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	125.0	210.0	59.173	6.6		2.04E-02	2.04E-02
SJEFF3	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	10.0	1100.0	23.333	0.5		1.32E-01	0.00E+00
SJEFF15	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	52.0	260.0	10.666	2.0		5.09E-03	5.09E-03
SJEFF16	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.29E-01	2.29E-01
SJEFF17	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.40E-03	2.40E-03
SJEFF18	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.29E-01	0.00E+00
SJEFF19	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		1.80E-03	1.80E-03
SJEFF20	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		1.20E-03	1.20E-03
SJEFF21	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		5.40E-04	5.40E-04
SJEFF22	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		4.80E-04	4.80E-04
SJEFF23	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		4.20E-04	4.20E-04
SJEFF24	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		3.00E-04	3.00E-04
SJEFF25	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	15.0	1049.0	149.734	0.2		4.80E-04	0.00E+00
SJEFF26	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	700.0	270.0	82.001	20.7		1.73E+03	1.73E+03
SJEFF27	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	700.0	270.0	82.001	29.0		2.50E+03	2.50E+03
SJEFF28	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	30.0	985.0	105.633	1.3		8.52E-06	0.00E+00
SJEFF29	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	240.0	600.0	32.999	7.0		3.54E-03	3.54E-03
SJEFF59	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	3.03E-01	2.17E-03	2.17E-03
SJEFF60	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	3.03E-01	2.17E-03	2.17E-03
SJEFF61	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	4.20E-02	3.00E-04	3.00E-04
SJEFF62	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.000	1.7	1.12E-02	7.98E-05	7.98E-05
SJEFF63	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	27.0	1800.0	10.046	1.5	2.86E-02	1.63E-01	1.63E-01
SJEFF65	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	0.0	0.000	0.5	1.45E-02	4.34E-04	4.34E-04
SJEFF66	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	0.0	0.000	0.5	1.40E-02	4.20E-04	4.20E-04
SJEFF67	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	-459.7	0.003	2.0	8.35E-02	5.97E-04	5.97E-04
SJEFF68	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	-459.7	0.003	2.0	3.54E-01	2.53E-03	2.53E-03
SJEFF69	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	-459.7	0.003	2.0	2.51E-01	1.79E-03	1.79E-03
SJEFF70	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	1.11E+00	3.37E-01	0.00E+00
SJEFF71	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	1.11E+00	3.37E-01	0.00E+00
SJEFF72	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	3.32E-01	1.02E-01	0.00E+00
SJEFF73	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	10.0	-459.7	0.003	1.0	1.92E-05	1.37E-07	1.37E-07
SJEFF74	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	10.0	-459.7	0.003	1.0	1.92E-05	1.37E-07	1.37E-07
SJEFF82	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	156.0	611.0	39.902	5.8	7.38E-02	3.77E+00	3.77E+00
SJEFF83	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	156.0	611.0	39.902	5.8	1.96E-01	6.37E+00	6.37E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SJEFF86	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	20.0	0.0	0.000	0.5	1.26E-01	9.00E-04	9.00E-04
SJEFF92	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	10.0	1100.0	23.333	0.5		2.17E+00	0.00E+00
SJEFF99	DEFAULT	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	2.5	170.0	46.499	2.0	5.60E-01	4.25E-02	4.25E-02
SJEFF100	DEFAULT	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	2.5	170.0	46.499	2.0	1.60E-01	1.14E-03	1.14E-03
SJEFF125	DEFAULT	FRED WEBER, INC. ANTONIA	720102.79	4248877.71	670.57	20.0	250.0	49.249	5.0		5.88E-02	5.88E-02
SJEFF128	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		2.33E-01	2.33E-01
SJEFF129	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1354.0	25.666	1.0		1.92E-02	1.92E-02
SJEFF130	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	30.0	1448.0	22.418	2.0		9.62E-03	9.62E-03
SJEFF131	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		3.50E-01	3.50E-01
SJEFF132	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		2.95E-01	2.95E-01
SJEFF133	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1347.0	16.316	1.0		1.54E-02	1.54E-02
SJEFF134	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	30.0	1448.0	22.418	2.0		6.01E-03	6.01E-03
SJEFF135	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1354.0	25.666	1.0		1.44E-02	1.44E-02
SJEFF136	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1600.0	18.734	2.0		7.50E-02	7.50E-02
SJEFF137	DEFAULT	JEFFERSON COUNTY CREMATION SERVICES LC PEVELY	728536.07	4239554.88	583.23	10.0	1100.0	23.333	0.5		9.39E-02	9.39E-02
SJEFF138	DEFAULT	SIMPSON CONSTRUCTION MATERIALS PAULINA HILLS SITE	726459.86	4259186.04	426.64	12.0	885.0	42.441	0.5		1.29E-01	1.29E-01
SJEFF144	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	32.0	247.0	0.853	3.7	3.03E+00	1.21E+00	1.21E+00
SJEFF145	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	5.0	400.0	0.003	2.0	5.35E-02	3.07E-01	3.07E-01
SJEFF146	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	5.0	400.0	0.003	2.0	3.61E-03	9.62E-08	9.62E-08
SSTC1	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	496.5	138.7	46.759	23.6		2.32E+02	2.32E+02
SSTC2	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	496.5	136.6	46.844	23.6		2.89E+02	2.89E+02
SSTC3	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	212.0	325.0	50.000	4.5		8.90E-04	8.90E-04
SSTC4	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	25.0	1100.0	23.333	1.0		1.42E+00	0.00E+00
SSTC9	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC10	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC11	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC12	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC13	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC14	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC15	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	14.0	1063.0	40.515	0.4		3.59E-01	0.00E+00
SSTC16	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	3.0	1011.0	154.085	0.8		1.08E+00	0.00E+00
SSTC17	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	3.0	1011.0	154.085	0.8		1.06E+00	0.00E+00
SSTC18	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	14.0	1063.0	56.732	0.4		3.66E-01	2.38E-04
SSTC28	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		2.16E+01	2.16E+01
SSTC29	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		7.21E+02	7.21E+02
SSTC30	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		2.16E+01	2.16E+01
SSTC31	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	53.0	520.0	58.999	1.8		1.33E-01	1.33E-01
SSTC45	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		2.31E+00	2.31E+00
SSTC46	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		2.66E-02	2.66E-02
SSTC47	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	10.0	1100.0	23.333	0.5		1.52E+00	0.00E+00
SSTC48	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		1.50E-03	1.50E-03
SSTC57	DEFAULT	BLASTCO INC	690213.84	4297755.23	543.44	20.0	0.0	0.000	0.5		3.96E-04	3.96E-04
SSTC63	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	65.0	16.499	1.5		4.20E-03	4.20E-03
SSTC64	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	17.0	450.0	27.631	1.3		4.09E-03	4.09E-03
SSTC65	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	20.0	0.0	0.000	0.5		4.10E-03	4.10E-03
SSTC66	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	77.0	33.015	1.5		1.56E-03	1.56E-03
SSTC67	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	77.0	33.015	1.5		8.40E-04	8.40E-04
SSTC68	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	450.0	39.416	1.5		1.44E-03	1.44E-03
SSTC69	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	400.0	29.708	1.0		1.74E-03	1.74E-03
SSTC70	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	450.0	24.803	1.2		4.68E-03	4.68E-03
SSTC71	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	28.0	475.0	1.667	0.5		0.00E+00	0.00E+00
SSTC72	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	28.0	450.0	27.500	2.3		0.00E+00	0.00E+00
SSTC73	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	10.0	1100.0	23.333	0.5		3.07E+00	0.00E+00
SSTC87	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	2.10E-02	6.31E-04	6.31E-04
SSTC88	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	3.14E-02	1.73E-04	1.73E-04

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTC89	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	1.20E+00	3.65E-01	3.65E-01
SSTC98	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC99	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC100	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC101	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC102	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC103	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC104	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC105	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC106	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC107	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTL1	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	250.0	326.0	101.627	11.0		2.28E-02	2.28E-02
SSTL2	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	250.0	326.0	101.627	11.0		2.20E-02	2.20E-02
SSTL3	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	350.0	345.0	135.400	14.0		2.97E+02	2.97E+02
SSTL4	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	350.0	374.0	123.284	16.0		4.69E+02	4.69E+02
SSTL5	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	40.0	642.0	38.100	1.0		5.46E-03	5.46E-03
SSTL6	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL7	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		1.96E+00	1.96E+00
SSTL8	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL9	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		2.01E-02	2.01E-02
SSTL10	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL11	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		1.10E-02	1.10E-02
SSTL14	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	99.0	440.0	9.432	4.5	9.84E-01	1.42E+00	1.42E+00
SSTL15	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	99.0	440.0	9.432	4.5	1.06E-02	7.55E-05	7.55E-05
SSTL16	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	10.0	1100.0	23.333	0.5	5.03E+00	1.53E+00	0.00E+00
SSTL17	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	104.0	450.0	7.172	1.2	2.91E+00	4.19E+00	4.19E+00
SSTL18	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	104.0	450.0	7.172	1.2	9.59E-02	6.85E-04	6.85E-04
SSTL19	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	40.0	315.0	30.098	4.0		2.95E-05	2.95E-05
SSTL20	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	40.0	315.0	30.098	4.0		2.24E-02	2.24E-02
SSTL21	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	10.0	1100.0	23.333	0.5		1.06E+00	0.00E+00
SSTL22	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	10.0	1100.0	23.333	0.5		5.74E-04	0.00E+00
SSTL23	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		2.57E+01	2.57E+01
SSTL24	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		6.69E-03	6.69E-03
SSTL25	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		2.66E-02	2.66E-02
SSTL26	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	110.0	70.0	0.003	2.7		1.39E-02	1.39E-02
SSTL27	DEFAULT	ST. JOHNS MERCY MEDICAL CNTR/MAINTENANCE NEW BALLAS RD	722224.73	4280414.44	627.82	30.0	400.0	4.951	4.0		1.11E+01	1.11E+01
SSTL28	DEFAULT	ST. JOHNS MERCY MEDICAL CNTR/MAINTENANCE NEW BALLAS RD	722224.73	4280414.44	627.82	30.0	400.0	4.951	4.0		1.95E-02	1.95E-02
SSTL29	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	159.0	300.0	32.667	4.8		3.08E-05	3.08E-05
SSTL30	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	159.0	300.0	32.667	4.8		2.36E-02	2.36E-02
SSTL31	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		4.34E-01	0.00E+00
SSTL32	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		4.04E-03	0.00E+00
SSTL33	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		3.77E+00	0.00E+00
SSTL37	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	175.0	350.0	4.849	9.0	0.00E+00	0.00E+00	0.00E+00
SSTL38	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	175.0	350.0	4.849	9.0	2.24E+00	1.60E-02	1.60E-02
SSTL39	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	21.0	475.0	9.616	1.2	0.00E+00	0.00E+00	0.00E+00
SSTL40	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	21.0	475.0	9.616	1.2	6.04E-01	4.31E-03	4.31E-03
SSTL41	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	1.39E+01	2.34E-03	0.00E+00
SSTL42	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	2.12E+01	3.78E-02	0.00E+00
SSTL43	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	1.59E+01	4.87E+00	0.00E+00
SSTL44	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	9.13E-02	2.37E+01	2.37E+01
SSTL45	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	9.02E-02	4.11E+01	4.11E+01
SSTL46	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	1.05E-01	1.48E+01	1.48E+01
SSTL47	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	2.86E-01	2.62E+01	2.62E+01
SSTL48	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7		2.04E-03	2.04E-03
SSTL66	DEFAULT	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	20.0	230.5	31.309	5.1		3.27E-01	3.27E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTL70	DEFAULT	FRED WEBER, INC. ANTIRE	711291.07	4264547.49	448.49	30.0	250.0	58.950	4.0		1.27E+00	1.27E+00
SSTL76	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	45.0	400.0	44.167	2.5	5.58E+00	8.24E+00	8.24E+00
SSTL77	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	45.0	400.0	44.167	2.5	1.38E+00	9.87E-03	9.87E-03
SSTL78	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	38.0	400.0	25.968	2.0	3.02E+00	4.47E+00	4.47E+00
SSTL79	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	38.0	400.0	25.968	2.0	1.06E+00	7.57E-03	7.57E-03
SSTL80	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	50.0	461.0	14.616	3.0	2.95E+00	4.36E+00	4.36E+00
SSTL81	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	50.0	461.0	14.616	3.0	7.02E-01	5.01E-03	5.01E-03
SSTL82	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	1.0	100.0	12.733	0.1	1.66E+00	1.19E-02	1.19E-02
SSTL83	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	15.0	955.0	19.800	0.7	2.52E+01	4.49E-02	0.00E+00
SSTL84	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	7.0	960.0	113.182	0.8	2.50E+01	7.63E+00	0.00E+00
SSTL85	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	30.0	965.0	31.234	5.0	2.03E-01	1.04E-02	1.04E-02
SSTL86	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	17.0	72.0	29.882	2.8		5.58E-03	5.58E-03
SSTL88	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	28.0	1400.0	25.466	1.0		1.01E+00	1.01E+00
SSTL89	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	38.3	1400.0	21.568	12.0		7.77E-01	7.77E-01
SSTL90	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	38.0	1400.0	21.568	12.0		6.35E-01	6.35E-01
SSTL92	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	40.0	1200.0	61.381	1.1		1.86E-02	1.86E-02
SSTL93	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	40.0	1200.0	61.381	1.1		6.98E-02	6.98E-02
SSTL94	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	45.0	1200.0	50.226	1.3		1.70E+01	1.70E+01
SSTL95	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	45.0	1200.0	50.226	1.3		5.43E+01	5.43E+01
SSTL96	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	35.0	1200.0	53.051	1.0		1.22E-01	1.22E-01
SSTL97	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	584.0	1450.0	21.923	4.7		1.08E-03	1.08E-03
SSTL98	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	584.0	1450.0	21.923	4.7		1.07E-03	1.07E-03
SSTL100	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	17.2	500.0	25.000	3.0		9.06E+00	9.06E+00
SSTL101	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	17.2	500.0	25.000	3.0		7.14E-03	7.14E-03
SSTL102	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	130.0	1009.0	53.156	1.0		2.56E+00	0.00E+00
SSTL106	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		6.63E-02	6.63E-02
SSTL107	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		1.15E-02	1.15E-02
SSTL108	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	12.0	900.0	38.100	1.2		8.33E+00	0.00E+00
SSTL109	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		1.37E-03	1.37E-03
SSTL111	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	3.02E+00	4.35E+00	4.35E+00
SSTL112	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	4.17E-01	2.98E-03	2.98E-03
SSTL113	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	4.40E-03	6.49E-03	6.49E-03
SSTL114	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	6.81E-01	4.86E-03	4.86E-03
SSTL115	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	10.0	1100.0	23.333	0.5	1.02E+02	3.11E+01	0.00E+00
SSTL116	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	35.0	270.0	10.000	4.0	1.45E-01	6.26E-03	6.26E-03
SSTL117	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	35.0	270.0	10.000	4.0	9.17E-01	6.55E-03	6.55E-03
SSTL118	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	15.0	-459.7	0.003	1.0	3.28E+01	3.00E-01	0.00E+00
SSTL120	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	15.0	65.0	7.165	2.2		3.20E-03	3.20E-03
SSTL121	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	16.0	75.0	26.949	1.1		8.96E-03	8.96E-03
SSTL122	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	29.0	600.0	14.167	2.5		4.83E-01	4.83E-01
SSTL123	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	30.0	365.0	12.001	1.2		4.48E-01	4.48E-01
SSTL124	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	29.0	360.0	25.499	0.7		1.63E-01	1.63E-01
SSTL126	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	20.0	0.0	0.000	0.5		1.23E-02	1.23E-02
SSTL127	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	30.0	650.0	11.998	1.3		3.60E-03	3.60E-03
SSTL128	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	30.0	650.0	11.998	1.3		1.79E+01	1.79E+01
SSTL129	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	26.0	650.0	13.264	2.0		2.26E-03	2.26E-03
SSTL130	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	26.0	650.0	13.264	2.0		1.44E+01	1.44E+01
SSTL131	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	54.0	1800.0	17.218	2.3		1.21E-03	1.21E-03
SSTL132	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	10.0	1100.0	23.333	0.5		9.83E-01	9.83E-01
SSTL133	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	10.0	1100.0	23.333	0.5		9.83E-01	9.83E-01
SSTL141	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	25.0	495.0	4.068	2.5		3.40E+00	3.40E+00
SSTL142	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	25.0	495.0	4.068	2.5		8.76E-04	8.76E-04
SSTL143	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	30.0	450.0	0.003	1.5		5.59E-04	5.59E-04
SSTL144	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	10.0	1100.0	23.333	0.5		4.66E-02	0.00E+00
SSTL147	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	25.0	550.0	1.181	0.7	9.18E-01	8.00E-01	8.00E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTL148	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	25.0	550.0	1.181	0.7	1.58E+00	5.47E-03	5.47E-03
SSTL149	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	15.2	446.0	19.393	1.7	4.42E-01	2.28E-01	2.28E-01
SSTL150	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	15.2	446.0	19.393	1.7	9.14E-02	4.81E-03	4.81E-03
SSTL151	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	16.0	77.0	4.774	2.0	2.46E+00	4.74E-01	4.74E-01
SSTL152	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	42.0	300.0	38.494	4.2	2.49E+01	5.49E+00	5.49E+00
SSTL153	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	26.7	400.0	26.785	0.8	3.84E-03	1.20E-04	1.20E-04
SSTL154	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	26.7	400.0	26.785	0.8	4.60E-02	1.44E-03	1.44E-03
SSTL162	DEFAULT	MACLAN INDUSTRIES	742056.49	4291436.76	495.44	14.0	190.0	0.003	0.2		2.29E-01	2.29E-01
SSTL165	DEFAULT	MISSOURI AMERICAN WATER-CENTRAL PLANT CHESTERFIELD	715427.34	4284896.78	451.44	22.0	871.0	24.016	0.8		1.02E-01	1.02E-01
SSTL166	DEFAULT	MISSOURI AMERICAN WATER-CENTRAL PLANT CHESTERFIELD	715427.34	4284896.78	451.44	10.0	871.0	24.016	0.8		2.38E-01	2.38E-01
SSTL169	DEFAULT	SPIRE MISSOURI, EAST INC	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	1.79E-01	1.28E-03	1.28E-03
SSTL170	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	25.0	-459.7	0.003	0.8	2.33E+01	3.69E-03	3.69E-03
SSTL171	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	18.0	-459.7	0.003	4.0	1.61E+00	6.69E-02	6.69E-02
SSTL172	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	15.0	-459.7	0.003	2.0	1.20E-02	8.60E-05	8.60E-05
SSTL173	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	16.0	-459.7	0.003	0.5	9.34E-01	2.85E-01	2.85E-01
SSTL174	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	4.62E-03	3.30E-05	3.30E-05
SSTL175	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	4.62E-03	3.30E-05	3.30E-05
SSTL196	DEFAULT	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	7.7	25.0	11.788	0.9	3.02E+00	1.28E-01	1.28E-01
SSTL199	DEFAULT	A.G. RECYCLING	734844.18	4284158.21	525.43	10.0	1100.0	23.333	0.5		1.59E-01	1.59E-01
SSTL200	DEFAULT	A.G. RECYCLING	734844.18	4284158.21	525.43	10.0	1100.0	23.333	0.5		7.25E-01	7.25E-01
SSTL209	DEFAULT	MISSOURI-AMERICAN WATER CO FLORISSANT	728394.88	4300010.04	461.78	15.0	896.0	0.000	14.0		9.51E+00	9.51E+00
SSTL214	DEFAULT	THE HARPER COMPANY	731184.93	4292013.86	588.35	10.0	1100.0	23.333	0.5		2.75E-01	0.00E+00
SCITY1	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	330.0	21.217	10.0		2.38E-02	2.38E-02
SCITY2	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	100.0	350.0	47.149	3.0		5.80E-02	5.80E-02
SCITY3	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		1.67E+01	1.67E+01
SCITY4	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		1.78E-02	1.78E-02
SCITY5	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		2.53E+01	2.53E+01
SCITY6	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		2.15E-02	2.15E-02
SCITY7	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	135.0	950.0	19.367	1.5		1.75E+01	1.75E+01
SCITY8	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	20.0	50.0	70.000	1.0		1.69E+00	1.69E+00
SCITY9	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	70.0	200.0	0.003	5.5	1.33E+00	9.51E-03	9.51E-03
SCITY10	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	70.0	200.0	0.003	5.5	2.13E+00	1.52E-02	1.52E-02
SCITY11	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	100.0	145.0	62.500	4.5	2.53E+00	1.81E-02	1.81E-02
SCITY12	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	100.0	145.0	62.500	4.5	3.20E-01	2.29E-03	2.29E-03
SCITY13	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	12.0	200.0	0.335	1.0	3.77E+00	1.15E+00	0.00E+00
SCITY14	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	50.400	2.0	3.55E-02	1.07E-03	1.07E-03
SCITY15	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	50.400	2.0	3.07E-02	9.22E-04	9.22E-04
SCITY16	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	69.751	1.7	3.07E-02	9.22E-04	9.22E-04
SCITY17	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	16.0	77.0	24.600	0.2		1.41E-03	1.41E-03
SCITY18	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	3.0	800.0	0.335	0.5	1.63E-01	4.98E-02	0.00E+00
SCITY22	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	20.0	0.0	0.000	0.5	5.72E-03	1.72E-04	1.72E-04
SCITY23	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	6.00E-02	1.83E-02	0.00E+00
SCITY24	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	785.0	42.283	0.3	2.11E+00	6.44E-01	0.00E+00
SCITY25	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	785.0	42.283	0.3	8.12E-03	4.79E-03	0.00E+00
SCITY26	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	1.73E-02	5.29E-03	0.00E+00
SCITY27	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	42.0	77.0	3.734	0.2	4.35E-02	1.33E-02	0.00E+00
SCITY28	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	20.0	200.0	0.335	1.0	1.98E-01	6.04E-02	0.00E+00
SCITY29	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.07E-01	3.27E-02	0.00E+00
SCITY30	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.09E-04	3.32E-05	0.00E+00
SCITY31	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	22.0	212.0	1.296	1.0	5.28E-01	1.61E-01	0.00E+00
SCITY32	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	90.0	77.0	33.215	2.2	1.09E-04	3.32E-05	0.00E+00
SCITY33	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	3.65E-02	1.12E-02	0.00E+00
SCITY34	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.98E-01	6.04E-02	0.00E+00
SCITY48	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		2.58E-01	2.58E-01
SCITY49	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		2.42E-02	2.42E-02

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY50	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		1.20E+00	1.20E+00
SCITY51	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		1.51E-01	1.51E-01
SCITY52	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		1.17E+00	1.17E+00
SCITY53	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		6.91E-03	6.91E-03
SCITY54	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		1.17E+00	1.17E+00
SCITY55	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		7.87E-03	7.87E-03
SCITY56	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	30.0	975.0	237.684	0.8		3.10E-02	0.00E+00
SCITY57	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		2.59E+01	2.59E+01
SCITY58	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		5.09E+00	5.09E+00
SCITY59	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		3.48E-02	3.48E-02
SCITY60	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.97E-01	3.97E-01	3.97E-01
SCITY61	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.97E-01	5.32E-02	5.32E-02
SCITY62	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.00E+00	4.43E+00	4.43E+00
SCITY63	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.30E+00	2.36E-02	2.36E-02
SCITY64	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.00E+00	4.43E+00	4.43E+00
SCITY65	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.20E+00	2.29E-02	2.29E-02
SCITY66	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	20.0	0.0	0.000	0.5	4.42E+01	1.33E+00	1.33E+00
SCITY67	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	69.0	318.0	63.035	3.0	4.19E+00	4.64E+00	4.64E+00
SCITY68	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	69.0	318.0	63.035	3.0	6.11E-01	5.15E-03	5.15E-03
SCITY69	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.04E+00	4.48E+00	4.48E+00
SCITY70	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	1.14E+00	8.17E-03	8.17E-03
SCITY71	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	10.0	1100.0	23.333	0.5	2.98E-03	4.70E-07	0.00E+00
SCITY72	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	10.0	1100.0	23.333	0.5	7.05E+00	2.15E+00	0.00E+00
SCITY83	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		1.14E-04	1.14E-04
SCITY84	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		4.07E-03	4.07E-03
SCITY85	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		8.40E-03	8.40E-03
SCITY86	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		1.14E+00	1.14E+00
SCITY87	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		4.07E-03	4.07E-03
SCITY88	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		1.14E+00	1.14E+00
SCITY89	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		4.07E-03	4.07E-03
SCITY90	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	10.0	1100.0	23.333	0.5		2.47E+00	0.00E+00
SCITY110	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	32.0	120.0	15.453	2.0		2.08E-02	2.08E-02
SCITY111	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	481.0	200.0	9.432	3.0		5.70E-03	5.70E-03
SCITY112	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	56.0	400.0	15.922	4.0		6.81E+01	6.81E+01
SCITY113	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	56.0	400.0	15.922	4.0		3.75E-02	3.75E-02
SCITY114	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	45.0	122.0	151.818	2.0		1.14E-02	1.14E-02
SCITY115	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	80.0	171.0	69.682	2.0		5.14E-03	5.14E-03
SCITY116	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	78.0	176.0	88.484	1.2		1.43E-03	1.43E-03
SCITY117	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	10.0	1100.0	23.333	0.5		1.91E-03	1.91E-03
SCITY121	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	42.0	340.0	37.776	4.0		9.43E+01	9.43E+01
SCITY122	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	42.0	340.0	37.776	4.0		5.31E-02	5.31E-02
SCITY123	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		6.41E+00	6.41E+00
SCITY124	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		7.35E-03	7.35E-03
SCITY125	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		1.86E-02	1.86E-02
SCITY126	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		5.89E-04	5.89E-04
SCITY127	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	30.0	140.0	0.125	2.0		1.44E-03	1.44E-03
SCITY128	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	15.4	752.2	32.451	1.0		7.85E-03	0.00E+00
SCITY129	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	4.665	2.0		3.72E-03	3.72E-03
SCITY132	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	6.916	3.3		1.72E-02	1.72E-02
SCITY133	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	36.601	2.0		3.72E-03	3.72E-03
SCITY136	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1800.0	8.301	3.7		8.58E-03	8.58E-03
SCITY137	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	42.0	1700.0	4.665	2.0		3.72E-03	3.72E-03
SCITY140	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	44.0	200.0	47.149	3.0		5.82E-03	5.82E-03
SCITY141	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	44.0	200.0	47.149	3.0		5.82E-03	5.82E-03
SCITY142	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	200.0	39.649	2.8		5.16E-03	5.16E-03

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY143	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY144	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY145	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY146	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY147	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	25.0	300.0	14.865	2.0		1.14E-02	1.14E-02
SCITY148	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	20.0	0.0	0.000	0.5		3.30E-03	3.30E-03
SCITY149	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	37.0	600.0	38.983	1.2		1.98E-03	1.98E-03
SCITY156	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.19E-02	1.19E-02
SCITY157	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.20E-02	1.20E-02
SCITY158	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.19E-02	1.19E-02
SCITY159	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	14.0	490.0	60.200	0.5		7.80E-01	0.00E+00
SCITY160	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	12.6	200.0	205.400	0.5		7.80E-01	0.00E+00
SCITY162	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	210.0	260.0	17.733	2.8	2.69E+00	1.16E-01	1.16E-01
SCITY163	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	210.0	260.0	17.733	2.8	6.20E+00	4.43E-02	4.43E-02
SCITY164	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.20E+00	9.30E-03	0.00E+00
SCITY165	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.18E+00	9.20E-03	0.00E+00
SCITY166	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.77E+00	8.30E-03	0.00E+00
SCITY167	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.12E+00	9.10E-03	0.00E+00
SCITY168	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.01E+00	1.23E+00	0.00E+00
SCITY169	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.15E+00	1.80E-02	0.00E+00
SCITY170	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.90E+00	1.08E-02	0.00E+00
SCITY171	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.52E+00	1.88E-02	0.00E+00
SCITY172	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	4.71E+00	2.04E-01	2.04E-01
SCITY173	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	1.09E+01	7.76E-02	7.76E-02
SCITY174	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	2.50E+00	1.08E-01	1.08E-01
SCITY175	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	6.01E+00	4.29E-02	4.29E-02
SCITY176	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	6.24E+00	1.38E-02	0.00E+00
SCITY177	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	5.17E+00	1.14E-02	0.00E+00
SCITY178	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	9.14E+00	2.02E-02	0.00E+00
SCITY179	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.31E+00	9.84E-01	0.00E+00
SCITY180	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.98E+00	8.40E-03	0.00E+00
SCITY181	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.29E-01	3.53E-03	3.53E-03
SCITY183	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.29E-01	2.41E-03	2.41E-03
SCITY185	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.24E-02	5.89E-04	5.89E-04
SCITY187	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.36E-01	1.69E-03	1.69E-03
SCITY189	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	1.37E+00	4.86E-01	0.00E+00
SCITY190	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	247.0	190.0	20.417	1.2	5.35E-02	2.31E-03	2.31E-03
SCITY191	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	247.0	190.0	20.417	1.2	5.00E-01	3.57E-03	3.57E-03
SCITY192	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.69E+01	6.78E-02	0.00E+00
SCITY193	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.48E+00	1.56E-02	0.00E+00
SCITY194	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.09E+01	4.41E-02	0.00E+00
SCITY227	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	250.0	18.068	1.0		2.54E-03	2.54E-03
SCITY228	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	150.0	22.218	1.0		1.20E+00	1.20E+00
SCITY229	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	25.0	0.0	0.000	1.0		2.19E-04	2.19E-04
SCITY242	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	60.0	250.0	71.667	1.7		2.39E-03	2.39E-03
SCITY243	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	60.0	400.0	19.833	1.5		4.37E-03	4.37E-03
SCITY244	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	20.0	0.0	0.000	0.5		1.37E-04	1.37E-04
SCITY245	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	55.0	750.0	11.168	4.2		8.16E-03	8.16E-03
SCITY246	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	43.0	500.0	7.467	2.5		7.33E-05	7.33E-05
SCITY247	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	20.0	0.0	0.000	0.5		3.46E-04	3.46E-04
SCITY248	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	36.0	375.0	1.716	2.0		2.48E-03	2.48E-03
SCITY266	DEFAULT	HUMANE SOCIETY OF MISSOURI ST. LOUIS - MACKLIND AVE	737162.32	4278817.40	474.08	24.0	1139.0	15.515	1.7		1.10E-02	1.10E-02
SCITY267	DEFAULT	HUMANE SOCIETY OF MISSOURI ST. LOUIS - MACKLIND AVE	737162.32	4278817.40	474.08	28.0	1800.0	15.584	2.0		6.76E-01	6.76E-01
SCITY275	DEFAULT	ALSCO, INC ST. LOUIS	743334.17	4275818.28	427.92	10.0	1100.0	23.333	0.5		2.33E+01	2.33E+01
SCITY276	DEFAULT	ALSCO, INC ST. LOUIS	743334.17	4275818.28	427.92	10.0	1100.0	23.333	0.5		4.99E-03	4.99E-03

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY277	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	23.5	800.0	0.003	0.5	7.11E-01	1.25E-05	0.00E+00
SCITY278	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	3.05E-01	1.28E-04	1.28E-04
SCITY279	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	6.87E-01	4.91E-03	4.91E-03
SCITY280	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	3.05E-02	1.28E-05	1.28E-05
SCITY281	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	6.89E-01	4.92E-03	4.92E-03
SCITY282	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.0	250.0	0.003	1.0	1.22E-01	5.27E-03	5.27E-03
SCITY283	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.0	250.0	0.003	1.0	2.73E-01	1.95E-03	1.95E-03
SCITY284	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.5	250.0	0.003	2.0	6.10E-01	2.56E-04	2.56E-04
SCITY285	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.5	250.0	0.003	2.0	1.38E+00	9.84E-03	9.84E-03
SCITY286	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	8.65E-01	1.53E-05	0.00E+00
SCITY287	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	7.84E+00	1.38E-04	0.00E+00
SCITY288	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	7.84E+00	1.38E-04	0.00E+00
SCITY289	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		2.26E-03	2.26E-03
SCITY290	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		2.91E+01	2.91E+01
SCITY291	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		1.63E-03	1.63E-03
SCITY292	DEFAULT	SOUTHERN METAL PROCESSING	739807.53	4271091.77	426.02	31.0	1590.0	19.255	2.5		1.28E+01	1.28E+01
SCITY293	DEFAULT	SOUTHERN METAL PROCESSING	739807.53	4271091.77	426.02	31.0	1590.0	19.255	2.5		3.47E+00	3.47E+00
SCITY295	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	2.14E+00	6.17E+01	6.17E+01
SCITY296	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.81E+00	1.29E-02	1.29E-02
SCITY297	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	8.93E-01	2.57E+01	2.57E+01
SCITY298	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	6.62E+00	4.73E-02	4.73E-02
SCITY299	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.89E+00	5.45E+01	5.45E+01
SCITY300	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	7.92E+00	5.66E-02	5.66E-02
SCITY301	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	2.14E+00	6.17E+01	6.17E+01
SCITY302	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.04E+00	7.40E-03	7.40E-03
SCITY303	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	10.0	1100.0	23.333	0.5	9.62E+00	5.13E+00	0.00E+00
SCITY304	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	10.0	1100.0	23.333	0.5	5.11E+00	6.08E+00	0.00E+00
SCITY315	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	10.0	1100.0	23.333	0.5	6.50E+00	1.98E+00	0.00E+00
SCITY316	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	7.40E-02	2.22E-03	2.22E-03
SCITY317	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	7.40E-02	2.22E-03	2.22E-03
SCITY318	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	10.0	1100.0	23.333	0.5	9.62E-01	3.00E-01	3.00E-01
SCITY319	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	2.00E-02	6.00E-04	6.00E-04
SCITY320	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	1.26E-02	3.70E-04	3.70E-04
SCITY321	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	380.0	33.766	2.0	8.99E-01	3.88E-02	3.88E-02
SCITY322	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	380.0	33.766	2.0	4.60E-01	3.28E-03	3.28E-03
SCITY323	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	1.40E-02	3.08E-05	0.00E+00
SCITY324	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	7.00E-04	1.54E-06	0.00E+00
SCITY325	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	5.78E-03	1.22E-05	0.00E+00
SCITY326	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	8.71E-02	3.76E-03	3.76E-03
SCITY327	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	8.30E-01	5.93E-03	5.93E-03
SCITY328	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	7.46E-01	3.22E-02	3.22E-02
SCITY329	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	9.04E-01	6.46E-03	6.46E-03
SCITY330	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	1007.0	51.050	0.7	4.68E-01	1.03E-03	0.00E+00
SCITY331	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	10.0	1100.0	23.333	0.5	4.06E+00	1.24E+00	0.00E+00
SCITY332	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	10.0	1100.0	23.333	0.5	2.02E-01	1.44E-03	1.44E-03
SCITY333	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	6.0	1157.0	35.000	0.3	8.24E+00	2.52E+00	0.00E+00
SCITY334	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	6.0	1076.0	151.667	0.3	2.56E+00	7.82E-01	0.00E+00
SCITY335	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	8.9	815.0	37.835	0.8	6.13E-01	1.35E-03	0.00E+00
SCITY344	DEFAULT	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	32.0	200.0	2.933	1.2		5.04E-03	5.04E-03
SCITY353	DEFAULT	CHRISTY REFRACTORIES CO L.L.C	738223.37	4278219.85	483.66	1.0	325.0	0.003	1.0		9.60E-02	9.60E-02
SCITY355	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	431.0	79.216	2.0		9.54E-01	9.54E-01
SCITY356	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	455.0	79.216	2.0		9.54E-01	9.54E-01
SCITY357	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	428.0	79.216	2.0		9.54E-01	9.54E-01
SCITY358	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01
SCITY359	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY360	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01
SCITY361	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	660.0	300.0	23.035	1.5		1.09E-03	1.09E-03
SCITY362	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	660.0	300.0	23.035	1.5		4.92E-03	4.92E-03
SCITY363	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	390.0	960.0	23.035	9.5		7.17E-01	7.17E-01
SCITY364	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	390.0	960.0	23.035	9.5		7.17E-01	7.17E-01
SCITY365	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		1.19E+00	1.19E+00
SCITY366	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		5.13E+00	5.13E+00
SCITY367	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		8.24E+00	8.24E+00
SCITY368	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		8.24E+00	8.24E+00
SCITY380	DEFAULT	BKEP MATERIALS, LLC ST. LOUIS TERMINAL CO	739332.17	4270413.67	420.93	25.0	450.0	20.000	2.5		2.46E-03	2.46E-03
SCITY381	DEFAULT	BKEP MATERIALS, LLC ST. LOUIS TERMINAL CO	739332.17	4270413.67	420.93	12.0	150.0	8.333	1.0		1.63E-01	1.63E-01
SCITY394	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	10.0	1100.0	23.333	0.5		2.06E+00	0.00E+00
SCITY395	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5		9.53E-03	9.53E-03
SCITY396	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5		1.71E-03	1.71E-03
SCITY401	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		9.30E-05	9.30E-05
SCITY402	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		4.97E-03	4.97E-03
SCITY403	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		5.07E-05	5.07E-05
SCITY404	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		2.48E-03	2.48E-03
SCITY405	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	10.0	1100.0	23.333	0.5		1.83E-02	0.00E+00
SCITY406	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	23.5	200.0	16.667	2.9		2.55E+00	2.55E+00
SCITY407	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	23.5	200.0	16.667	2.9		2.87E-02	2.87E-02
CJEFF34	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	36.6	77.0	20.600	1.8	2.68E-02		
CJEFF35	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	350.0	40.000	2.0	2.90E-01		
CJEFF36	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	41.667	2.5	2.07E-01		
CJEFF37	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	20.0	0.0	0.000	0.5	9.13E-03		
CJEFF43	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	56.0	370.0	33.333	2.5	1.01E-01		
CJEFF44	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	41.667	2.5	8.06E-01		
CJEFF45	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	112.999	2.5	9.97E-02		
CJEFF46	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	20.600	2.5	2.58E-01		
CSTLC55	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	34.0	375.0	26.555	2.3	1.68E-02		
CSTLC56	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	34.0	375.0	26.555	2.3	1.27E+00		
CSTLC57	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	33.0	428.0	15.669	3.8	1.66E-02		
CSTLC58	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	33.0	428.0	15.669	3.8	3.85E-01		
CSTLC59	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	20.0	250.0	2.083	1.0	7.72E-02		
CSTLC60	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	3.28E+00		
CSTLC61	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	1.29E-01		
CSTLC62	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	9.99E-05		
CSTLC63	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	19.0	425.0	7.047	1.7	6.01E-01		
CSTLC64	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	24.0	270.0	105.951	2.0	3.24E+00		
CSTLC152	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	43.0	-459.7	3.225	1.0	1.38E-01		
CSTLC155	DEFAULT	FRED WEBER INC. - SOUTH ASPHALT BATCH SOUTH ASPHALT	732929.25	4259955.19	424.64	37.0	230.0	51.250	4.2	2.57E+01		
CSTLC156	DEFAULT	FRED WEBER INC. - SOUTH ASPHALT BATCH SOUTH ASPHALT	732929.25	4259955.19	424.64	12.0	355.0	0.804	1.3	4.03E-01		
CSTLC157	DEFAULT	FRED WEBER INC. - NORTH ASPHALT H and B	720614.10	4290798.15	468.70	31.0	230.0	80.499	4.2	3.93E+01		
CSTLC158	DEFAULT	FRED WEBER INC. - NORTH ASPHALT H and B	720614.10	4290798.15	468.70	20.0	300.0	16.667	1.1	2.29E-01		
CSTLC207	DEFAULT	MISSOURI-AMERICAN WATER CO FLORISSANT	728394.88	4300010.04	461.78	15.0	896.0	0.000	14.0	1.61E+02		
CCITY65	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	100.0	350.0	29.984	1.3	3.08E-02		
CCITY203	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	250.0	18.068	1.0	3.56E-01		
CCITY204	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	150.0	22.218	1.0	1.68E+02		
CCITY344	DEFAULT	GP RECYCLING, LLC	743830.86	4284034.28	422.18	20.0	0.0	0.000	0.5	1.72E-02		
CCITY368	DEFAULT	GP RECYCLING, LLC	740384.08	4280241.69	507.64	10.0	1100.0	23.333	0.5	6.73E+00		
CCITY369	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5	1.33E+00		
CCITY370	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5	5.69E-02		

Off-Site Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	Potential Emissions (lb/hr) CO	SOx	SO2 (1-hour)
SJEFF64	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	16.4	3.8	15.3	1.28E-02	9.13E-05	9.13E-05
SJEFF84	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	4.68E-03	4.68E-03
SJEFF85	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	7.06E-03	7.06E-03
SJEFF87	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	16.4	3.8	15.3	2.29E-01	1.44E-03	1.44E-03
SJEFF88	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	3.91E-03	3.91E-03
SJEFF89	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		1.47E-03	1.47E-03
SJEFF90	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		2.29E-01	2.29E-01
SJEFF91	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		6.88E-03	6.88E-03
SJEFF93	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		1.38E-03	1.38E-03
SJEFF101	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	4.81E-01	2.40E-02	2.40E-02
SJEFF102	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	6.41E-01	1.42E-02	1.42E-02
SJEFF103	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	5.24E-01	6.09E-03	6.09E-03
SJEFF104	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	1.51E-01	3.75E-03	3.75E-03
SJEFF105	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6		1.08E-03	1.08E-03
SJEFF106	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6		1.14E-03	1.14E-03
SJEFF107	AERO METAL FINISHING	718099.61	4263747.23	613.55	8.2	2.3	7.6		2.43E-01	2.43E-01
SJEFF126	FRED WEBER, INC. ANTONIA	720102.79	4248877.71	670.57	8.2	2.3	7.6		3.08E+00	3.08E+00
SSTC56	BLASTCO INC	690213.84	4297755.23	543.44	8.2	2.3	7.6		1.47E-01	1.47E-01
SSTL67	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	16.4	3.8	15.3		5.88E-04	5.88E-04
SSTL68	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	16.4	3.8	15.3		1.02E+00	1.02E+00
SSTL125	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	8.2	2.3	7.6		7.18E-03	7.18E-03
SSTL197	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	8.2	2.3	7.6		1.80E-01	1.80E-01
SCITY19	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	8.24E-02	2.47E-02	2.47E-02
SCITY20	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	4.44E-03	7.73E-01	7.73E-01
SCITY21	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	2.59E+00	7.94E-01	7.94E-01
SCITY44	ADM GRAIN COMPANY ST. LOUIS	744141.30	4284932.90	425.39	15.0	0.2	14.0		6.22E-04	6.22E-04
SCITY45	ADM GRAIN COMPANY ST. LOUIS	744141.30	4284932.90	425.39	15.0	0.2	14.0		2.76E-02	2.76E-02
SCITY118	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		7.50E-05	7.50E-05
SCITY119	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		4.00E-01	4.00E-01
SCITY120	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		2.61E-01	2.61E-01
SCITY130	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY131	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY134	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY135	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY138	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY139	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY182	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	3.36E-02	2.40E-04	2.40E-04
SCITY184	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	6.59E-02	4.71E-04	4.71E-04
SCITY186	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	3.36E-02	2.40E-04	2.40E-04
SCITY188	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	4.95E-02	3.53E-04	3.53E-04
SCITY195	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	8.2	2.3	7.6	8.40E-02	6.00E-04	6.00E-04
SCITY241	PQ CORPORATION -THE	739053.43	4285317.19	495.80	8.2	2.3	7.6		2.66E-02	2.66E-02
SCITY340	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		3.60E-04	3.60E-04
SCITY341	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.13E-03	1.13E-03
SCITY342	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.20E-03	1.20E-03
SCITY343	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.20E-02	1.20E-02
CJEFF33	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.49E-01		
CJEFF38	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.71E-03		
CJEFF39	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	3.22E-03		

Off-Site Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	Potential Emissions (lb/hr) CO	SOx	SO2 (1-hour)
CJEFF40	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	2.01E-01		
CJEFF41	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.10E-03		
CJEFF42	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.18E-04		
CJEFF47	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	6.55E-02		
CJEFF48	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	6.56E-06		
CJEFF49	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.09E-04		
CJEFF50	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.48E-04		
CJEFF51	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	5.28E-02		
CJEFF52	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	2.46E-03		
CJEFF53	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.53E-01		
CJEFF54	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.56E-02		
CJEFF55	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.16E-01		
CJEFF56	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.45E-03		
CJEFF57	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	3.42E-01		
CJEFF58	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.74E-03		
CJEFF59	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.92E-01		
CJEFF60	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.36E-02		
CSTLC92	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	8.2	2.3	7.6	2.25E-01		
CSTLC151	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	13.5	1.4	0.7	1.58E-01		
CSTLC195	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	13.5	1.4	0.7	5.97E-01		
CCITY343	GP RECYCLING, LLC	743830.86	4284034.28	422.18	8.2	2.3	7.6	5.57E-02		

ATTACHMENT B
MODEL SUMMARY OUTPUT

10-5-22 US Steel CO Scale-up Significant Impacts Analysis Results

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag	Time	Met File	Sources	Groups	Receptors
AERMOD 22112	Granite City SIL_2019_CO.SUM	CO	1-HR	ALL	1ST	1157.328	746400	4286400	128.82	132.25		0 19020109	STL_LCN19	13	1	14098
AERMOD 22112	Granite City SIL_2016_CO.SUM	CO	1-HR	ALL	1ST	1094.348	750800	4288100	127.44	127.44		0 16121910	STL_LCN16	13	1	14098
AERMOD 22112	Granite City SIL_2018_CO.SUM	CO	1-HR	ALL	1ST	1036.463	745200	4287400	129.9	134.11		0 18112209	STL_LCN18	13	1	14098
AERMOD 22112	Granite City SIL_2020_CO.SUM	CO	1-HR	ALL	1ST	997.1573	746700	4287100	126.89	126.89		0 20010610	STL_LCN20	13	1	14098
AERMOD 22112	Granite City SIL_2017_CO.SUM	CO	1-HR	ALL	1ST	982.0781	748434.9	4287033	127.16	127.16		0 17051502	STL_LCN17	13	1	14098
AERMOD 22112	Granite City SIL_2019_CO.SUM	CO	8-HR	ALL	1ST	691.6775	748481.6	4286378	126.67	126.67		0 19041908	STL_LCN19	13	1	14098
AERMOD 22112	Granite City SIL_2018_CO.SUM	CO	8-HR	ALL	1ST	669.2078	748481.6	4286378	126.67	126.67		0 18111224	STL_LCN18	13	1	14098
AERMOD 22112	Granite City SIL_2017_CO.SUM	CO	8-HR	ALL	1ST	651.0973	750472	4287091	125.7	125.7		0 17090416	STL_LCN17	13	1	14098
AERMOD 22112	Granite City SIL_2016_CO.SUM	CO	8-HR	ALL	1ST	645.9934	748434.9	4287033	127.16	127.16		0 16110108	STL_LCN16	13	1	14098
AERMOD 22112	Granite City SIL_2020_CO.SUM	CO	8-HR	ALL	1ST	618.4866	748434.9	4287033	127.16	127.16		0 20041108	STL_LCN20	13	1	14098

10-5-22 US Steel CO Scale-up Significant Impacts Analysis Results

Pollutant	Average	Group	Rank	Model Conc. (ug/m3)	Significant Impact Level (ug/m3)	% SIL
CO	1-HR	ALL	1ST	1157.3	2,000	58%
CO	8-HR	ALL	1ST	691.7	500	138%

10-5-22 US Steel CO NAAQS Analysis Results

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag	Time	Met File	Sources	Groups	Receptors
AERMOD 22112	Granite City NAAQS_2016_CO.SUM	CO	8-HR	ALL	2ND	1856.677	748434.9	4287033	127.16	127.16		0 16032208	STL_LCN16	584	1	205
AERMOD 22112	Granite City NAAQS_2017_CO.SUM	CO	8-HR	ALL	2ND	1941.224	748434.9	4287033	127.16	127.16		0 17121624	STL_LCN17	584	1	205
AERMOD 22112	Granite City NAAQS_2018_CO.SUM	CO	8-HR	ALL	2ND	1726.885	748470.1	4287000	126.94	126.94		0 18092424	STL_LCN18	584	1	205
AERMOD 22112	Granite City NAAQS_2019_CO.SUM	CO	8-HR	ALL	2ND	2045.17	748434.9	4287033	127.16	127.16		0 19110908	STL_LCN19	584	1	205
AERMOD 22112	Granite City NAAQS_2020_CO.SUM	CO	8-HR	ALL	2ND	1966.717	748434.9	4287033	127.16	127.16		0 20092408	STL_LCN20	584	1	205

10-5-22 US Steel CO NAAQS Analysis Results

Pollutant	Average	Group	Rank	Model Conc. (ug/m3)	Background Conc. (ug/m3)	Total Conc. (ug/m3)	Standard (ug/m3)	% Standard
CO	8-HR	ALL	2ND	2045.2	1646	3691.2	10,000	37%

Background data from East St. Louis monitor (AQS No. 85-510-029), high second high value from 2016-2018.

R000456

REFERENCES

1. Guidelines on Air Quality Models, (Revised). Appendix W of 40 CFR Part 51, 82 FR 5182, January 17, 2017.

2 . Prevention of Significant Deterioration, The Art and Science of PSD Air Quality Analysis, The Modeling Perspective, Illinois Environmental Protection Agency, Modeling Unit, February 27, 2014..

3. AERSCREEN User's Guide. EPA-454/B-15-005, July 2015.

4. Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for Stack Height Regulations (Revised). EPA-450/4-80-023R, U.S. Environmental Protection Agency, June 1985.

5. *Sierra Club v. EPA*, No. 10-1413, 2013 WL 216018 (Jan. 22, 2013).

6. Ambient Monitor Guidelines for Prevention of Significant Deterioration, EPA-450/4-87-007, USEPA, May 1987.

7. Ambient Monitor Guidelines for Prevention of Significant Deterioration, EPA-450/4-87-007, USEPA, May 1987.

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217/782-2113

CONSTRUCTION PERMIT -- NSPS SOURCE

PERMITTEE

United States Steel Corporation
Attn: Larry Siebenberger
600 Grant Street
Pittsburgh, Pennsylvania 15219

Application No.: 06070023
Applicant's Designation:
Subject: Cogeneration Boiler Project
Date Issued: January 30, 2008
Location: 1951 State Street, Granite City

I.D. No.: 119813AAI
Date Received: July 11, 2006

This Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a blast furnace gas (BFG) fired cogeneration boiler, a flare, and cooling tower, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

If you have any questions on this permit, please contact Jason Schnepp at 217/782-2113.

COPY
Original Signed by
Edwin C. Bakowski, P.E.

Edwin C. Bakowski, P.E.
Acting Manager, Permit Section
Division of Air Pollution Control

Date Signed: 1/30/08

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Lotus Notes
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1.0 LIST OF ABBREVIATIONS AND ACRONYMS COMMONLY USED

BFG	Blast Furnace Gas
CAAPP	Clean Air Act Permit Program
CFR	Code of Federal Regulations
CO	Carbon Monoxide
dscf	Dry standard cubic feet
gr	Grains
HAP	Hazardous Air Pollutant
H_2SO_4	Sulfuric Acid
hr	Hour
IAC	Illinois Administrative Code
I.D. No.	Identification Number of Source, assigned by Illinois EPA
Illinois EPA	Illinois Environmental Protection Agency
Lb	Pound
mg	Milligram
Mo	Month
mmBtu	Million British Thermal Units
MSSCAM	Major Stationary Sources Construction and Modification (35 Part IAC 203), also known as Nonattainment New Source Review (NA NSR)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns as measured by applicable test or monitoring methods
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration (40 CFR 52.21)
scf	Standard Cubic Feet
scm	Standard Cubic Meter
SO_2	Sulfur Dioxide
USEPA	United States Environmental Protection Agency
VOM	Volatile Organic Material
Yr	Year

2.0 OVERALL SOURCE CONDITIONS

2.1 General Applicable Provisions and Regulations

2.1.1 The new units being constructed as part of this project are subject to particular regulations as set forth in Section 3 (Unit-Specific Conditions for Specific Emission Units) of this permit.

2.1.2 In addition, these emission units are subject to the following regulations of general applicability:

a. No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally overhead at a point beyond the property line of the source unless the wind speed is greater than 40.2 kilometers per hour (25 miles per hour), pursuant to 35 IAC 212.301 and 212.314.

b. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

2.2 General Non-Applicability of Regulations of Concern

2.2.1 PSD/NAA NSR

a. The Permittee has addressed the applicability of 40 CFR 52.21, PSD, and 35 IAC Part 203, Major Stationary Sources Construction and Modification (MSSCAM). The limits established by this permit are intended to ensure that the Cogeneration Boiler Project addressed in this construction permit does not constitute a major modification of the source pursuant to these rules (See also Condition 2.6 and Attachment 1). For the purpose of addressing whether this project is a major modification for emissions of particulate matter under MSSCAM, as US Steel did not provide separate $PM_{2.5}$ emission data for the project and given the netting analysis shows that project would not be accompanied by a significant net increase in emissions is conducted in terms of emissions of PM_{10}, the limits for emissions PM_{10} established by this permit are also applicable to emissions of $PM_{2.5}$.

2.3 General Work Practice Requirements

2.3.1 Operating Program

a. Pursuant to 35 IAC 212.309, emission units that are subject to a requirement in 35 IAC 212.304 through 212.308 or 212.316 shall be operated under the provisions of an operating program, consistent with the requirements set forth in 35 IAC 212.310 and 212.312, and prepared by the Permittee and submitted to the Illinois EPA for its review. Such operating program shall be designed to significantly reduce fugitive particulate matter emissions.

i. At a minimum the operating program shall include the information and elements specified by 35 IAC 212.310, including: (1) a detailed description of the best management practices utilized to control fugitive dust; (2) estimated frequency of application of dust suppressants by location; and (3) such other information as may be necessary to facilitate the Illinois EPA's review of the operating program.

ii. This program shall also identify the specific control measures as may be needed to ensure that certain emission units comply with the opacity limits of 35 IAC 212.316.

iii. Pursuant to 35 IAC 212.312, this operating program shall be amended from time to time by the Permittee so that the operating program is current. Such amendments shall be consistent with 35 IAC Part 212 Subpart K and shall be submitted to the Illinois EPA for its review.

2.4 General Recordkeeping Requirements

2.4.1 Retention and Availability of Records

a. All records and logs required by this permit shall be retained for at least five years from the date of entry (unless a longer retention period is specified by the particular recordkeeping provision herein), shall be kept at a location at the source that is readily accessible to the Illinois EPA or USEPA, and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request.

b. The Permittee shall retrieve and print, on paper during normal source office hours, any records retained in an electronic format (e.g., computer) in response to an

Illinois EPA or USEPA request for records during the course of a source inspection.

2.5 General Reporting Requirements

2.5.1 Reporting and Notifications Associated with Emissions Tests

a. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected testing date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

b. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing, including at a minimum:

i. The person(s) who will be performing sampling and analysis and their experience with similar tests.

ii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

iii. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.

iv. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods.

v. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

vi. Opacity observations during the period of testing.

c. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 30

days after the test results are compiled and finalized. The Final Report shall include at a minimum:

i. A summary of results.

ii. General information.

iii. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.

iv. Detailed description of test conditions, including:

A. Process information.

B. Control equipment information, e.g., equipment condition and operating parameters during testing.

v. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

2.5.2 Notification and Reporting of Deviations

a. Except as specified in a particular provision of this permit, notifications and reports for deviation from applicable requirements of this permit shall include at least the following information: the date and time of the event, a description of the event, information on the magnitude of the deviation, a description of the corrective measures taken, and a description of any preventative measures taken to prevent future occurrences.

2.6 Provisions for Existing Equipment

a. This permit relies upon the emissions decreases established by the Emission Reduction Projects (Construction Permit 06070022). For this purpose, existing Boilers 1 through 10 shall be permanently shut down within 180 days of the initial start up of the new cogeneration boiler or upon completion of shakedown of the boiler, whichever occurs first, unless the Illinois EPA authorizes an extended transition period between the cogeneration boiler and existing boilers to address the protracted shakedown of the new boiler, in which case the operation of the new and existing boilers during the extended transition period shall be coordinated so that their combined emissions do not exceed the annual emissions limits set by this permit for the cogeneration boiler.

b. This permit relies upon the planned permanent shutdown of the No. 6 Galvanizing Line. Once the line is permanently shutdown, restart of the line would require a construction permit from the Illinois EPA.

Note: The application indicates an annual decrease of 10.36 tons of CO, 38.48 tons of NO_x, 0.94 tons of PM/PM_{10}, 0.07 tons of SO_2, and 0.68 tons of VOM from the shutdown of No. 6 Galvanizing Line. These values represent the actual emissions attributable to natural gas combustion in No. 6 Galvanizing Line. As these changes are unrelated to the project, they are considered contemporaneous emission decreases as addressed in the Attachment to this permit.

c. This permit relies upon the planned permanent shutdown of the No. 4 COG Booster Pump (natural gas fired). This natural gas fired pump is being replaced by an electric pump.

Note: The application indicates an annual decrease of 117.97 tons of CO, 77.30 tons of NO_x, 0.64 tons of PM/PM_{10}, 0.02 tons of SO_2, and 0.99 tons of VOM from the shutdown of No. 4 COG Booster Pump (natural gas fired). These values represent the actual emissions attributable to natural gas combustion in the No. 4 COG Booster Pump (natural gas fired). As these changes are unrelated to the project, they are considered contemporaneous emission decreases as addressed in the attachment to this permit.

d. i. Emissions attributable to the combustion of natural gas associated with the blending station (Construction Permit 04110018) shall not exceed the following limits after the cogeneration boiler initially starts up. Compliance with the annual limits shall be determined from a running total of 12 months of data. This Condition supersedes Condition 3 of Construction Permit 04110018, issued February 4, 2005.

	Emissions	
Pollutant	(Tons/Month)	(Tons/Year)
NO_x	2.80	17.22
CO	0.84	5.17
PM	0.12	0.73
PM_{10}	0.11	0.62
VOM	0.06	0.34
SO_2	0.01	0.04

ii. The Permittee shall continue to comply with the other requirements of Construction Permit 04110018, including operational limitations, recordkeeping and reporting requirements.

2.7 Authorization to Operate

The new emission units addressed by this construction permit may be operated under this permit until they have been incorporated into the source's issued CAAPP permit, provided that the Permittee submits a timely and complete application for such CAAPP permit.

3.0 UNIT-SPECIFIC CONDITIONS FOR SPECIFIC EMISSION UNITS

3.1 Cogeneration Boiler

3.1.1 Description

Under the source's current configuration, twelve boilers at the source (Boilers 1-12) fire BFG as well as coke oven gas and natural gas. This project involves construction of a new cogeneration boiler and the shutdown of Boilers 1-10 (Also addressed by Emission Reduction Project, Construction Permit 06070022). BFG previously burned in Boilers 1-10 would be sent to the new cogeneration boiler under the proposed configuration.

The new boiler would be used for cogeneration, as it would supply high pressure steam to a steam turbine which would produce electricity for use at the source. Low-pressure steam from this turbine would then be used for manufacturing operations at the source.

The new boiler would be primarily fed with BFG; however, natural gas would be used for the pilot flame and also for combustion control.

3.1.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Cogeneration Boiler	BFG Boiler (nominal 505 mmBtu/hour capacity)	BFG Pre-Treatment System

3.1.3 Applicable Provisions and Regulations

a. The "affected unit" for the purpose of these unit-specific conditions, is the BFG Boiler described in Conditions 3.1.1 and 3.1.2.

3.1.3-1 Applicable Federal Emission Standards (40 CFR 60, Subpart Db)

The affected unit is subject to the NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db.

Note: While the affected unit meets the applicability of 40 CFR Part 60 Subpart Db, it is not subject to the emission standards of this rule.

3.1.3-2 Applicable State Emission Standards (35 IAC Part 212)

a. The affected unit is subject to 35 IAC 212.122(a), which provides that no person shall cause or allow the emission

of smoke or other particulate matter into the atmosphere from any fuel combustion emission unit for which construction or modification commenced on or after April 14, 1972, with actual heat input greater than 73.2 MW (250 mmBtu/hour), having an opacity greater than 20 percent.

3.1.3-3 Applicable State Regulations (35 IAC Part 216)

a. The affected unit is subject to 35 IAC 216.121, which provides that no person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from a fuel combustion unit with a heat input capacity of 10 million Btu per hour or more to exceed 200 ppm, corrected to 50 percent excess air.

3.1.4 Non-Applicability of Regulations of Concern

a. The affected unit is not subject to the NSPS for Electric Utility Steam Generating Units (40 CFR 60, Subpart Da) because the affected unit is not an electric utility steam generating unit as the term is defined in 40 CFR 60.41Da.

b. The affected unit is not subject to 40 CFR 60, Subpart D because the affected unit meets the applicability requirements under 40 CFR 60.40b(a) [40 CFR 60.40b(j)].

c. The affected unit is not subject to the sulfur dioxide standards of 40 CFR 60, Subpart Db because the affected unit meets the exemption provided at 40 CFR 60.42b(k)(2).

d. The affected unit is not subject to the nitrogen oxides standards of 40 CFR 60, Subpart Db because the affected unit has an annual capacity factor for natural gas of 10 percent or less and is subject to a federally enforceable requirement that limits operation of the facility to an annual capacity factor of 10 percent or less for natural gas (See also Condition 3.1.6(a)).

e. The affected unit is not subject to the particulate matter standards of 40 CFR 60, Subpart Db because these standards do not apply to gaseous fuel boilers.

f. i. This permit is issued based on the affected unit not being subject to emission standards or other requirements pursuant to the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD. This is because this NESHAP has been vacated by a court mandate, pursuant to a request by USEPA, and is no longer in effect.

Note: Had this rule not been vacated, the affected unit would have met the BFG fuel fired boiler exclusion at 40 CFR 63.7491(o). Incidentally, "large gaseous fuel units," under this NESHAP would have been limited to CO emissions of no more than 400 ppm, dry basis at 3 percent oxygen, 30-day rolling average, excluding periods of startup, shutdown, malfunction, and low-load operation, which is less stringent than the standard set by 35 IAC 216.121 (See Condition 3.1.3-3).

ii. This permit is issued based on the affected unit not being a major source of HAPs for purposes of Section 112(g) of the Clean Air Act so that a case-by-case determination of Maximum Achievable Control Technology (MACT) is not required for the affected unit pursuant to Section 112(g) and 40 CFR 63 Subpart B. This is because the affected unit is being constructed at a developed site and the potential annual emissions of HAPs from the affected unit are less than 10 tons of any individual HAP and less than 25 tons of any combination of HAPs.

iii. The affected unit and the Permittee shall comply in a timely manner with all applicable provisions of a NESHAP adopted by USEPA or a case-by-case MACT determination made by the Illinois EPA that applies to the affected unit. For this purpose, the Permittee shall address the affected unit in an application submitted to the Illinois EPA pursuant to Section 112(j) of the Clean Air Act to support a case-by-case determination of MACT for the boilers at the source.

g. The affected unit is not subject to 35 IAC 217.121 because the affected unit is not fossil fuel-fired as defined by 35 IAC 211.2425.

3.1.5 Control Requirements and Work Practices

a. Emissions of PM and PM_{10} from the affected unit shall be controlled by the existing BFG pretreatment system, which entails treatment by dust catchers and wet scrubbers.

i. The PM content of the BFG burned in the affected unit shall not exceed 0.01 grains/dscf.

ii. Emissions of PM from the affected unit, as measured by USEPA Method 5, shall not exceed 0.03 lb/mmBtu of exhaust.

b. BFG and natural gas shall be the only fuels fired in the affected unit.

c. The affected unit shall be operated for the primary purpose of supplying steam and electricity to the source with no more than 219,000 MW-hour of excess electricity sent to any utility power distribution system for sale in any calendar year from the electrical generator associated with the unit.

3.1.6 Production and Emission Limitations

a. i. A. The maximum design firing rate of the affected unit shall not exceed 505 mmBtu/hour.

B. The maximum design BFG input of the affected unit shall not exceed 476 mmBtu/hour.

ii. Fuel usage for the affected unit and the new BFG flare shall not exceed the following limits (rolling 12-month basis):

A. Natural gas: 341,666 mmBtu/year.

B. BFG and natural gas fuel usage combined: 4,511,426 mmBtu/year.

b. i. Emissions from the affected unit shall not exceed the following limits. Compliance with these limits shall be determined as a 3-hour average unless continuous emissions monitoring is conducted, in which compliance shall be determined as a daily average (24 operating hours):

Pollutant	Mode	
	BFG* (Lbs/mmBtu)	Natural Gas (Lbs/mmBtu)
NO_x	0.05	0.12
CO	0.15	0.0824
VOM	---	0.0054
PM/PM_{10}	0.101	0.0075
SO_2	0.20	0.0006
Indiv. Metal HAP	0.00066	0.00066
Total HAPs	0.0053	0.0053

* BFG mode entails firing a mix of BFG with up to 10 percent natural gas.

ii. Emissions from the affected unit and the new BFG flare shall not exceed the following limits:

Pollutant	Emissions	
	Tons/Month	Tons/Year
NO_x	12.5	124.74
CO	33.9	338.36
VOM	0.1	0.92
PM/PM_{10}	22.9	228.39
SO_2	45.2	451.14
Indiv. Metal HAP	0.2	1.5
Total HAPs	1.2	12.0

c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total), unless otherwise specified in a particular condition.

3.1.7 Emissions Testing Requirements

a. Within 60 days after achieving the maximum production rate at which the affected unit will be operated, but not later than 180 days after initial startup of the affected unit, the Permittee shall conduct performance test(s) and furnish the Illinois EPA a written report of the results of such test(s).

b. i. These tests shall be designed to measure the NO_x, CO, SO_2, PM_{10}, PM and VOM emissions in BFG mode under conditions which are representative of maximum emissions.

ii. These tests shall also include measurements of emissions of metals if the Permittee elects to conduct emissions testing to verify compliance with the limits for metal HAPs, as an alternative to applying data for the metal HAP content of material collected during pretreatment of the BFG, as provided for by Condition 3.1.8-2(b).

c. The following USEPA test methods shall be used for testing of emissions, unless another method is approved by the Illinois EPA. Refer to 40 CFR 51, Appendix M, and 40 CFR 60, Appendix A, for test methods.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
SO_2	Method 6
NO_x	Method 7
CO	Method 10
PM_{10}	Methods 201A* & 202

PM	Method 5
VOM	Method 18 or 25A
Metals	Method 29

* The Permittee may also use Method 5 as an alternative to Method 201A, provided that the measured results shall be considered PM10.

d. The Permittee shall submit a plan, notifications and a report for these emissions tests as required by Condition 2.5.1. For this purpose, in addition to other required information, the test report shall include data for the sulfur and PM content of BFG and the metals content of the material removed from raw BFG by the pretreatment system, as determined pursuant to Condition 3.1.8-2.

3.1.8-1 Emissions Monitoring Requirements

a. The Permittee shall install, calibrate, operate, and maintain NO_x and CO continuous monitoring system(s) on the affected unit within one year after the initial emission testing required by this permit unless this testing or further testing conducted by the Permittee demonstrates that the unit normally complies by a margin of at least 5 percent with the NO_x and CO emission limit in this permit or the Illinois EPA approves further time for the Permittee to achieve this level of performance.

b. i. These monitoring systems shall be operated during all periods of operation of the affected boiler except for continuous monitoring system maintenance, breakdowns and repairs.

ii. The Permittee shall maintain records for the continuous monitoring system, including recorded emission concentrations and records of maintenance, calibration, and operational activity associated with the system.

iii. The Permittee shall submit quarterly monitoring reports to the Illinois EPA for these emission monitoring system(s) in accordance with relevant reporting requirements of the NSPS for continuous emissions monitoring systems.

c. NO_x or CO continuous emission monitoring may be discontinued if a parametric monitoring plan is approved by the Illinois EPA in a revised construction permit or the operating permit for the plant.

d. The requirement for a NO_x or CO monitoring system may be revised or waived in the operating permit for the source

if the Illinois EPA determines that compliance with requirements for NO_x or CO emissions is not facilitated to a significant degree by such monitoring.

3.1.8-2 Analysis of Blast Furnace Gas (BFG)

a. The Permittee shall sample and analyze cleaned BFG after the pretreatment system for sulfur content (lb/mmBtu), using appropriate ASTM methods or other comparable methodology. These measurements shall be conducted during the emission testing required by Condition 3.1.7 and on at least a quarterly basis thereafter. The records for this activity shall also include operating data for the blast furnaces and the BFG pretreatment system at the time of sampling.

b. The Permittee shall sample and analyze the cleaned BFG after the pretreatment system for PM content (gr/scf) and the material collected by the BFG pretreatment system for HAP metal content (by weight, dry basis, for individual metals as addressed by Method 29) using appropriate ASTM methods or other comparable methodology. These measurements shall be conducted during the emission testing required by Condition 3.1.7 and on at least a biennial basis thereafter. The records for this activity shall also include operating data for the blast furnaces and the BFG pretreatment system at the time of sampling. Unless testing for emissions of HAP metals is conducted in accordance with Condition 3.1.7(b)(ii), this data on the composition of collected material must be applied to data for PM emissions to calculate emissions of metals for purposes of verifying compliance with the emission limits in Condition 3.1.6 for HAP metals and HAPs.

3.1.9 Recordkeeping Requirements

a. The Permittee shall maintain the following records for the BFG pretreatment system:

i. Records for pressure drop and water flow;

ii. Operating log; and

iii. Maintenance log.

b. The Permittee shall maintain the following emission records:

i. A file which contains supporting documentation which demonstrates the maximum design firing rate of the affected unit (mmBtu/hour), the maximum design BFG input of the affected unit, and the

manufacturer's guarantees for the emission rates of the natural gas burners in the affected unit.

ii. Amounts of fuel burned by type (mmBtu/month and mmBtu/year) for the affected unit.

iii. Emissions of NO_x, CO, VOM, PM/PM_{10}, SO_2 and HAPs (tons/month and tons/year) from the affected unit.

iv. Amounts of fuel burned for the affected unit and the new BFG flare, combined, by type (mmBtu/month and mmBtu/year).

v. Summation of the emissions of NO_x, CO, VOM, PM/PM_{10}, SO_2 and HAPs from the affected unit and the new BFG flare (tons/month and tons/year).

c. The Permittee shall comply with the applicable recordkeeping requirements of the NSPS, as specified in 40 CFR 60.7(b) and 60.49b.

d. The Permittee shall maintain records of the sulfur content of the fuels burned in the affected unit, including records for the sampling and analysis of BFG pursuant to Condition 3.1.8-2(a). Records may consist of copies of supplier specifications for the sulfur content of natural gas.

3.1.10 Reporting Requirements

a. The Permittee shall promptly notify the Illinois EPA of deviations of an affected unit with the permit requirements of this section (Section 3.1). Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

i. Emissions or operation of the affected unit in excess of the limits specified in Condition 3.1.6 shall be reported within 30 days of such occurrence.

ii. Other deviations shall be reported in a quarterly compliance report.

b. The Permittee shall comply with the applicable reporting requirements of the NSPS, as specified in 40 CFR 60.7 and 60.49b.

3.2 Flare

3.2.1 Description

A new BFG flare would be installed to safely combust excess BFG that cannot be productively used at the source as fuel. Although the primary disposition of BFG is the new cogeneration boiler, existing Boilers 11 and 12, and the blast furnace stoves, there may be periods of time when the existing BFG flare system is unable to handle all of the excess BFG (e.g., when the BFG boiler is down for maintenance). During these periods, the excess BFG would be routed to the new BFG flare.

3.2.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description
BFG Flare	New Blast Furnace Gas Flare

3.2.3 Applicable Provisions and Regulations

a. The "affected unit" for the purpose of these unit-specific conditions, is the flare described in Conditions 3.2.1 and 3.2.2.

b. The affected unit is subject to 35 IAC 214.301, which generally provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from a process emission unit to exceed 2,000 ppm.

3.2.4 Non-Applicability of Regulations of Concern

Non-applicability of regulations of concern are not set for the affected unit.

3.2.5 Control Requirements and Work Practices

a. i. The affected unit shall be designed and operated to comply with the following equipment design specifications and work practices.

A. The affected unit shall be designed for flaring of BFG.

B. The affected unit shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

C. The affected unit shall be operated with a flame present at all times when BFG may be sent to the affected unit.

D. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

ii. Emissions of PM and PM_{10} from the affected unit shall be controlled by the existing BFG pretreatment system, which entails treatment by dust catchers and wet scrubbers.

iii. BFG and natural gas shall be the only fuels combusted in the affected unit.

b. The Permittee shall not vent any gas stream containing reduced sulfur compound concentrations to the affected unit that would cause the sulfur dioxide emissions into the atmosphere from any affected unit to exceed 2,000 ppm. This limit ensures that the affected unit meets the emission limit in 35 IAC 214.301.

3.2.6 Production and Emission Limitations

a. The affected unit is subject to limitations addressing emissions from both the BFG Boiler and the affected unit set forth in Condition 3.1.6.

3.2.7 Testing Requirements

a. Within 180 days after initial startup of the affected unit or otherwise the first opportunity during normal working hours of environmental staff when the unit is operated for a period of at least 10 daylight hours, the Permittee shall conduct observations for visible emissions from the affected unit and furnish the Illinois EPA a written report of the results of such test(s).

b. The test shall be designed to measure the presence of visible emissions from the affected unit.

c. The Permittee shall submit reports for these tests as required by Condition 2.5.1(c).

3.2.8 Monitoring Requirements

a. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

3.2.9 Recordkeeping Requirements

a. The Permittee shall maintain records of the following items related to the pilot flame:

i. Date and duration of any time when the pilot flame monitoring equipment of the affected unit was not in operation, with explanation.

ii. Date and duration of any time when there was no pilot flame present at the affected unit, with explanation.

iii. The Permittee shall maintain records of the following items for each exceedance of the limits in Conditions 3.2.3, 3.2.5, or 3.1.6, which shall include:

A. Identification of the limit that may have been exceeded.

B. Duration of the possible exceedance.

C. An estimate of the amount of emissions in excess of the applicable standard.

D. A description of the cause of the possible exceedance.

E. When compliance was reestablished.

b. The Permittee shall maintain records of the following items for the affected unit:

i. Amount of gas burned by type (mmBtu/month and mmBtu/year).

ii. Emissions of NO_x, CO, VOM, PM/PM_{10}, and SO_2 (tons/month and tons/year).

3.2.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements of this section (Section 3.2). Reports shall include information specified in Condition 3.2.10(a)(i).

i. Within 30 days of exceedance of the limits in Conditions 3.2.3 and 3.2.5 the notification shall include:

   A. Identification of the limit that may have been exceeded.

   B. Duration of the possible exceedance.

   C. An estimate of the amount of emissions in excess of the applicable standard.

   D. A description of the cause of the possible exceedance.

   E. When compliance was reestablished.

ii. Other deviations shall be reported in a quarterly compliance report.

3.3 Cooling Water Tower

3.3.1 Description

A cooling tower would be installed with the new cogeneration boiler and associated turbine.

The cooling tower would be a source of particulate matter because of minerals contained in the water, which would be emitted if a water droplet completely evaporates in the cooling tower.

3.3.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Cooling Tower	Provides cool water to condense steam.	Drift Eliminator

3.3.3 Applicable Provisions and Regulations

a. An "affected unit" for the purpose of these unit-specific conditions is a cooling water tower described in Conditions 3.3.1 and 3.3.2.

b. Pursuant to 40 CFR 63.402, the Permittee shall not use chromium-based water treatment chemicals in the affected unit.

3.3.4 Non-Applicability of Regulations of Concern

a. The affected unit is not subject to 35 IAC 219.986(d), because the cooling tower does not cool process water.

3.3.5 Control Requirements and Work Practices

a. The design drift loss from the drift eliminator on the affected unit shall not exceed 0.001 percent.

3.3.6 Production and Emission Limitations

a. i. The capacity of the affected unit, expressed in terms of design water circulation rate, shall not exceed 42,000 gallons per minute, hourly average.

ii. The total dissolved solids content of water circulating in the affected unit shall not exceed 4,190 ppm on a monthly basis.

b. Emissions of PM/PM_{10} from the affected unit shall not exceed 0.39 tons/month and 3.86 tons/year. Compliance

with the annual limit shall be determined from a running total of 12 months of data.

3.3.7 Sampling and Analysis

a. The Permittee shall sample and analyze the water being circulated in the affected unit on at least a monthly basis for the total dissolved solids content.

b. Upon written request by the Illinois EPA, the Permittee shall promptly have the water circulating in the affected unit sampled and analyzed for the presence of hexavalent chromium in accordance with the procedures of 40 CFR 63.404(a) and (b).

c. The Permittee shall keep records for this sampling and analysis activity, including documentation for sampling and analysis as well the resulting data that is collected.

3.3.8 Monitoring Requirements

a. Upon written request by the Illinois EPA, the Permittee shall test the percent drift achieved by the drift eliminator pursuant to Cooling Technology Institute's Acceptance Test Code No. 140 or other appropriate procedure approved by the Illinois EPA. This test shall be performed by a licensed performance testing service.

3.3.9 Recordkeeping Requirements

a. The Permittee shall keep records of the capacity (gallons/minute, hourly average) and the design maximum drift loss rate of the affected unit with supporting documentation.

b. The Permittee shall keep records of emissions of PM/PM_{10}, with supporting calculations (tons/month and tons/year).

3.3.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements of this section (Section 3.3). Reports shall include information specified in Condition 3.3.10(a).

a. Emissions or operation of the affected unit in excess of the limits specified in Condition 3.3.6 within 30 days of such occurrence.

4.0 ATTACHMENTS

Attachment 1: Netting Analysis (Tons/Year)

	Date	NO_x (NA NSR)	NO_x (PSD)	CO	SO_2	VOM	PM	$PM_{10}/PM_{2.5}$	Lead	H_2SO_4
Project Emissions		124.74	124.74	338.36	451.14	0.92	232.25	232.25	---	---
Significance Threshold:		40	40	100	40	40	25	15	0.6	7
Greater Than Significant?		Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Contemporaneous[a] Increases										
NG Enrichment (04110018)	2/2005	17.22	17.22	5.17	0.04	0.34	0.73	0.62	---	---
Slab Furnaces (06070022)		---	---	26.77	---	1.75	43.43	43.43	---	---
Contemporaneous[a] Decreases										
Boilers 1 thru 10 (06070022)	[b]	-278.89	-278.89	-313.61	-789.43	-1.22	-228.06	-228.06	---	---
COG Desulf (06070022)	[b]	---	---	---	-2,107.95	---	-94.15	-94.15	---	-63.11
Slab Furnaces (06070022)	[b]	-427.94	-427.94	---	-174.15	---	---	---	---	---
No. 6 Galv. Line (06070023)	[b]	-38.48	-38.48	-10.36	-0.07	-0.68	-0.94	-0.94	---	---
No. 4 COG Pump (06070023)	[b]	-77.30	-77.30	-117.97	-0.02	-0.99	-0.64	-0.64	---	---
NET EMISSIONS CHANGE		-680.65	-680.65	-71.64	-2,620.44	0.12	-47.38	-47.49	---	-63.11
Significance Threshold:		40	40	100	40	40	25	15	0.6	7
Greater Than Significant?		No	No	No	No	No	No	No	No	No

Notes:

a. Based on the projected date for initial startup of the proposed cogeneration boiler, the contemporaneous time period for PSD pollutants is April 2002 through July 2008. The contemporaneous time period for NA NSR pollutants is July 2001 through July 2008.

b. Future emissions decrease. The decrease in emissions from existing Boilers 1 thru 10, which the project replaces, will begin when the new boiler initially starts up diverting BFG from the existing boilers and will be complete after the shakedown and any transition period for the new boiler, when the existing boilers must be permanently shut down.

R000481

Attachment 2: Standard Permit Conditions

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits, which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Illinois EPA and a supplemental written permit issued.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. To obtain and remove samples of any discharge or emissions of pollutants, and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities.

   c. Does not release the Permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations.

   d. Does not take into consideration or attest to the structural stability of any units or parts of the project, and

   e. In no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Illinois EPA before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Illinois EPA may file a complaint with the Board for modification, suspension or revocation of a permit.

   a. Upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed, or

   b. Upon finding that any standard or special conditions have been violated, or

   c. Upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

JMS:06070023:psj

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/785-1705

CONSTRUCTION PERMIT -- REVISED*
NSPS/NESHAP SOURCE

PERMITTEE

United States Steel Corporation - Granite City Works
Attn: Krista Armentrout
1951 State Street
Granite City, Illinois 62040

Application No.: 06070023 I.D. No.: 119813AAI
Subject: Cogeneration Boiler Project
Date Permit Originally Issued: January 30, 2008
Date Application for Revised Permit Received: February 6, 2017
Date Revised Permit Issued: March 25, 2021
Location: 1951 State Street, Granite City, Madison County

This Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a cogeneration boiler, a flare, and cooling tower, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s).

If you have any questions on this permit, please contact Minesh Patel at 217/785-5151.

William D Marr
Manager, Permit Section
Bureau of Air

WDM:MVP:tan

cc: CES

* This permit has been revised at the request of the Permittee to address operation of the cogeneration boiler as a natural gas-fired boiler, including operation without any blast furnace gas, as well as operation predominantly on blast furnace gas, as originally provided.

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1.0 LIST OF ABBREVIATIONS AND ACRONYMS COMMONLY USED

BFG	Blast Furnace Gas
CAAPP	Clean Air Act Permit Program
CFR	Code of Federal Regulations
CO	Carbon Monoxide
dscf	Dry standard cubic feet
gr	Grains
HAP	Hazardous Air Pollutant
H_2SO_4	Sulfuric Acid
hr	Hour
IAC	Illinois Administrative Code
I.D. No.	Identification Number of Source, assigned by Illinois EPA
Illinois EPA	Illinois Environmental Protection Agency
Lb	Pound
mg	Milligram
Mo	Month
mmBtu	Million British Thermal Units
MSSCAM	Major Stationary Sources Construction and Modification (35 Part IAC 203), also known as Nonattainment New Source Review (NA NSR)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns as measured by applicable test or monitoring methods
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration (40 CFR 52.21)
scf	Standard Cubic Feet
scm	Standard Cubic Meter
SO_2	Sulfur Dioxide
USEPA	United States Environmental Protection Agency
VOM	Volatile Organic Material
Yr	Year

2.0 OVERALL SOURCE CONDITIONS

2.1 General Applicable Provisions and Regulations

2.1.1 The new units being constructed as part of this project are subject to particular regulations as set forth in Section 3 (Unit-Specific Conditions for Specific Emission Units) of this permit.

2.1.2 In addition, these emission units are subject to the following regulations of general applicability:

a. No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally overhead at a point beyond the property line of the source unless the wind speed is greater than 40.2 kilometers per hour (25 miles per hour), pursuant to 35 IAC 212.301 and 212.314.

b. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

2.2 General Non-Applicability Provisions

2.2.1 PSD/NA NSR

a. The Permittee has addressed the applicability of 40 CFR 52.21, PSD, and 35 IAC Part 203, Major Stationary Sources Construction and Modification (MSSCAM). The limits established by this permit are intended to ensure that the Cogeneration Boiler Project addressed in this construction permit does not constitute a major modification of the source pursuant to these rules (See Attachment 1). For the purpose of addressing whether this project is a major modification for emissions of particulate matter under MSSCAM, as US Steel did not provide separate $PM_{2.5}$ emission data for the project and given the netting analysis shows that the project would not be accompanied by a significant net increase in emissions is conducted in terms of emissions of PM_{10}, the limits for emissions of PM_{10} established by this permit are also applicable to emissions of $PM_{2.5}$.

2.3 General Work Practice Requirements

2.3.1 Operating Program

a. Pursuant to 35 IAC 212.309, emission units that are subject to a requirement in 35 IAC 212.304 through 212.308 or

212.316 shall be operated under the provisions of an operating program, consistent with the requirements set forth in 35 IAC 212.310 and 212.312, and prepared by the Permittee and submitted to the Illinois EPA for its review. Such operating program shall be designed to significantly reduce fugitive particulate matter emissions.

i. At a minimum the operating program shall include the information and elements specified by 35 IAC 212.310, including: (1) a detailed description of the best management practices utilized to control fugitive dust; (2) estimated frequency of application of dust suppressants by location; and (3) such other information as may be necessary to facilitate the Illinois EPA's review of the operating program.

ii. This program shall also identify the specific control measures as may be needed to ensure that certain emission units comply with the opacity limits of 35 IAC 212.316.

iii. Pursuant to 35 IAC 212.312, this operating program shall be amended from time to time by the Permittee so that the operating program is current. Such amendments shall be consistent with 35 IAC Part 212 Subpart K and shall be submitted to the Illinois EPA for its review.

2.4 General Recordkeeping Requirements

2.4.1 Retention and Availability of Records

a. All records and logs required by this permit shall be retained for at least five years from the date of entry (unless a longer retention period is specified by the particular recordkeeping provision herein), shall be kept at a location at the source that is readily accessible to the Illinois EPA or USEPA, and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request.

b. The Permittee shall retrieve and print, on paper during normal source office hours, any records retained in an electronic format (e.g., computer) in response to an Illinois EPA or USEPA request for records during the course of a source inspection.

2.5 General Reporting Requirements

2.5.1 Reporting and Notifications Associated with Emissions Tests

a. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall

be submitted a minimum of 30 days prior to the expected testing date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

b. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing, including at a minimum:

i. The person(s) who will be performing sampling and analysis and their experience with similar tests.

ii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

iii. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.

iv. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods.

v. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

vi. Opacity observations during the period of testing.

c. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 30 days after the test results are compiled and finalized. The Final Report shall include at a minimum:

i. A summary of results.

ii. General information.

iii. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.

iv. Detailed description of test conditions, including:

A. Process information.

B. Control equipment information, e.g., equipment condition and operating parameters during testing.

v. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

2.5.2 Notification and Reporting of Deviations

a. Except as specified in a particular provision of this permit, notifications and reports for deviation from applicable requirements of this permit shall include at least the following information: the date and time of the event, a description of the event, information on the magnitude of the deviation, a description of the corrective measures taken, and a description of any preventative measures taken to prevent future occurrences.

2.6 RESERVED

(This condition originally addressed the requirements for permanent shutdown of existing emission units including Boilers 1 through 10, No. 6 Galvanizing line, No. 4 Coke Oven Gas Booster Pump and a Coke Oven Gas Blending Station, all of which have now been permanently shutdown.)

2.7 Authorization to Operate

The Permittee may operate the cogeneration boiler as a natural gas-fired boiler as addressed by this revised construction permit under this permit until this manner of operation is addressed in the source's CAAPP permit.

Note: The operation of the cogeneration boiler as a blast furnace gas-fired unit has been addressed in the CAAPP permit for the source, as issued on March 4, 2013.

3.0 UNIT-SPECIFIC CONDITIONS FOR SPECIFIC EMISSION UNITS

3.1 Cogeneration Boiler

3.1.1 Description

a. This project involves construction of a new cogeneration boiler.

The new boiler would be used for cogeneration, as it would supply high pressure steam to a steam turbine-generator, which would produce electricity for use at the source. Low-pressure steam from this turbine would then be used for manufacturing operations at the source.

Except when blast furnace(s) are idled, the new boiler would be primarily fed with blast furnace gas (BFG) which is by-product fuel from the blast furnaces at the source. Natural gas would be used for the pilot flame and for combustion stability. When both blast furnaces are idled, natural gas would be the primary fuel if steam were needed from this boiler.

This project would be accompanied by the permanent shut down of existing Boilers 1 through 10, with accompanying decreases in their emissions. Blast furnace gas previously sent to these boilers would now be sent to the new boiler.

b. i. This revised permit addresses an additional operational scenario for this new boiler, which entails operation primarily on natural gas, including operation only on natural gas, rather than operation predominantly on blast furnace gas, as initially addressed by this permit. This additional scenario addresses the operation of this boiler when the blast furnaces at the source, as well as other units, are not being operated or are being operated at reduced levels. The adjacent Gateway coke plant would continue to provide a portion of the steam powering the turbine generator.

ii. To accommodate this change, this revised permit no longer limits the usage of natural gas by this boiler. As a consequence:

A. This boiler is subject to a standard for emissions of nitrogen oxides (NOx), with accompanying requirements for continuous emissions monitoring, under the federal New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db, as now addressed in this revised permit.

B. This boiler is also subject to a requirement for periodic tune ups of the boiler under the federal National Emission Standards for Hazardous Air Pollutant (NESHAP), 40 CFR 63 Subpart DDDDD, when operating as a natural gas-fired unit (i.e., a unit in the "unit designed to burn gas 1 subcategory" under this NESHAP) rather than as a blast furnace gas fuel-fired boiler, which requirement is now addressed by this revised permit.

iii. This revised permit also addresses the requirements of state rules for NOx emissions. 35 IAC Part 217 Subparts D and E, which took effect on January 1, 2015.

c. For purposes of these unit-specific conditions, in this revised permit, the cogeneration boiler is referred to as the "affected unit."

3.1.2 List of Emission Units and Air Pollution Control Measures

Emission Unit	Description	Emission Control Measures
Cogeneration Boiler	Blast furnace gas and natural gas-fired boiler (nominal capacity 505 mmBtu/hour)	*

* BFG undergoes pre-treatment to remove entrained dust before being burned.

3.1.3-1 Applicable Federal New Source Performance Standards (NSPS)

a. The affected unit is subject to the NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db, and applicable requirements of the General Provisions of the NSPS, 40 CFR 60 Subpart A.

b. Pursuant to 40 CFR 60.44b(h), (i) and (l)(1), as the affected unit is a low heat release boiler as defined by 40 CFR 60.41b, the NO_x emissions (expressed as NO_2) of the affected unit shall not exceed 43 ng/J (0.10 lb/million Btu) heat input, determined on a 30-day rolling average basis. This standard applies at all times including periods of startup, shutdown, or malfunction.

3.1.3-2 Applicable Federal National Emission Standards for Hazardous Air Pollutants (NESHAP)

a. During each compliance period in which the affected unit does not qualify as a "blast furnace gas fuel-fired boiler" as defined by 40 CFR 63.7575, the affected unit is subject to the National Emission Standards for Hazardous Air

Pollutants (NESHAP) for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD (Boiler NESHAP) and related requirements of General Provisions 40 CFR 63 Subpart A. For this purpose, the Permittee shall comply with applicable requirements for an existing boiler in the "units designed to burn gas 1 fuel" category of the Boiler NESHAP, including the following:

i. Pursuant to 40 CFR 63.7500(a)(1) and Table 3 of Boiler NESHAP, the Permittee shall conduct periodic tune-ups of the affected unit as specified by the Boiler NESHAP.

ii. Pursuant to 40 CFR 60.11(d) and 63.7500(a)(3), the Permittee shall operate and maintain the affected unit, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions at all times including during startup, shutdown and malfunction.

3.1.3-3 Applicable State Emission Standards

a. The affected unit is subject to 35 IAC 212.122(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter (PM) into the atmosphere from any fuel combustion emission unit for which construction or modification commenced on or after April 14, 1972, with actual heat input greater than 73.2 MW (250 mmBtu/hour), having an opacity greater than 20 percent.

b. The affected unit is subject to 35 IAC 216.121, which provides that no person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from a fuel combustion unit with a heat input capacity of 10 million Btu per hour or more to exceed 200 ppm, corrected to 50 percent excess air.

c. The affected unit is subject to 35 IAC 217 Subparts D and E, pursuant to which the following requirements for NOx emissions apply:

i. 35 IAC 217.164(a), which provides that during each ozone season and calendar year in which the affected unit combusts only natural gas, the NOx emissions from the unit shall not exceed 0.08 lb/mmBtu on an ozone season and annual basis.

ii. 35 IAC 217.164(b), which provides that during each ozone season or calendar year in which the affected unit combusts a combination of blast furnace gas and natural gas, the NO_x emission of the unit shall not

exceed the limitation calculated using the equation in this rule on an ozone season and annual basis.

Note: This equation calculates a limitation for NOx in lb/mmBtu that is based on an emission rate of 0.0288 lb/mmBtu for blast furnace gas and 0.084 lb/mmBtu for natural gas, weighted by the fraction of the heat input to a unit during the ozone season or calendar year provided by each fuel.

iii. 35 IAC 217.150(e), which provides that the owner or operator of a subject unit must operate such unit in a manner consistent with good air pollution control practice to minimize NO_x emissions.

d. When the affected unit combusts blast furnace gas, the affected unit is subject to 35 IAC 214.161(b)(1) and 214.162, which provides that the sulfur content of blast furnace gas shall not exceed 1000 ppm.

3.1.4 Non-Applicability Provisions

a. The affected unit is not subject to the NSPS for Electric Utility Steam Generating Units (40 CFR 60 Subpart Da) because the affected unit is not an electric utility steam generating unit as the term is defined in 40 CFR 60.41Da.

b. The affected unit is not subject to 40 CFR 60 Subpart D because the affected unit meets the applicability criteria of 40 CFR Subpart Db at 40 CFR 60.40b(a) [40 CFR 60.40b(j)].

c. Under the NSPS, 40 CFR 60 Subpart Db:

i. The affected unit is not subject to the SO_2 standards because the affected unit meets the exemption provided at 40 CFR 60.42b(k)(2).

ii. The affected unit is not subject to the PM standards because these standards do not apply to boilers that only burn gaseous fuel.

Note: This revised permit is based on the affected unit being subject to the NO_x standards of the NSPS, 40 CFR 60 Subpart Db. This is different than Condition 7.10.4(c)(iv) of the CAAPP permit for the source, which indicates that these standards are not applicable for the affected unit because the annual capacity factor of this unit for natural gas is limited to 10 percent or less, which is no longer the case as a result of this revised permit.

d. Under the NESHAP, 40 CFR 63 Subpart DDDDD, when the affected unit qualifies as a "blast furnace gas fuel-fired boiler" as defined by 40 CFR 63.7575, this permit is issued

based on the affected unit not being subject to this NESHAP. This is because the affected unit would be excluded from this NESHAP by 40 CFR 63.7491(k).

Note: Under the NESHAP, 40 CFR 63 Subpart DDDDD, a boiler is considered a blast furnace gas fuel-fired boiler if blast furnace gas comprises at least 90 percent of the total volume of fuel burned in a unit during the compliance period.

e. This permit is issued based on the affected unit not being an affected source for purposes of the federal Acid Rain Program or Cross-State Air Pollution Rule. This is because the affected unit qualifies as a cogeneration unit since the electrical generator associated with this unit does not supply more than 219,000 MW-hour of electricity to any utility power distribution system for sale in any calendar year.

3.1.5 Control Requirements and Work Practices

a. When blast furnace gas (BFG) is used as a fuel for the affected unit, emissions of PM and PM_{10} from the affected unit shall be controlled by the existing BFG pretreatment system, which entails treatment of BFG by dust catchers and wet scrubbers.

b. Emissions of PM from the affected unit, as measured by USEPA Method 5, shall not exceed 0.03 lb/mmBtu.

c. BFG and natural gas shall be the only fuels fired in the affected unit.

d. Pursuant to 40 CFR 97.404(b)(1)(i) and 40 CFR 72.6(b)(4)(i), the affected unit shall not supply more than 219,000 MW-hour of excess electricity to any utility power distribution system for sale in any calendar year from the electrical generator associated with the unit.

3.1.6 Production and Emission Limit

a. i. The maximum design firing rate of the affected unit shall not exceed 505 mmBtu/hour.

ii. The maximum design BFG input of the affected unit shall not exceed 476 mmBtu/hour.

Note: As this revised permit allows operation of the affected unit as a natural gas-fired boiler, this revised permit no longer limits the annual capacity factor of the affected unit for natural gas to 10 percent. This is different than Condition 7.10.6(a)(iii) of the CAAPP permit for the source, which limits the annual capacity factor of this unit for natural gas to less than 10 percent,

consistent with the original construction permit issued for the affected unit.

b. i. The emission from the affected unit, the new BFG flare and the natural gas pilot for the new BFG flare, in lbs/mmBtu heat input, shall each not exceed the following limits. Compliance with these limits shall be determined as a 3-hour average unless continuous emissions monitoring is conducted, in which compliance shall be determined as a daily average (24 operating hours):

A. Emissions of pollutants other than NO_x and VOM:

Pollutant	Limit (Lbs/mmBtu)
CO	0.15
PM/PM_{10}	0.10
SO_2	0.20
Indiv. Metal HAP	0.0007
Total HAPs	0.005

B. Emissions of NO_x and VOM from the affected unit and the new BFG flare shall each not exceed the limit calculated using the following equation:

$$L = [(R_{BFG} \times H_{BFG}) + (R_{NG} \times H_{NG})]/(H_{BFG} + H_{NG})$$

Where:

L = Emission limit for NO_x or VOM, in lbs/mmBtu;

R = Emission rate for the pollutant for the type of fuel, as follows:

Pollutant	Emission Rates for Fuel Type (Lbs/mmBtu)	
	BFG (R_{BFG})	Natural Gas (R_{NG})
NO_x	0.05	0.12
VOM	0.003	0.0054

H_{BFG} = Heat input to the unit from BFG, in mmBtu;

H_{NG} = Heat input to the unit from natural gas, in mmBtu.

ii. Emissions from the affected unit and the new BFG flare, including emissions associated with natural gas pilot for the new BFG flare, combined, shall not exceed the following limits:

Pollutant	Emissions	
	Tons/Month	Tons/Year
NO_x	22.6	124.74
CO	33.9	338.36
VOM	2.78	12.2
PM/PM_{10}	22.9	228.39
SO_2	45.2	451.14
Indiv. Metal HAP	0.2	1.5
Total HAPs	1.2	12.0

c. Compliance with the above annual limits in Conditions 3.1.6(a)(ii) and (b)(ii) shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total), unless otherwise specified in a particular condition.

3.1.7-1 Emissions Testing Requirements

a. Within 60 days after achieving the maximum production rate at which the affected unit will be operated, but not later than 180 days after initial startup of the affected unit, the Permittee shall conduct performance test(s) and furnish the Illinois EPA a written report of the results of such test(s).

b. i. These tests shall be designed to measure the CO, SO_2, PM_{10}, PM and VOM emissions under operational conditions which are representative of maximum emissions when blast furnace gas is the primary fuel burned in the affected unit.

ii. These tests shall also include measurements of emissions of metals to verify compliance with the limits for metal HAPs.

c. The following USEPA test methods shall be used for testing of emissions, unless another method is approved by the Illinois EPA. Refer to 40 CFR 51, Appendix M, and 40 CFR 60, Appendix A, for test methods.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
SO_2	Method 6
CO	Method 10
PM_{10}	Methods 201A* & 202
PM	Method 5
VOM	Method 18 or 25A
Metals	Method 29

* The Permittee may also use Method 5 as an alternative to Method 201A, provided that the measured results shall be considered PM_{10}.

d. The Permittee shall submit a plan, notifications and a report for these emissions tests as required by Condition 2.5.1. For this purpose, in addition to other required information, the test report shall include data for the sulfur content of BFG, as determined pursuant to Condition 3.1.8-2.

Note: The issuance of this revised permit does not require that the testing of the affected unit addressed by this condition be repeated. This testing, which also addressed emissions of NO_x, was conducted after the affected units initially began operation in 2009. This revised permit also does not affect the periodic emission testing for the affected unit required in current CAAPP permit.

3.1.7-2 Performance Testing Requirements

a. Pursuant to 35 IAC Part 217 Subpart D, if the Permittee is not conducting continuous emissions monitoring for NOx for the affected unit, the Permittee shall comply with all applicable emission testing requirements of 35 IAC 217.157(a).

3.1.8-1 NO_x Emissions Monitoring Requirements

a. For the affected unit, the Permittee is subject to the following requirements for continuous emission monitoring for NOx:

i. Pursuant to 40 CFR 60.48b(b)(2), for the affected unit, the Permittee shall install a NO_x emission rate Continuous Emission Monitoring System (CEMS) that meets the requirement of 40 CFR Part 75. The Permittee shall comply with the requirements of 40 CFR 60.49b. Data reported to meet the requirements of 40 CFR 60.49b shall not include data substituted using the missing data procedures in Subpart D of the 40 CFR Part 75 nor shall the data have been bias adjusted in accordance with the procedures of 40 CFR Part 75.

ii. Pursuant to 40 CFR 60.48b(c), the CEMS shall be operated and data recorded during all periods of operation of the affected unit except for CEMS breakdowns and repairs. Data shall be recorded during calibration checks and zero and span adjustments.

iii. Pursuant to 40 CFR 60.48b(d), the 1-hour NO_x emission rates measured shall be expressed in ng/J or lb/mmBtu heat input and shall be used to calculate the average emission rates in 40 CFR 60.44b. The 1-hour averages shall be calculated using the data points required in 40 CFR 60.13(h)(2).

iv. Pursuant to 40 CFR 60.48b(e), the Permittee shall follow the procedures in 40 CFR 60.13 for installation, evaluation and operation of CEMS.

v. Pursuant to 40 CFR 60.48b(f), when NO_x emission data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data shall be obtained by using standby monitoring systems, Method 7 or 7A of appendix A of 40 CFR 60 or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days.

b. Pursuant to 35 IAC 217.157(a)(1), unless blast furnace gas provides at least 90 percent of the actual heat input to the affected unit on a calendar year basis and testing for the affected unit shows NOx emissions that are less than 70 percent of the applicable limitations under 35 IAC 217.164 (Condition 2.1.3-3(c)(i) or (ii)), a continuous emission monitoring system for NO_x is also required on the affected unit, which the Permittee must install, calibrate, maintain, and operate to measure NO_x emissions in accordance with 40 CFR 75.

3.1.8-2 Analysis of Blast Furnace Gas (BFG)

When BFG is used as a fuel for the affected unit, the Permittee shall:

a. Sample and analyze cleaned BFG after the pretreatment system for sulfur content (lbs/mmBtu), using appropriate ASTM methods or other comparable methodology. These measurements shall be conducted on at least an annual basis. The records for this activity shall also include operating data for the blast furnaces and the BFG pretreatment system at the time of sampling.

3.1.9 Recordkeeping Requirements

a. For the affected unit, the Permittee shall comply with the applicable recordkeeping requirements of the NSPS, as specified in 40 CFR 60.7(b) and 60.49b.

b. For affected unit, the Permittee shall comply with the applicable recordkeeping requirements of the NESHAP, as specified in 40 CFR 63.7555.

c. For the affected unit, the Permittee shall comply with recordkeeping requirements of 35 IAC 217.156.

d. For periods when BFG is used as fuel for the affected unit, the Permittee shall maintain the following records for the BFG pretreatment system:

i. Records for pressure drop and water flow;

ii. Operating log; and

iii. Maintenance log.

e. The Permittee shall maintain the following emission records:

i. A file which contains:

A. The maximum design firing rate of the affected unit (mmBtu/hour) and the maximum design BFG input of the affected unit with supporting documentation.

B. For the affected unit and for the new BFG flare for CO, PM/PM_{10}, SO_2, individual metal HAPs and total HAPs, the emission factor(s) used by the Permittee to determine monthly and annual emissions and a demonstration of compliance with the emission limits in Condition 3.1.6(b)(i)(A), with supporting documentation and calculations.

C. For the affected unit and the new BFG flare for NO_x and VOM, the emission rate(s) used by the Permittee for different fuels to determine monthly and annual emissions and a demonstration of compliance for the emission rates for each fuel in Condition 3.1.6(b)(i)(B), with supporting documentation and calculations.

ii. Amounts of fuel burned by type (mmBtu/month and mmBtu/year) for the affected unit.

iii. Emissions of NO_x, CO, VOM, PM/PM_{10}, SO_2 and HAPs (tons/month and tons/year) from the affected unit.

iv. Amounts of fuel burned for the affected unit and the new BFG flare, combined, by type (mmBtu/month and mmBtu/year).

v. Summation of the emissions of NO_x, CO, VOM, PM/PM_{10}, SO_2 and HAPs from the affected unit and the new BFG flare (tons/month and tons/year).

f. The Permittee shall maintain records of the sulfur content of the fuels burned in the affected unit, including records for the sampling and analysis of BFG pursuant to Condition

3.1.8-2(a). Records may consist of copies of supplier specifications for the sulfur content of natural gas.

3.1.10 Reporting Requirements

a. The Permittee shall promptly notify the Illinois EPA of deviations of an affected unit with the permit requirements of this section (Section 3.1). Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

i. Emissions or operation of the affected unit in excess of the limits specified in Condition 3.1.6(b) shall be reported within 30 days of such occurrence.

ii. Other deviations shall be reported in a semi-annual compliance report.

b. For the affected unit, the Permittee shall comply with the applicable reporting requirements of the NSPS, as specified in 40 CFR 60.7 and 60.49b.

c. For the affected unit, the Permittee shall comply with the applicable notification and reporting requirements of the NESHAP, as specified in 40 CFR 63.7545 and 63.7550.

d. For the affected unit, the Permittee shall comply with the applicable notification and reporting requirements of 35 IAC 217.156.

e. The Permittee shall notify the Illinois EPA as follows, if the status of the affected unit changes to or from a blast furnace gas fuel-fired boiler for purposes of the Boiler NESHAP and the Permittee ceases or intends to cease conducting periodic tune ups in accordance with the provisions of the NESHAP or will be required to resume conducting such tune ups:

i. If the status of the unit changes so that the unit becomes a blast furnace gas fuel-fired boiler, the Permittee shall notify the Illinois EPA within 30 days of the date that it will no longer fulfill requirements of 40 CFR 63 Subpart DDDDD. In this notification, the Permittee shall provide the date that a tune up of the affected unit was last conducted, information showing that the affected unit now qualifies as a "blast furnace gas fuel-fired boiler" as defined by 40 CFR 63.7575 and the date that the Permittee ceased or will cease complying with the Boiler NESHAP. (This notification is not required if the status of the affected unit changes to a blast furnace gas fuel-fired boiler but the Permittee continues to conduct periodic tune ups for the unit in accordance with the Boiler NESHAP.)

ii. If the status of the unit changes so that it is no longer a blast furnace gas fuel-fired boiler and it must begin complying with the requirements of 40 CFR 63 Subpart DDDDD, the Permittee shall notify the Illinois EPA within 30 days. In this notification, the Permittee shall provide the date that the unit ceased to qualify as a blast furnace gas fuel-fired boiler and discuss the reason(s) for this change, and the action that have been or will be taken to comply with 40 CFR 63 Subpart DDDDD. (This notification is not required if the status of the affected unit changes to natural gas-fired unit but the Permittee has been conducting periodic tune ups for the unit in accordance with the Boiler NESHAP while it was a blast furnace gas fuel-fired boiler.)

3.2 Blast Furnace Gas Flare

3.2.1 Description

A new BFG flare (Flare 2) would be installed to safely combust excess BFG that cannot be productively used at the source as fuel. Although the primary disposition of BFG is the new cogeneration boiler, existing Boilers 11 and 12, and the blast furnace stoves, there may be periods of time when the existing BFG flare system is unable to handle all of the excess BFG (e.g., when the BFG boiler is down for maintenance). During these periods, the excess BFG would be routed to the new BFG flare.

3.2.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description
BFG Flare	New Blast Furnace Gas Flare (Flare 2)

3.2.3 Applicable Provisions and Regulations

a. The "affected unit" for the purpose of these unit-specific conditions, is the flare described in Conditions 3.2.1 and 3.2.2.

b. The affected unit is subject to 35 IAC 214.301, which generally provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from a process emission unit to exceed 2,000 ppm.

3.2.4 Non-Applicability of Regulations of Concern

Non-applicability of regulations of concern are not set for the affected unit.

3.2.5 Control Requirements and Work Practices

a. i. The affected unit shall be designed and operated to comply with the following equipment design specifications and work practices.

A. The affected unit shall be designed for flaring of BFG.

B. The affected unit shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

C. The affected unit shall be operated with a flame present at all times when BFG may be sent to the affected unit.

D. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

ii. Emissions of PM and PM_{10} from the affected unit shall be controlled by the existing BFG pretreatment system, which entails treatment by dust catchers and wet scrubbers.

iii. A. BFG and natural gas shall be the only fuels combusted in the affected unit.

B. The maximum design firing rate of the pilot burner of the affected unit shall not exceed 10.0 mmBtu/hour.

b. The Permittee shall not vent any gas stream containing reduced sulfur compound concentrations to the affected unit that would cause the sulfur dioxide emissions into the atmosphere from any affected unit to exceed 2,000 ppm. This limit ensures that the affected unit meets the emission limit in 35 IAC 214.301.

3.2.6 Production and Emission Limitations

a. The affected unit is subject to limitations addressing emissions from both the BFG Boiler and the affected unit set forth in Condition 3.1.6.

3.2.7 Testing Requirements

a. Within 180 days after initial startup of the affected unit or otherwise the first opportunity during normal working hours of environmental staff when the unit is operated for a period of at least 10 daylight hours, the Permittee shall conduct observations for visible emissions from the affected unit and furnish the Illinois EPA a written report of the results of such test(s).

b. The test shall be designed to measure the presence of visible emissions from the affected unit.

c. The Permittee shall submit reports for these tests as required by Condition 2.5.1(c).

3.2.8 Monitoring Requirements

a. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

3.2.9 Recordkeeping Requirements

a. The Permittee shall maintain records of the following items related to the pilot flame:

i. Date and duration of any time when the pilot flame monitoring equipment of the affected unit was not in operation, with explanation.

ii. Date and duration of any time when there was no pilot flame present at the affected unit, with explanation.

iii. The Permittee shall maintain records of the following items for each exceedance of the limits in Conditions 3.2.3, 3.2.5, or 3.1.6, which shall include:

A. Identification of the limit that may have been exceeded.

B. Duration of the possible exceedance.

C. An estimate of the amount of emissions in excess of the applicable standard.

D. A description of the cause of the possible exceedance.

E. When compliance was reestablished.

b. The Permittee shall maintain records of the following items for the affected unit:

i. Amount of gas burned by type (mmBtu/month and mmBtu/year).

ii. Emissions of NO_x, CO, VOM, PM/PM_{10}, and SO_2 (tons/month and tons/year).

3.2.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements of this section (Section 3.2). Reports shall include information specified in Condition 3.2.10(a)(i).

i. Within 30 days of exceedance of the limits in Conditions 3.2.3 and 3.2.5 the notification shall include:

A. Identification of the limit that may have been exceeded.

B. Duration of the possible exceedance.

C. An estimate of the amount of emissions in excess of the applicable standard.

D. A description of the cause of the possible exceedance.

E. When compliance was reestablished.

ii. Other deviations shall be reported in a quarterly compliance report.

3.3 Cooling Water Tower

3.3.1 Description

A cooling tower would be installed with the new cogeneration boiler and associated turbine.

The cooling tower would be a source of particulate matter because of minerals contained in the water, which would be emitted if a water droplet completely evaporates in the cooling tower.

3.3.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Cooling Tower	Provides cool water to condense steam.	Drift Eliminator

3.3.3 Applicable Provisions and Regulations

a. The "affected unit" for the purpose of these unit-specific conditions is the cooling water tower described in Conditions 3.3.1 and 3.3.2.

b. Pursuant to 40 CFR 63.402, the Permittee shall not use chromium-based water treatment chemicals in the affected unit.

3.3.4 Non-Applicability of Regulations of Concern

a. The affected unit is not subject to 35 IAC 219.986(d), because the cooling tower does not cool process water.

3.3.5 Control Requirements and Work Practices

a. The design drift loss from the drift eliminator on the affected unit shall not exceed 0.001 percent.

3.3.6 Production and Emission Limitations

a. i. The capacity of the affected unit, expressed in terms of design water circulation rate, shall not exceed 42,000 gallons per minute, hourly average.

ii. The total dissolved solids content of water circulating in the affected unit shall not exceed 4,190 ppm on a monthly basis.

b. Emissions of PM/PM_{10} from the affected unit shall not exceed 0.39 tons/month and 3.86 tons/year. Compliance with the annual limit shall be determined from a running total of 12 months of data.

3.3.7 Sampling and Analysis

a. The Permittee shall sample and analyze the water being circulated in the affected unit on at least a monthly basis for the total dissolved solids content.

b. Upon written request by the Illinois EPA, the Permittee shall promptly have the water circulating in the affected unit sampled and analyzed for the presence of hexavalent chromium in accordance with the procedures of 40 CFR 63.404(a) and (b).

c. The Permittee shall keep records for this sampling and analysis activity, including documentation for sampling and analysis as well the resulting data that is collected.

3.3.8 Monitoring Requirements

a. Upon written request by the Illinois EPA, the Permittee shall test the percent drift achieved by the drift eliminator pursuant to Cooling Technology Institute's Acceptance Test Code No. 140 or other appropriate procedure approved by the Illinois EPA. This test shall be performed by a licensed performance testing service.

3.3.9 Recordkeeping Requirements

a. The Permittee shall keep records of the capacity (gallons/minute, hourly average) and the design maximum drift loss rate of the affected unit with supporting documentation.

b. The Permittee shall keep records of emissions of PM/PM_{10}, with supporting calculations (tons/month and tons/year).

3.3.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements of this section (Section 3.3). Reports shall include information specified in Condition 3.3.10(a).

a. Emissions or operation of the affected unit in excess of the limits specified in Condition 3.3.6 within 30 days of such occurrence.

4.0 ATTACHMENTS

Attachment 1: Netting Analysis (Tons/Year)

	NO_x (NA NSR)	NO_x (PSD)	CO	SO_2	VOM	PM	$PM_{10}/PM_{2.5}$	Lead	H_2SO_4
Project Emissions	124.74	124.74	338.36	451.14	12.2	232.25	232.25	---	---
Significance Threshold:	40	40	100	40	40	25	15	0.6	7
Greater Than Significant?	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Contemporaneous[a] Increases									
NG Enrichment (04110018)	17.22	17.22	5.17	0.04	0.34	0.73	0.62	---	---
Slab Furnaces (06070022)	---	---	26.77	---	1.75	43.43	43.43	---	---
Contemporaneous[a] Decreases									
Boilers 1 thru 10 (06070022)	-278.89	-278.89	-313.61	-789.43	-1.22	-228.06	-228.06	---	---
COG Desulf (06070022)	---	---	---	-2,107.95	---	-94.15	-94.15	---	-63.11
Slab Furnaces (06070022)	-427.94	-427.94	---	-174.15	---	---	---	---	---
No. 6 Galv. Line (06070023)	-38.48	-38.48	-10.36	-0.07	-0.68	-0.94	-0.94	---	---
No. 4 COG Pump (06070023)	-77.30	-77.30	-117.97	-0.02	-0.99	-0.64	-0.64	---	---
NET EMISSIONS CHANGE	-680.65	-680.65	-71.64	-2,620.44	11.4	-47.38	-47.49	---	-63.11
Significance Threshold:	40	40	100	40	40	25	15	0.6	7
Greater Than Significant?	No	No	No	No	No	No	No	No	No

Notes:

a. Based on the projected date for initial startup of the proposed cogeneration boiler, the contemporaneous time period for PSD pollutants is April 2002 through July 2008. The contemporaneous time period for NA NSR pollutants is July 2001 through July 2008.

R000511

Attachment 2: Standard Permit Conditions

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits, which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Illinois EPA and a supplemental written permit issued.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. To obtain and remove samples of any discharge or emissions of pollutants, and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities.

   c. Does not release the Permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations.

   d. Does not take into consideration or attest to the structural stability of any units or parts of the project, and

   e. In no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Illinois EPA before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Illinois EPA may file a complaint with the Board for modification, suspension or revocation of a permit.

   a. Upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed, or

   b. Upon finding that any standard or special conditions have been violated, or

   c. Upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emission of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the Permittee from compliance with the other applicable statues and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST. P.O. BOX 19506. SPRINGFIELD, ILLINOIS 62794-9506 · (217) 782-2113

PAT QUINN, GOVERNOR JOHN J. KIM, INTERIM DIRECTOR

217/785-1705

CONSTRUCTION PERMIT -- REVISED*
NSPS SOURCE

NSPS/NESHAP

PERMITTEE

United States Steel Corporation - Granite City Works
Attn: Bryan Kresak, Environmental Director
600 Grant Street
Pittsburgh, Pennsylvania 15219

Application No.: 06070023 I.D. No.: 119813AAI
Subject: Cogeneration Boiler Project
Date Permit Originally Issued: January 30, 2008
Date Application for Revised Permit Received: November 20, 2012
Date Revised Permit Issued: November 30, 2012
Location: 1951 State Street, Granite City

This Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a blast furnace gas (BFG) fired cogeneration boiler, a flare, and cooling tower, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

If you have any questions on this permit, please contact Jason Schnepp or Christopher Romaine at 217/785-1705.

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
JUN 16 2015
REVIEWER

COPY
Original Signed by
Edwin C. Bakowski, P.E.

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

Date Signed: November 30, 2012

ECB:CPR:psj 11/30/12

cc: Region 3
Lotus Notes
CES

*This revised permit provides for an increase in the permitted usage of natural gas by the Cogeneration Boiler for a period of 14 months (see Condition 3.1.6(a)(iii)). The Permittee applied for this revision due to an extended outage of another boiler at the source, Boiler 11, that results in the use of additional natural gas by the Cogeneration Boiler. This revised permit does not increase the permitted emissions of the Cogeneration Boiler.

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1.0 LIST OF ABBREVIATIONS AND ACRONYMS COMMONLY USED

BFG	Blast Furnace Gas
CAAPP	Clean Air Act Permit Program
CFR	Code of Federal Regulations
CO	Carbon Monoxide
dscf	Dry standard cubic feet
gr	Grains
HAP	Hazardous Air Pollutant
H_2SO_4	Sulfuric Acid
hr	Hour
IAC	Illinois Administrative Code
I.D. No.	Identification Number of Source, assigned by Illinois EPA
Illinois EPA	Illinois Environmental Protection Agency
Lb	Pound
mg	Milligram
Mo	Month
mmBtu	Million British Thermal Units
MSSCAM	Major Stationary Sources Construction and Modification (35 Part IAC 203), also known as Nonattainment New Source Review (NA NSR)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns as measured by applicable test or monitoring methods
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration (40 CFR 52.21)
scf	Standard Cubic Feet
scm	Standard Cubic Meter
SO_2	Sulfur Dioxide
USEPA	United States Environmental Protection Agency
VOM	Volatile Organic Material
Yr	Year

2.0 OVERALL SOURCE CONDITIONS

2.1 General Applicable Provisions and Regulations

2.1.1 The new units being constructed as part of this project are subject to particular regulations as set forth in Section 3 (Unit-Specific Conditions for Specific Emission Units) of this permit.

2.1.2 In addition, these emission units are subject to the following regulations of general applicability:

a. No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally overhead at a point beyond the property line of the source unless the wind speed is greater than 40.2 kilometers per hour (25 miles per hour), pursuant to 35 IAC 212.301 and 212.314.

b. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

2.2 General Non-Applicability of Regulations of Concern

2.2.1 PSD/NAA NSR

a. The Permittee has addressed the applicability of 40 CFR 52.21, PSD, and 35 IAC Part 203, Major Stationary Sources Construction and Modification (MSSCAM). The limits established by this permit are intended to ensure that the Cogeneration Boiler Project addressed in this construction permit does not constitute a major modification of the source pursuant to these rules (See also Condition 2.6 and Attachment 1). For the purpose of addressing whether this project is a major modification for emissions of particulate matter under MSSCAM, as US Steel did not provide separate $PM_{2.5}$ emission data for the project and given the netting analysis shows that project would not be accompanied by a significant net increase in emissions is conducted in terms of emissions of PM_{10}, the limits for emissions PM_{10} established by this permit are also applicable to emissions of $PM_{2.5}$.

2.3 General Work Practice Requirements

2.3.1 Operating Program

a. Pursuant to 35 IAC 212.309, emission units that are subject to a requirement in 35 IAC 212.304 through 212.308 or 212.316 shall be operated under the provisions of an operating program, consistent with the requirements set forth in 35 IAC 212.310 and 212.312, and prepared by the Permittee and submitted to the Illinois EPA for its review. Such operating program shall be designed to significantly reduce fugitive particulate matter emissions.

i. At a minimum the operating program shall include the information and elements specified by 35 IAC 212.310, including: (1) a detailed description of the best management practices utilized to control fugitive dust; (2) estimated frequency of application of dust suppressants by location; and (3) such other information as may be necessary to facilitate the Illinois EPA's review of the operating program.

ii. This program shall also identify the specific control measures as may be needed to ensure that certain emission units comply with the opacity limits of 35 IAC 212.316.

iii. Pursuant to 35 IAC 212.312, this operating program shall be amended from time to time by the Permittee so that the operating program is current. Such amendments shall be consistent with 35 IAC Part 212 Subpart K and shall be submitted to the Illinois EPA for its review.

2.4 General Recordkeeping Requirements

2.4.1 Retention and Availability of Records

a. All records and logs required by this permit shall be retained for at least five years from the date of entry (unless a longer retention period is specified by the particular recordkeeping provision herein), shall be kept at a location at the source that is readily accessible to the Illinois EPA or USEPA, and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request.

b. The Permittee shall retrieve and print, on paper during normal source office hours, any records retained in an electronic format (e.g., computer) in response to an

Illinois EPA or USEPA request for records during the course of a source inspection.

2.5 General Reporting Requirements

2.5.1 Reporting and Notifications Associated with Emissions Tests

a. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected testing date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

b. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing, including at a minimum:

i. The person(s) who will be performing sampling and analysis and their experience with similar tests.

ii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

iii. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.

iv. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods.

v. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

vi. Opacity observations during the period of testing.

c. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 30

days after the test results are compiled and finalized. The Final Report shall include at a minimum:

i. A summary of results.

ii. General information.

iii. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.

iv. Detailed description of test conditions, including:

A. Process information.

B. Control equipment information, e.g., equipment condition and operating parameters during testing.

v. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

2.5.2 Notification and Reporting of Deviations

a. Except as specified in a particular provision of this permit, notifications and reports for deviation from applicable requirements of this permit shall include at least the following information: the date and time of the event, a description of the event, information on the magnitude of the deviation, a description of the corrective measures taken, and a description of any preventative measures taken to prevent future occurrences.

2.6 Provisions for Existing Equipment

a. This permit relies upon the emissions decreases established by the Emission Reduction Projects (Construction Permit 06070022). For this purpose, existing Boilers 1 through 10 shall be permanently shut down within 180 days of the initial start up of the new cogeneration boiler or upon completion of shakedown of the boiler, whichever occurs first, unless the Illinois EPA authorizes an extended transition period between the cogeneration boiler and existing boilers to address the protracted shakedown of the new boiler, in which case the operation of the new and existing boilers during the extended transition period shall be coordinated so that their combined emissions do not exceed the annual emissions limits set by this permit for the cogeneration boiler.

b. This permit relies upon the planned permanent shutdown of the No. 6 Galvanizing Line. Once the line is permanently shutdown, restart of the line would require a construction permit from the Illinois EPA.

Note: The application indicates an annual decrease of 10.36 tons of CO, 38.48 tons of NO_x, 0.94 tons of PM/PM_{10}, 0.07 tons of SO_2, and 0.68 tons of VOM from the shutdown of No. 6 Galvanizing Line. These values represent the actual emissions attributable to natural gas combustion in No. 6 Galvanizing Line. As these changes are unrelated to the project, they are considered contemporaneous emission decreases as addressed in the Attachment to this permit.

c. This permit relies upon the planned permanent shutdown of the No. 4 COG Booster Pump (natural gas fired). This natural gas fired pump is being replaced by an electric pump.

Note: The application indicates an annual decrease of 117.97 tons of CO, 77.30 tons of NO_x, 0.64 tons of PM/PM_{10}, 0.02 tons of SO_2, and 0.99 tons of VOM from the shutdown of No. 4 COG Booster Pump (natural gas fired). These values represent the actual emissions attributable to natural gas combustion in the No. 4 COG Booster Pump (natural gas fired). As these changes are unrelated to the project, they are considered contemporaneous emission decreases as addressed in the attachment to this permit.

d. i. Emissions attributable to the combustion of natural gas associated with the blending station (Construction Permit 04110018) shall not exceed the following limits after the cogeneration boiler initially starts up. Compliance with the annual limits shall be determined from a running total of 12 months of data. This Condition supersedes Condition 3 of Construction Permit 04110018, issued February 4, 2005.

	Emissions	
Pollutant	(Tons/Month)	(Tons/Year)
NO_x	2.80	17.22
CO	0.84	5.17
PM	0.12	0.73
PM_{10}	0.11	0.62
VOM	0.06	0.34
SO_2	0.01	0.04

ii. The Permittee shall continue to comply with the other requirements of Construction Permit 04110018, including operational limitations, recordkeeping and reporting requirements.

2.7 Authorization to Operate

The new emission units addressed by this construction permit may be operated under this permit until they have been incorporated into the source's issued CAAPP permit, provided that the Permittee submits a timely and complete application for such CAAPP permit.

3.0 UNIT-SPECIFIC CONDITIONS FOR SPECIFIC EMISSION UNITS

3.1 Cogeneration Boiler

3.1.1 Description

Under the source's current configuration, twelve boilers at the source (Boilers 1-12) fire BFG as well as coke oven gas and natural gas. This project involves construction of a new cogeneration boiler and the shutdown of Boilers 1-10 (Also addressed by Emission Reduction Project, Construction Permit 06070022). BFG previously burned in Boilers 1-10 would be sent to the new cogeneration boiler under the proposed configuration.

The new boiler would be used for cogeneration, as it would supply high pressure steam to a steam turbine which would produce electricity for use at the source. Low-pressure steam from this turbine would then be used for manufacturing operations at the source.

The new boiler would be primarily fed with BFG; however, natural gas would be used for the pilot flame and also for combustion control.

3.1.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Cogeneration Boiler	BFG Boiler (nominal 505 mmBtu/hour capacity)	BFG Pre-Treatment System

3.1.3 Applicable Provisions and Regulations

a. The "affected unit" for the purpose of these unit-specific conditions, is the BFG Boiler described in Conditions 3.1.1 and 3.1.2.

3.1.3-1 Applicable Federal Emission Standards (40 CFR 60, Subpart Db)

The affected unit is subject to the NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db.

Note: While the affected unit meets the applicability of 40 CFR Part 60 Subpart Db, it is not subject to the emission standards of this rule.

3.1.3-2 Applicable State Emission Standards (35 IAC Part 212)

a. The affected unit is subject to 35 IAC 212.122(a), which provides that no person shall cause or allow the emission

of smoke or other particulate matter into the atmosphere from any fuel combustion emission unit for which construction or modification commenced on or after April 14, 1972, with actual heat input greater than 73.2 MW (250 mmBtu/hour), having an opacity greater than 20 percent.

3.1.3-3 Applicable State Regulations (35 IAC Part 216)

a. The affected unit is subject to 35 IAC 216.121, which provides that no person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from a fuel combustion unit with a heat input capacity of 10 million Btu per hour or more to exceed 200 ppm, corrected to 50 percent excess air.

3.1.4 Non-Applicability of Regulations of Concern

a. The affected unit is not subject to the NSPS for Electric Utility Steam Generating Units (40 CFR 60, Subpart Da) because the affected unit is not an electric utility steam generating unit as the term is defined in 40 CFR 60.41Da.

b. The affected unit is not subject to 40 CFR 60, Subpart D because the affected unit meets the applicability requirements under 40 CFR 60.40b(a) [40 CFR 60.40b(j)].

c. The affected unit is not subject to the sulfur dioxide standards of 40 CFR 60, Subpart Db because the affected unit meets the exemption provided at 40 CFR 60.42b(k)(2).

d. The affected unit is not subject to the nitrogen oxides standards of 40 CFR 60, Subpart Db because the affected unit has an annual capacity factor for natural gas of 10 percent or less and is subject to a federally enforceable requirement that limits operation of the facility to an annual capacity factor of 10 percent or less for natural gas (See also Condition 3.1.6(a)).

e. The affected unit is not subject to the particulate matter standards of 40 CFR 60, Subpart Db because these standards do not apply to gaseous fuel boilers.

f. i. This permit is issued based on the affected unit not being subject to emission standards or other requirements pursuant to the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD. This is because this NESHAP has been vacated by a court mandate, pursuant to a request by USEPA, and is no longer in effect.

Note: Had this rule not been vacated, the affected unit would have met the BFG fuel fired boiler exclusion at 40 CFR 63.7491(o). Incidentally, "large gaseous fuel units," under this NESHAP would have been limited to CO emissions of no more than 400 ppm, dry basis at 3 percent oxygen, 30-day rolling average, excluding periods of startup, shutdown, malfunction, and low-load operation, which is less stringent than the standard set by 35 IAC 216.121 (See Condition 3.1.3-3).

ii. This permit is issued based on the affected unit not being a major source of HAPs for purposes of Section 112(g) of the Clean Air Act so that a case-by-case determination of Maximum Achievable Control Technology (MACT) is not required for the affected unit pursuant to Section 112(g) and 40 CFR 63 Subpart B. This is because the affected unit is being constructed at a developed site and the potential annual emissions of HAPs from the affected unit are less than 10 tons of any individual HAP and less than 25 tons of any combination of HAPs.

iii. The affected unit and the Permittee shall comply in a timely manner with all applicable provisions of a NESHAP adopted by USEPA or a case-by-case MACT determination made by the Illinois EPA that applies to the affected unit. For this purpose, the Permittee shall address the affected unit in an application submitted to the Illinois EPA pursuant to Section 112(j) of the Clean Air Act to support a case-by-case determination of MACT for the boilers at the source.

g. The affected unit is not subject to 35 IAC 217.121 because the affected unit is not fossil fuel-fired as defined by 35 IAC 211.2425.

3.1.5 Control Requirements and Work Practices

a. Emissions of PM and PM_{10} from the affected unit shall be controlled by the existing BFG pretreatment system, which entails treatment by dust catchers and wet scrubbers.

i. The PM content of the BFG burned in the affected unit shall not exceed 0.01 grains/dscf.

ii. Emissions of PM from the affected unit, as measured by USEPA Method 5, shall not exceed 0.03 lb/mmBtu of exhaust.

b. BFG and natural gas shall be the only fuels fired in the affected unit.

c. The affected unit shall be operated for the primary purpose of supplying steam and electricity to the source with no more than 219,000 MW-hour of excess electricity sent to any utility power distribution system for sale in any calendar year from the electrical generator associated with the unit.

3.1.6 Production and Emission Limitations

a. i. A. The maximum design firing rate of the affected unit shall not exceed 505 mmBtu/hour.

B. The maximum design BFG input of the affected unit shall not exceed 476 mmBtu/hour.

ii. Fuel usage for the affected unit and the new BFG flare shall not exceed the following limits (rolling 12-month basis):

A. Natural gas: 341,666 mmBtu/year.

B. BFG and natural gas fuel usage combined: 4,511,426 mmBtu/year.

iii. Notwithstanding Condition 3.1.6(a)(ii)(A), above, the usage of natural gas for the affected unit and the new BFG flare, combined, shall not exceed 394,024 mmBtu/year, for the rolling 12-month periods that end in the months of November 2012 through December 2013. For example, the natural gas usage for these units, combined, for the 12-month period ending in November 2012 (which includes the months of December 2011 through November 2012) shall not exceed 394,024 mmBtu.

b. i. Emissions from the affected unit shall not exceed the following limits. Compliance with these limits shall be determined as a 3-hour average unless continuous emissions monitoring is conducted, in which compliance shall be determined as a daily average (24 operating hours):

Pollutant	Mode	
	BFG* (Lbs/mmBtu)	Natural Gas (Lbs/mmBtu)
NO_x	0.05	0.12
CO	0.15	0.0824

Pollutant	Mode	
	BFG* (Lbs/mmBtu)	Natural Gas (Lbs/mmBtu)
VOM	---	0.0054
PM/PM_{10}	0.101	0.0075
SO_2	0.20	0.0006
Indiv. Metal HAP	0.00066	0.00066
Total HAPs	0.0053	0.0053

* BFG mode entails firing a mix of BFG with up to 10 percent natural gas.

ii. Emissions from the affected unit and the new BFG flare shall not exceed the following limits:

Pollutant	Emissions	
	Tons/Month	Tons/Year
NO_x	12.5	124.74
CO	33.9	338.36
VOM	0.1	0.92
PM/PM_{10}	22.9	228.39
SO_2	45.2	451.14
Indiv. Metal HAP	0.2	1.5
Total HAPs	1.2	12.0

c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total), unless otherwise specified in a particular condition.

3.1.7 Emissions Testing Requirements

a. Within 60 days after achieving the maximum production rate at which the affected unit will be operated, but not later than 180 days after initial startup of the affected unit, the Permittee shall conduct performance test(s) and furnish the Illinois EPA a written report of the results of such test(s).

b. i. These tests shall be designed to measure the NO_x, CO, SO_2, PM_{10}, PM and VOM emissions in BFG mode under conditions which are representative of maximum emissions.

ii. These tests shall also include measurements of emissions of metals if the Permittee elects to conduct emissions testing to verify compliance with the limits for metal HAPs, as an alternative to applying data for the metal HAP content of material

collected during pretreatment of the BFG, as provided for by Condition 3.1.8-2(b).

c. The following USEPA test methods shall be used for testing of emissions, unless another method is approved by the Illinois EPA. Refer to 40 CFR 51, Appendix M, and 40 CFR 60, Appendix A, for test methods.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
SO_2	Method 6
NO_x	Method 7
CO	Method 10
PM_{10}	Methods 201A* & 202
PM	Method 5
VOM	Method 18 or 25A
Metals	Method 29

* The Permittee may also use Method 5 as an alternative to Method 201A, provided that the measured results shall be considered PM10.

d. The Permittee shall submit a plan, notifications and a report for these emissions tests as required by Condition 2.5.1. For this purpose, in addition to other required information, the test report shall include data for the sulfur and PM content of BFG and the metals content of the material removed from raw BFG by the pretreatment system, as determined pursuant to Condition 3.1.8-2.

3.1.8-1 Emissions Monitoring Requirements

a. The Permittee shall install, calibrate, operate, and maintain NO_x and CO continuous monitoring system(s) on the affected unit within one year after the initial emission testing required by this permit unless this testing or further testing conducted by the Permittee demonstrates that the unit normally complies by a margin of at least 5 percent with the NO_x and CO emission limit in this permit or the Illinois EPA approves further time for the Permittee to achieve this level of performance.

b. i. These monitoring systems shall be operated during all periods of operation of the affected boiler except for continuous monitoring system maintenance, breakdowns and repairs.

ii. The Permittee shall maintain records for the continuous monitoring system, including recorded emission concentrations and records of maintenance,

calibration, and operational activity associated with the system.

iii. The Permittee shall submit quarterly monitoring reports to the Illinois EPA for these emission monitoring system(s) in accordance with relevant reporting requirements of the NSPS for continuous emissions monitoring systems.

c. NO_x or CO continuous emission monitoring may be discontinued if a parametric monitoring plan is approved by the Illinois EPA in a revised construction permit or the operating permit for the plant.

d. The requirement for a NO_x or CO monitoring system may be revised or waived in the operating permit for the source if the Illinois EPA determines that compliance with requirements for NO_x or CO emissions is not facilitated to a significant degree by such monitoring.

3.1.8-2 Analysis of Blast Furnace Gas (BFG)

a. The Permittee shall sample and analyze cleaned BFG after the pretreatment system for sulfur content (lb/mmBtu), using appropriate ASTM methods or other comparable methodology. These measurements shall be conducted during the emission testing required by Condition 3.1.7 and on at least a quarterly basis thereafter. The records for this activity shall also include operating data for the blast furnaces and the BFG pretreatment system at the time of sampling.

b. The Permittee shall sample and analyze the cleaned BFG after the pretreatment system for PM content (gr/scf) and the material collected by the BFG pretreatment system for HAP metal content (by weight, dry basis, for individual metals as addressed by Method 29) using appropriate ASTM methods or other comparable methodology. These measurements shall be conducted during the emission testing required by Condition 3.1.7 and on at least a biennial basis thereafter. The records for this activity shall also include operating data for the blast furnaces and the BFG pretreatment system at the time of sampling. Unless testing for emissions of HAP metals is conducted in accordance with Condition 3.1.7(b)(ii), this data on the composition of collected material must be applied to data for PM emissions to calculate emissions of metals for purposes of verifying compliance with the emission limits in Condition 3.1.6 for HAP metals and HAPs.

3.1.9 Recordkeeping Requirements

a. The Permittee shall maintain the following records for the BFG pretreatment system:

i. Records for pressure drop and water flow;

ii. Operating log; and

iii. Maintenance log.

b. The Permittee shall maintain the following emission records:

i. A file which contains supporting documentation which demonstrates the maximum design firing rate of the affected unit (mmBtu/hour), the maximum design BFG input of the affected unit, and the manufacturer's guarantees for the emission rates of the natural gas burners in the affected unit.

ii. Amounts of fuel burned by type (mmBtu/month and mmBtu/year) for the affected unit.

iii. Emissions of NO_x, CO, VOM, PM/PM_{10}, SO_2 and HAPs (tons/month and tons/year) from the affected unit.

iv. Amounts of fuel burned for the affected unit and the new BFG flare, combined, by type (mmBtu/month and mmBtu/year).

v. Summation of the emissions of NO_x, CO, VOM, PM/PM_{10}, SO_2 and HAPs from the affected unit and the new BFG flare (tons/month and tons/year).

c. The Permittee shall comply with the applicable recordkeeping requirements of the NSPS, as specified in 40 CFR 60.7(b) and 60.49b.

d. The Permittee shall maintain records of the sulfur content of the fuels burned in the affected unit, including records for the sampling and analysis of BFG pursuant to Condition 3.1.8-2(a). Records may consist of copies of supplier specifications for the sulfur content of natural gas.

3.1.10 Reporting Requirements

a. The Permittee shall promptly notify the Illinois EPA of deviations of an affected unit with the permit requirements of this section (Section 3.1). Reports

shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

i. Emissions or operation of the affected unit in excess of the limits specified in Condition 3.1.6 shall be reported within 30 days of such occurrence.

ii. Other deviations shall be reported in a quarterly compliance report.

b. The Permittee shall comply with the applicable reporting requirements of the NSPS, as specified in 40 CFR 60.7 and 60.49b.

3.2 Flare

3.2.1 Description

A new BFG flare would be installed to safely combust excess BFG that cannot be productively used at the source as fuel. Although the primary disposition of BFG is the new cogeneration boiler, existing Boilers 11 and 12, and the blast furnace stoves, there may be periods of time when the existing BFG flare system is unable to handle all of the excess BFG (e.g., when the BFG boiler is down for maintenance). During these periods, the excess BFG would be routed to the new BFG flare.

3.2.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description
BFG Flare	New Blast Furnace Gas Flare

3.2.3 Applicable Provisions and Regulations

a. The "affected unit" for the purpose of these unit-specific conditions, is the flare described in Conditions 3.2.1 and 3.2.2.

b. The affected unit is subject to 35 IAC 214.301, which generally provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from a process emission unit to exceed 2,000 ppm.

3.2.4 Non-Applicability of Regulations of Concern

Non-applicability of regulations of concern are not set for the affected unit.

3.2.5 Control Requirements and Work Practices

a. i. The affected unit shall be designed and operated to comply with the following equipment design specifications and work practices.

A. The affected unit shall be designed for flaring of BFG.

B. The affected unit shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

C. The affected unit shall be operated with a flame present at all times when BFG may be sent to the affected unit.

D. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

ii. Emissions of PM and PM_{10} from the affected unit shall be controlled by the existing BFG pretreatment system, which entails treatment by dust catchers and wet scrubbers.

iii. BFG and natural gas shall be the only fuels combusted in the affected unit.

b. The Permittee shall not vent any gas stream containing reduced sulfur compound concentrations to the affected unit that would cause the sulfur dioxide emissions into the atmosphere from any affected unit to exceed 2,000 ppm. This limit ensures that the affected unit meets the emission limit in 35 IAC 214.301.

3.2.6 Production and Emission Limitations

a. The affected unit is subject to limitations addressing emissions from both the BFG Boiler and the affected unit set forth in Condition 3.1.6.

3.2.7 Testing Requirements

a. Within 180 days after initial startup of the affected unit or otherwise the first opportunity during normal working hours of environmental staff when the unit is operated for a period of at least 10 daylight hours, the Permittee shall conduct observations for visible emissions from the affected unit and furnish the Illinois EPA a written report of the results of such test(s).

b. The test shall be designed to measure the presence of visible emissions from the affected unit.

c. The Permittee shall submit reports for these tests as required by Condition 2.5.1(c).

3.2.8 Monitoring Requirements

a. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

3.2.9 Recordkeeping Requirements

a. The Permittee shall maintain records of the following items related to the pilot flame:

i. Date and duration of any time when the pilot flame monitoring equipment of the affected unit was not in operation, with explanation.

ii. Date and duration of any time when there was no pilot flame present at the affected unit, with explanation.

iii. The Permittee shall maintain records of the following items for each exceedance of the limits in Conditions 3.2.3, 3.2.5, or 3.1.6, which shall include:

A. Identification of the limit that may have been exceeded.

B. Duration of the possible exceedance.

C. An estimate of the amount of emissions in excess of the applicable standard.

D. A description of the cause of the possible exceedance.

E. When compliance was reestablished.

b. The Permittee shall maintain records of the following items for the affected unit:

i. Amount of gas burned by type (mmBtu/month and mmBtu/year).

ii. Emissions of NO_x, CO, VOM, PM/PM_{10}, and SO_2 (tons/month and tons/year).

3.2.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements of this section (Section 3.2). Reports shall include information specified in Condition 3.2.10(a)(i).

i. Within 30 days of exceedance of the limits in Conditions 3.2.3 and 3.2.5 the notification shall include:

   A. Identification of the limit that may have been exceeded.

   B. Duration of the possible exceedance.

   C. An estimate of the amount of emissions in excess of the applicable standard.

   D. A description of the cause of the possible exceedance.

   E. When compliance was reestablished.

ii. Other deviations shall be reported in a quarterly compliance report.

3.3 Cooling Water Tower

3.3.1 Description

A cooling tower would be installed with the new cogeneration boiler and associated turbine.

The cooling tower would be a source of particulate matter because of minerals contained in the water, which would be emitted if a water droplet completely evaporates in the cooling tower.

3.3.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Cooling Tower	Provides cool water to condense steam.	Drift Eliminator

3.3.3 Applicable Provisions and Regulations

a. An "affected unit" for the purpose of these unit-specific conditions is a cooling water tower described in Conditions 3.3.1 and 3.3.2.

b. Pursuant to 40 CFR 63.402, the Permittee shall not use chromium-based water treatment chemicals in the affected unit.

3.3.4 Non-Applicability of Regulations of Concern

a. The affected unit is not subject to 35 IAC 219.986(d), because the cooling tower does not cool process water.

3.3.5 Control Requirements and Work Practices

a. The design drift loss from the drift eliminator on the affected unit shall not exceed 0.001 percent.

3.3.6 Production and Emission Limitations

a. i. The capacity of the affected unit, expressed in terms of design water circulation rate, shall not exceed 42,000 gallons per minute, hourly average.

ii. The total dissolved solids content of water circulating in the affected unit shall not exceed 4,190 ppm on a monthly basis.

b. Emissions of PM/PM_{10} from the affected unit shall not exceed 0.39 tons/month and 3.86 tons/year. Compliance

with the annual limit shall be determined from a running total of 12 months of data.

3.3.7 Sampling and Analysis

a. The Permittee shall sample and analyze the water being circulated in the affected unit on at least a monthly basis for the total dissolved solids content.

b. Upon written request by the Illinois EPA, the Permittee shall promptly have the water circulating in the affected unit sampled and analyzed for the presence of hexavalent chromium in accordance with the procedures of 40 CFR 63.404(a) and (b).

c. The Permittee shall keep records for this sampling and analysis activity, including documentation for sampling and analysis as well the resulting data that is collected.

3.3.8 Monitoring Requirements

a. Upon written request by the Illinois EPA, the Permittee shall test the percent drift achieved by the drift eliminator pursuant to Cooling Technology Institute's Acceptance Test Code No. 140 or other appropriate procedure approved by the Illinois EPA. This test shall be performed by a licensed performance testing service.

3.3.9 Recordkeeping Requirements

a. The Permittee shall keep records of the capacity (gallons/minute, hourly average) and the design maximum drift loss rate of the affected unit with supporting documentation.

b. The Permittee shall keep records of emissions of PM/PM_{10}, with supporting calculations (tons/month and tons/year).

3.3.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements of this section (Section 3.3). Reports shall include information specified in Condition 3.3.10(a).

a. Emissions or operation of the affected unit in excess of the limits specified in Condition 3.3.6 within 30 days of such occurrence.

4.0 ATTACHMENTS

Attachment 1: Netting Analysis (Tons/Year)

	Date	NO_x (NA NSR)	NO_x (PSD)	CO	SO_2	VOM	PM	$PM_{10}/PM_{2.5}$	Lead	H_2SO_4
Project Emissions		124.74	124.74	338.36	451.14	0.92	232.25	232.25	---	---
Significance Threshold:		40	40	100	40	40	25	15	0.6	7
Greater Than Significant?		Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Contemporaneous[a] Increases										
NG Enrichment (04110018)	2/2005	17.22	17.22	5.17	0.04	0.34	0.73	0.62	---	---
Slab Furnaces (06070022)		---	---	26.77	---	1.75	43.43	43.43	---	---
Contemporaneous[a] Decreases										
Boilers 1 thru 10 (06070022)	[b]	-278.89	-278.89	-313.61	-789.43	-1.22	-228.06	-228.06	---	---
COG Desulf (06070022)	[b]	---	---	---	-2,107.95	---	-94.15	-94.15	---	-63.11
Slab Furnaces (06070022)	[b]	-427.94	-427.94	---	-174.15	---	---	---	---	---
No. 6 Galv. Line (06070023)	[b]	-38.48	-38.48	-10.36	-0.07	-0.68	-0.94	-0.94	---	---
No. 4 COG Pump (06070023)	[b]	-77.30	-77.30	-117.97	-0.02	-0.99	-0.64	-0.64	---	---
NET EMISSIONS CHANGE		-680.65	-680.65	-71.64	-2,620.44	0.12	-47.38	-47.49	---	-63.11
Significance Threshold:		40	40	100	40	40	25	15	0.6	7
Greater Than Significant?		No	No	No	No	No	No	No	No	No

Notes:

a. Based on the projected date for initial startup of the proposed cogeneration boiler, the contemporaneous time period for PSD pollutants is April 2002 through July 2008. The contemporaneous time period for NA NSR pollutants is July 2001 through July 2008.

b. Future emissions decrease. The decrease in emissions from existing Boilers 1 thru 10, which the project replaces, will begin when the new boiler initially starts up diverting BFG from the existing boilers and will be complete after the shakedown and any transition period for the new boiler, when the existing boilers must be permanently shut down.

R000540

Attachment 2: Standard Permit Conditions

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits, which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Illinois EPA and a supplemental written permit issued.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. To obtain and remove samples of any discharge or emissions of pollutants, and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities.

   c. Does not release the Permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations.

   d. Does not take into consideration or attest to the structural stability of any units or parts of the project, and

   e. In no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Illinois EPA before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Illinois EPA may file a complaint with the Board for modification, suspension or revocation of a permit.

   a. Upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed, or

   b. Upon finding that any standard or special conditions have been violated, or

   c. Upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

JMS:06070023:psj

R000543

CALCULATION SHEET

Facility United States Steel - Granite City	I.D. 119813AAI
Anal. Eng. CPR Date 11 30 12	PN 06070023
Rev. Eng. _____ Date ___ ___ ___	Date Rec. 11 20 12

TEMPORARY REVISION OF CONSTRUCTION PERMIT FOR POWER BOILER 1*

*This is currently the only Power Boiler at the Granite City Works.

US Steel has requested a temporary increase in the permitted usage of natural gas by the new power boiler, also known as the Cogeneration Boiler. The reason for the request is an incident that occurred on April 20, 2012 at one of the two older boilers at the source, Boiler 11. The boiler failed catastrophically due to a "rapid combustion of fuel," more commonly referred to as industrial explosion. As described by US steel, this incident had multiple consequences. Most obviously it took Boiler 11 out of service, reducing the sources of steam to the plant. Boiler 11 is still out of commission, with repairs having begun, with ordering of parts with a long lead time, and is not expected to be completed until June 2013. It also led US Steel to remove Boiler 12, a sister boiler to Boiler 12, from service pending completion of an analysis for the cause of the explosion in Boiler 11. This was essential as a matter of employee protection, even though fortunately no personnel were injured by the explosion in Boiler 11. The causes of the explosion, i.e., sequences of events and system failures, have now been identified and Boiler 12 has been returned to service. US Steel also determined that is was also desirable to use more natural gas in the fuel mix for Power Boiler #1. This is necessary to ensure reliable and safe operation of the boiler. Overall, this has now resulted in an increase in natural gas usage by the boiler above the permit limit. While US Steel explains that it had hoped to be able to "correct" the situation in the months following the incident, this has not been the case. The limit, which applies on a 12-month rolling basis, was exceeded in October. After being turned down for a Provisional Variance to address the situation, US Steel has now applied directly for a revision to the Construction Permit.

Facility _____	I.D. ___ ___ ___
Anal. Eng. _____ Date ___ ___ ___	PN ___ ___ ___ ___
Rev. Eng. _____ Date ___ ___ ___	Date Rec. ___ ___ ___

The primary fuel of this boiler is byproduct blast furnace gas, supplemented w/ natural gas. In particular, US Steel has requested authorization to increase annual natural gas usage by 52,358 mm Btu, compared to the current limit of 341,666 mm Btu. (an increase of about 16 percent).

It has not requested an increase on the overall usage of the boiler, 4,511,426 mm Btu. On this basis, the requested change to the limit would entail use of up to 8.8% natural gas in the fuel mix, compared to the 7.6% currently allowed by the permit.

Incidentally, these limits actually apply to the new boiler and a new flare, which handles additional blast furnace gas that cannot be used as fuel, given the shutdown of a number of existing gas fired boilers in conjunction with the construction of Power Boiler 1.

In any event, the requested change is a small fraction of the permitted operation of the boiler. The reason for the increase is certainly "acceptable" as the explosion was clearly unintentional, it is important to operate remaining boilers reliably and safely, and natural gas in many aspects is a "cleaner fuel" than byproduct blast furnace gas.

The requested change would not affect regulatory applicability. To trigger applicability of the NSPS, the boiler's permitted capacity factor for natural gas would have to be more than 10%, which is not the case. Accordingly the only substantive issue for consideration is the implication of this change for purposes of PSD and MSCAM. In other words, will this change be accompanied by a significant increase in emissions of any regulated pollutant for which a limit was set for purposes of netting, when the boiler was permitted. In this regard the permitting of the boiler relied upon contemporaneous decreases in emissions from shutdown of the old boiler at the site. This test is being conservatively and perhaps unnecessarily applied because USSteel has not requested any increase in the permitted emissions of the boiler.

CALCULATION SHEET

Facility _____	I.D. ___ ___ ___
Anal. Eng. _____ Date ___ ___ ___	PN ___ ___ ___ ___
Rev. Eng. _____ Date ___ ___ ___	Date Rec. ___ ___ ___

In this regard it may also be relevant to consider the nature of the limit on natural gas usage by the boiler that US Steel seeks to change. While this "limit" was used in developing the annual limits for the emissions of the boiler,* it has no real role in the practical enforceability of the annual limit. This is because the boiler always burns a mixture of natural gas and blast furnace gas. While the permit sets different "emission rate" limits for burning of natural gas and blast furnace gas, for many pollutants the natural gas is lower and not used in setting the annual limit. The NSR pollutants for which the natural gas limits are higher are NOx (0.12 compared to 0.05 lb/mmBtu) and VOM (0.0054 lb/mmbtu compared to no limit**). However, these higher limits only become applicable when the boiler is in natural gas mode, i.e., the boiler is firing more than 10% natural gas. As discussed previously, the requested increase still keeps the theoretical usage of natural gas below 10 percent. The usage of natural gas, as limited by the permit, does not act to constrain the emissions of the boiler. Thus, the limit at issue may arguably be "unjustified," and only relevant as it an element of the permit. US Steel directionally explains that this limit is merely a reflection of US Steel's projection of the amount of natural gas that might be used in the boiler. Thus, this limit certainly has lesser status than the limit on the overall usage of steel by the boiler, which directly addresses the permitted operation of the boiler and its associated emissions.

Accordingly, temporary adjustment of limit to address incident with Boiler 11 is not constrained/prohibited by NSR. ok to revise on 11/20/

* Annual emission limit = limit on annual bel usage × emission rate for BFG + limit on natural gas usage × difference in BFG & NG rates, if NG > BFG

** In fact, VOM emissions in blast furnace mode tested out at <0.001 lb/mm Btu.

CALCULATION SHEET

Facility _____	I.D. ___ ___ ___ ___
Anal. Eng. _____ Date ___ ___ ___	PN ___ ___ ___ ___ ___
Rev. Eng. _____ Date ___ ___ ___	Date Rec. ___ ___ ___

In summary, a revised permit may be issued as requested by US Steel. While US Steel has expressed an intent to request a permanent revision of the limit in a separate application, this does not preclude the immediate action to address the current situation.

However, the action cannot be retroactive in nature. That is, since the revised permit would become effective in November 2012, the first compliance determination that can be addressed is the compliance determination for November 2012. Since repairs to Boiler 11 are not expected to be completed until June 2013, it is certainly reasonable to relief to be provided for another 6 months. Indeed, it might have been reasonable for USSteel to request a temporary increase in permitted natural gas usage through July 2014, to provide a full 12 months of operation after Boiler 11 comes back in service.

ok grant cpr 11/30/12

Review of Revised Permit

Heading - Indicate revised

Note - Briefly explain what the revision does and does not do, i.e., allows more use of natural gas but not an increase in permitted emissions. Given format of original permit, the explanation is most simply provided by an asterisked footnote on the first page. It is not worthy of creation of findings or addition of a please note at the end.

Condition 3.1.6(a)(iii) - Temporary higher limit for usage of natural gas, which will serve in place of the limit in Condition 3.1.6(a)(ii)(A), which now applies and will apply in the future. 341,666 + 52,358 = 394,024

Condition 13 made more complicated as it must address transition between limits that apply as a 12-month running total. For this purpose, the limits that are considered based on the last month of the 12-month rolling period, including that month and the previous 11 months

CALCULATION SHEET

Facility _____	I.D. ___ ___ ___
Anal. Eng. _____ Date ___ ___ ___	PN ___ ___ ___ ___
Rev. Eng. _____ Date ___ ___ ___	Date Rec. ___ ___ ___

Permitted Increase in Natural Gas Usage - 55,238 mmBtu/year

Pollutant	Allowable Increase Factor (lb/mmBtu)	Allowable Increase Tons/year	Projected Actual Increase Factor (lb/mmBtu)	Projected Actual Increase Tons/year
NO_x	0.12	3.31	0.01 (rounded from 0.006 → 0.01)	0.28
CO	0.0824	2.28	0.01 (rounded from 0.0013 → 0.01)	0.28
VOM	0.0054	0.15	0.01 (rounded to 0.01)	0.28
PM/PM_{10}	0.0075	0.21	0.01 (rounded to 0.01)	0.28
SO_2	0.0006	0.0166	0.001 (rounded to 0.001)	0.028
GHG (CO_2)	———	———	120.0	3,314

Based on this conservative analysis, the additional use of natural gas would not have significant allowable emissions and would actually have emissions that would typically be considered negligible for permitted.

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

b. upon finding that any standard or special conditions have been violated, or

c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Illinois Environmental Protection Agency
Bureau of Air
January 2008

Responsiveness Summary for Public Comments and Questions on the Cogeneration Boiler Project at the United States Steel Granite City Works in Granite City, Illinois

Source Identification No.: 119813AAI
Application No.: 06070023

EPA - DIVISION OF RECORDS MANAGEMENT
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DECISION

On January 30, 2008, the Illinois Environmental Protection Agency (Illinois EPA) Bureau of Air issued a permit to United States Steel (US Steel) to construct a Cogeneration Boiler at its Granite City Works, in Granite City, Illinois. At the same time, the Illinois EPA issued this Responsiveness Summary to address questions and comments submitted to the Illinois EPA concerning the proposed issuance of a permit for this project.

BACKGROUND

US Steel submitted an application to the Illinois EPA, Bureau of Air for construction of a cogeneration boiler at its Granite City Works in Granite City. The Granite City Works is an integrated iron and steel mill producing flat rolled steel products.

The proposed boiler would be a "cogeneration" boiler because steam from the boiler would be used both to generate electricity for the mill and in manufacturing processes at the mill. The boiler would be designed to fire blast furnace gas, which is a byproduct from the existing blast furnaces at the mill, as its primarily fuel. This project would also include construction of an additional flare to ensure adequate capacity for flaring of surplus blast furnace gas and a new cooling tower to support the operation of the new boiler. The proposed boiler, which would have a nominal heat input capacity of 505 million Btu per hour, would replace ten smaller boilers, which have an aggregate capacity of 600 million Btu per hour. The existing boilers, which currently burn blast furnace gas, are nearing the end of their useful life. These existing boilers make low-pressure steam, which cannot be efficiently used for cogeneration of electricity.

Another project is also currently proposed for the Granite City Works, i.e., the construction of a heat recovery coke plant by Gateway Energy and Coke Company. The proposed heat recovery coke plant and an associated coke conveyor system proposed by US Steel are not the subject of this Responsiveness Summary. Comments submitted to the Illinois EPA on the draft permits prepared by the Illinois EPA for the coke plant project and associated conveyor system will be addressed in a separate Responsiveness Summary when the Bureau of Air takes action on the permit applications for those facilities.

COMMENT PERIOD AND PUBLIC HEARING

The Illinois EPA, Bureau of Air evaluates applications for permits for proposed sources of emissions. An air pollution control permit application must appropriately address compliance with applicable air pollution control laws and regulations before a permit can be issued. Following its initial technical review of United States Steel's application, the Illinois EPA Bureau of Air made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft permit for public review and comment.

1. US Steel requested that the Illinois EPA hold a public hearing on the Cogeneration Boiler Project. The public comment period opened with the publication of a hearing notice in the Granite City Press Record Journal on September 23, 2007. The hearing notice was published again in the Granite City Press Record Journal on September 30 and October 7, 2007. The public hearing was held on November 7, 2007, at the Knights of Columbus Hall in Granite City. The purpose of this public hearing was to accept oral comments into the written hearing record and answer questions about the proposed project. The comment period was originally scheduled to close on December 7, 2007. In response to a request from several environmental organizations, the close of the comment period was extended until December 14, 2007.

AVAILABILITY OF DOCUMENTS

Copies of the construction permit for a Cogeneration Boiler issued to US Steel and this Responsiveness Summary are available by the following means:

1. From the Illinois Permit Database on the Internet:

   www.epa.gov/region5/air/permits/ilonline.htm
   (Find the documents under All Permit Records (sorted by name), Construction Permit Records).

2. By viewing documents at one of the following repositories:

Six Mile Regional Library District 2001 Delmar Avenue Granite City, IL 62040 618/452-6238	Illinois EPA Collinsville Regional Office 2009 Mall Street Collinsville, IL 62234 618/346-5120	Illinois EPA 1021 N. Grand Ave., East Springfield, IL 62794 217/782-7027

3. By contacting the Illinois EPA by telephone, facsimile or electronic mail:

   Illinois EPA
   Bradley Frost, Office of Community Relations Coordinator
   888/372-1996 Toll Free - Environmental Helpline
   217/782-7027 - Desk Line
   217/782-9143 - TDD
   217/524-5023 - Facsimile
   brad.frost@illinois.gov

COMMENTS & QUESTIONS WITH RESPONSES BY THE ILLINOIS EPA

1. Will any of the electricity that's being generated by the cogeneration facility be moved to the power grid or used outside of the Granite City Works?

The proposed cogeneration facility is being developed for the purpose of supplying electricity, and steam, to the Granite City Works, not to generate electricity to be put on the power grid and sold. This has been clarified in the issued permit. Some sale of electricity to the grid is allowed because there will be periods, especially during shut down or transition of manufacturing operations, when the use of electricity by the Granite City Works will be out of balance with the amount of electricity that is being generated. The excess electrical power during these periods will be directed to the grid for sale until generation again matches the use of electricity by the Granite City Works. The amount of such electricity going to the grid from the cogeneration facility is limited to below the threshold level at which the boiler would be regulated under Illinois' air pollution control rules as an electrical generating unit, i.e., a unit whose main purpose is to supply electrical power to the grid for sale.

2. For emissions of particulate matter$_{2.5}$ ($PM_{2.5}$), the draft permit would not subject the cogeneration boiler project to any of the rigorous emission control and air quality related requirements that apply to a major project under the rules for Nonattainment New Source Review (NA NSR) or Prevention of Significant Deterioration of Air Quality (PSD). This is of critical importance as $PM_{2.5}$ is a pollutant with the potential for significant impacts on and damage to the health of the public.[3] The air quality in the Greater Metropolitan St. Louis Area does not currently comply with the applicable National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ and the highest levels of $PM_{2.5}$ in the area are measured in Granite City, which is no coincidence given the magnitude of the emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors from the Granite City Works.[4]

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[3] $PM_{2.5}$ is widely recognized as posing significant public health risks, including premature death from heart and lung disease and aggravation of heart and lung diseases, with associated hospital admissions, doctor and emergency room visits, medication use, and school and work absences. High levels of $PM_{2.5}$ in the air can also trigger asthma attacks. $PM_{2.5}$ air quality also possibly has a role in lung cancer, infant mortality, and developmental problems, such as low birth weight in children. Unlike total suspended particulate, which is very effectively filtered out of the air by the upper respiratory system, the small size of $PM_{2.5}$ lets it easily be inhaled deeply into the lungs where it can remain embedded for long periods of time before being absorbed into the bloodstream. Individuals particularly sensitive to fine particle exposure include older adults, people with heart and lung disease, and children. To address the potential impacts pf PM2.5 on public health, the USEPA in 2006 revised the short-term NAAQS for PM2.5, lowering it to 35 micrograms per cubic meter, annual average.

[4] In a November 2007 presentation explaining its recommendation to designate the Metro-East region nonattainment for the 24-hour $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS), the Illinois EPA highlighted the Granite City Works as one of the top five sources of $PM_{2.5}$ emissions in the region, as well as one of the top few sources of each of the $PM_{2.5}$ precursors – nitrogen oxides, sulfur dioxide, volatile organic material, and ammonia.

The net increase in emissions of particulate matter for this project is not significant, as shown in Attachment 1 of the issued permit, Accordingly, the project is not a major project for particulate matter and the project's emissions of particulate matter are not subject to the regulatory requirements that would apply if the project were major.

The Illinois EPA shares the concerns expressed by this comment about the current levels of $PM_{2.5}$ air quality in Granite City and the region. However, current $PM_{2.5}$ air quality is being appropriately addressed by activities to lower emissions and come into compliance with the NAAQS for $PM_{2.5}$. These activities are separate from the permitting of the proposed project and must proceed irrespective of the proposed project to bring the area into attainment. In this regard, the health and well-being of the public is generally addressed by the process that starts when an area is designated nonattainment, which requires the State and/or USEPA to take needed measures to reduce emissions, improve air quality, and bring the area into attainment. This process includes a detailed evaluation of the role that different sources and categories of sources have in contributing to nonattainment status, so as to allow a comprehensive set of control measures to be developed that will prove both effective and feasible in achieving the ultimate result of attainment. This detailed evaluation is a critical step in the process, as the contribution of sources to nonattainment status may be affected by their location and influenced by specific sets of meteorological conditions, so that certain reductions in emissions are more effective in actually improving $PM_{2.5}$ air quality. For example, a key action to improve air quality both on a regional basis and throughout the eastern United States has been the adoption of the Clean Air Interstate Rule (CAIR) by USEPA. CAIR addresses the emissions of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) from coal-fired power plants, as SO_2 and NO_x are precursors to the formation of $PM_{2.5}$ in the atmosphere and contribute to background levels of $PM_{2.5}$, most critically in urban areas.

This process to bring an area into attainment, which is triggered by an area being designated nonattainment, does not prohibit the construction of the proposed cogeneration boiler facility. The provisions of the federal Clean Air Act accommodate construction activity in a nonattainment area as economic activity is also important to the well-being of the public. Instead, as observed by this comment, additional requirements are imposed on major projects by the NA NSR rules, which are designed to ensure that a proposed major project will not interfere with the ongoing work to bring the area into attainment. However, this project is not such a major project for emissions of particulate matter. Most notably in this regard, the proposed new cogeneration boiler will take the place of ten existing boilers at the Granite City Works.

3. The emissions of US Steel and other manufacturing sources in Madison County disproportionately affect poor and minority populations who live nearby.

The presence of poor and minority populations in the area, is another reason why the emissions of existing sources need to be reduced as quickly as reasonably practicable to improve air quality and bring the area into

attainment with the NAAQS while also minimizing disruption to the local economy on which area residents also depend.

4. The draft permit would improperly and unlawfully address emissions of $PM_{2.5}$ from the project as if they were PM10. The draft permit, in Attachment 1, indicates that the proposed project will have the potential to emit 232.25 tons per year of "$PM_{10}/PM_{2.5}$," without separately addressing how much $PM_{2.5}$ will be emitted. The draft permit would not set any limits on the project's $PM_{2.5}$ emissions and would not address the various substantive requirements applicable to a major project for a nonattainment pollutant, such as offsets, LAER-based emission limits, an analysis of alternatives, and compliance requirements for US Steel's existing major sources in Illinois. 35 IAC Part 203, Subpart C. Notably, this permit could be Illinois EPA's only opportunity to set LAER limit on PM2.5 emissions from the new cogeneration boiler, flare, and cooling tower.

   In the Project Summary for the draft permit, the Illinois EPA explained that, consistent with USEPA's interim guidance, "…to address whether the project is a major modification under MSSCAM, particulate matter emissions were evaluated in terms of PM_{10} …" Illinois EPA then accepted US Steel's claim that contemporaneous decreases in "$PM_{10}/PM_{2.5}$" emissions netted US Steel out of MSSCAM (i.e., Illinois' NA NSR rules, 35 IAC Part 203, Major Stationary Sources Construction and Modification). Neither US Steel nor Illinois EPA has documented that the particulate matter emissions of the Granite City Works specifically in terms of $PM_{2.5}$ - as opposed to PM_{10} - will be not be significantly higher than pre-project emissions.

The applicability of NA NSR to the proposed project for emissions of particulate matter[5] has been appropriately addressed. As explained in the Project Summary accompanying the draft permit, for this purpose emissions of PM_{10} were used as a surrogate for emissions of $PM_{2.5}$, for which the Greater Metropolitan St. Louis area is designated nonattainment. This approach is appropriate as it is consistent with formal USEPA guidance that is currently in effect. In particular, USEPA indicates that emissions of PM_{10} should be used for implementation of the NA NSR program until it completes rulemaking that sets forth how NA NSR should be implemented in terms of emissions of $PM_{2.5}$, which has not yet occurred. Using this approach to applicability of NA NSR, the project is not a major project for emissions of particulate matter. The fact that the project is not a major project does not prevent the Illinois EPA from pursuing measures to lower the particulate matter emissions of the new emission units in the cogeneration facility if it were determined

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[5] Particulate matter emissions consist of particles of various sizes (generally less than 40 micrometers) that remain suspended in the atmosphere for an extended period of time. PM_{10} emissions consist of filterable and condensable particulate with an aerodynamic diameter of 10 micrometers or less. Particles greater than 2.5 micrometers (but less than 10 micrometers) within the PM_{10} fraction are considered the "coarse" fraction of PM_{10}. Particles with an aerodynamic diameter of 2.5 micrometers or less are considered the "fine" fraction of PM_{10} and are separately addressed as $PM_{2.5}$.

that lower emissions were needed as part of the attainment demonstration to bring the area into compliance with the NAAQS for $PM_{2.5}$.

5. The use of PM_{10} as a surrogate for $PM_{2.5}$ violates applicable law because the federal Clean Air Act imposes specific requirements on areas that are designated nonattainment for a pollutant. In this regard, since 1997, the USEPA has distinguished $PM_{2.5}$ from PM_{10}, with adoption of a separate NAAQS for $PM_{2.5}$.[6] USEPA has made separate attainment and nonattainment designations for $PM_{2.5}$ and PM_{10}. Thus, the Granite City Works are in an area that is attainment of the PM_{10} NAAQS but nonattainment for $PM_{2.5}$ NAAQS. Illinois' regulations follow this scheme.[7] By proceeding as if the proposed cogeneration boiler project will emit only PM_{10}, rather than both PM_{10} and $PM_{2.5}$, the Illinois EPA failed to determine whether the project netted out of NA NSR requirements with respect to the project's $PM_{2.5}$ emissions. If the project were significant for its $PM_{2.5}$ emissions, the project would be subject to the substantive requirements of 35 IAC Part 203.

The Illinois EPA has appropriately addressed emissions of $PM_{2.5}$ in the permitting of the proposed project. The Illinois EPA did not assume that the project will emit only PM_{10} and ignore $PM_{2.5}$. $PM_{2.5}$ is a subset of PM_{10} and its consideration is inherent in a consideration of PM_{10}, as is explicitly shown by the inclusion of $PM_{2.5}$ emissions in Attachment 1 of the draft permit. The Illinois EPA used PM_{10} as a surrogate for $PM_{2.5}$ in the determination of applicability of NA NSR for $PM_{2.5}$, which is an acceptable approach at this time. In particular, there is not a NA NSR program for emissions of particulate matter in terms of $PM_{2.5}$ at this time. The Clean Air Act does not directly impose NA NSR requirements on proposed projects for emissions of $PM_{2.5}$ as suggested by this comment. Rather the Clean Air Act requires that states or USEPA adopt an implementation plan for a nonattainment area that includes a NA NSR program for emissions of nonattainment pollutant(s), which has not yet occurred for emissions of $PM_{2.5}$.

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[6] USEPA has stated that "The characteristics, sources, and potential health effects of larger or "coarse" fraction particles (from 2.5 to 10 micrometers in diameter) and smaller or "fine" particles (smaller than 2.5 micrometers in diameter) are very different." In the Final $PM_{2.5}$ Implementation Rule, USEPA told states that because of the significant differences between PM_{10} and $PM_{2.5}$, they would have to use different regulatory controls to protect air quality and public health. "In contrast to PM_{10}, EPA anticipates that achieving the NAAQS for $PM_{2.5}$ will generally require States to evaluate different sources for controls, to consider controls of one or more precursors in addition to direct PM emissions, and to adopt different control strategies." And as discussed more fully below, pollution control measures designed for PM_{10} emissions are not as effect for control of $PM_{2.5}$ emissions.

[7] Illinois regulations define "ambient air quality standard" as "those standards promulgated from time to time …by the United States Environmental Protection Agency (USEPA)…" 35 IAC 201.102. The construction or major modification in a nonattainment area of a source that is "major for the pollutant for which the area is designated a nonattainment area" without a permit is prohibited. 35 IAC 203.201. See also 35 IAC 203.207(a).

6. The Illinois EPA based its approach to the cogeneration project's $PM_{2.5}$ emissions on "USEPA's interim guidance for implementation of Nonattainment New Source Review for $PM_{2.5}$."[8] However, Illinois EPA's reliance on this USEPA guidance for this project is misplaced because USEPA's recommended use of PM_{10} as a surrogate for $PM_{2.5}$ expired by its own terms when USEPA published the final $PM_{2.5}$ implementation rule in September 2007, before the draft permit was placed on public notice.

This comment misrepresents the current status of USEPA guidance for implementation of NSR for $PM_{2.5}$. While USEPA has completed certain portions of its implementation rulemaking for $PM_{2.5}$, which address certain matters related to emissions and air quality for $PM_{2.5}$, it has not yet completed the essential rulemaking for implementation of NSR for $PM_{2.5}$. The USEPA guidance memo ("Interim Implementation of New Source Review Requirements for $PM_{2.5}$," April 5, 2005) is a "memorandum to address how States should implement major NSR for $PM_{2.5}$ until we [USEPA] promulgate the $PM_{2.5}$ implementation rule." As of the date of issuance of this permit, the $PM_{2.5}$ implementation rule has not been completed in full. This was clearly stated by USEPA in the preamble to the rulemaking when it adopted part of the $PM_{2.5}$ implementation rule (Clean Air Fine Particle Implementation Rule; Final Rule, 72 FR 20586, April 25, 2007):

> **(Note that this rule does not include final $PM_{2.5}$ requirements for the new source review (NSR) program; the final NSR rule will be issued at a later date.) Page 20586**

This status was confirmed on September 21, 2007 in a subsequent rulemaking proposal by USEPA related to implementation of the $PM_{2.5}$ NAAQS, "40 CFR Parts 51 and 52 Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers ($PM_{2.5}$)—Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC); Proposed Rule." In the preamble for this proposed rule, USEPA again states that:

> **The NSR part of the implementation rule is anticipated to be promulgated in September 2007. Additionally, once this proposed rulemaking is finalized, States will be able to fully implement a $PM_{2.5}$ NSR program. 72 FR 54116 (Sept. 21, 2007)**

In fact, the NSR part of the $PM_{2.5}$ implementation rule was not actually adopted in September 2007 as indicated in the proposed rule. Absent the NSR part of the $PM_{2.5}$ implementation rule, Illinois EPA is neither required nor able to

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[8] In response to a request for the specific guidance upon which it was relying, the Illinois EPA provided four documents: (1) Memorandum by John S. Seitz, EPA, "Interim Implementation of New Source Review Requirements for $PM_{2.5}$" (Oct. 23, 1997) ("Seitz Memo"); (2) Memorandum by Stephen D. Page, "Implementation of New Source Review Requirements in $PM_{2.5}$ Nonattainment Areas" (Apr. 5, 2005) ("Page Memo"); (3) USEPA, Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards, 70 FR 66057 (Nov. 1, 2005) ("Proposed $PM_{2.5}$ Implementation Rule"); and (4) USEPA, Clear Air Fine Particle Implementation Rule, 72 FR 20586 (Apr. 25, 2007) ("Final $PM_{2.5}$ Implementation Rule").

implement NA NSR for $PM_{2.5}$ except as it is made possible by the USEPA guidance to which this commenter takes objection in other comments.

7. USEPA's guidance recommending use of PM_{10} as a surrogate for $PM_{2.5}$ has expired. The Illinois EPA is improperly relying on outdated USEPA guidance documents as emissions of PM_{10} are used as a surrogate for emissions of $PM_{2.5}$ from the project, effectively "pretending" that all $PM_{2.5}$ emissions are PM_{10}. The 1997 Seitz memo only provided interim guidance for implementing the newly promulgated $PM_{2.5}$ NAAQS. It stated that sources could use PM_{10} as a surrogate for $PM_{2.5}$ in meeting NSR requirements until certain difficulties were resolved, primarily with respect to monitoring, emissions estimation, and modeling. This position was reaffirmed by USEPA specifically for NA NSR permitting in a 2005 memorandum by Stephen Page, Director of USEPA,[9] which noted that USEPA was recommending the use of PM_{10} as a surrogate for $PM_{2.5}$ "until we promulgate the $PM_{2.5}$ implementation rule." On November 1, 2005, USEPA published a proposed $PM_{2.5}$ implementation rule that made clear that use of PM_{10} as a surrogate for $PM_{2.5}$ would no longer be acceptable when the proposed rule was finalized.[10] In April 2007, USEPA published the final $PM_{2.5}$ implementation rule. Although the final rule stated that additional NSR guidance would be forthcoming, the rule clearly affirmed USEPA's rejection of the surrogacy approach as it discussed permitting under Title V of the Clean Air Act.[11]

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[9] Memorandum, April 5, 2005, Stephen Page, Director USEPA, "Implementation of New Source Review requirements in PM-2.5 Nonattainment Areas"

[10] "…The requirements applicable to NSR SIPs [State Implementation Plans] for and the obligation to subject sources to NSR permitting for $PM_{2.5}$ direct and precursor emissions are codified in the existing federal regulations, and can be implemented without specific regulatory changes. The existing regulations require NSR for any NAAQS pollutant for which an area is designated attainment or nonattainment. …For nonattainment areas, permits must comply with the nonattainment NSR requirements for $PM_{2.5}$, either in a State's approved part D program or, where that is lacking, as set forth in 40 CFR part 51, Appendix S, pursuant to § 52.24(k). …Once this $PM_{2.5}$ implementation rule is finalized, States will have the necessary tools to implement a major NSR program for $PM_{2.5}$ States will no longer be permitted to implement a nonattainment major NSR program for PM_{10} as a surrogate for the $PM_{2.5}$ nonattainment major NSR program…." 70 FR 66044, 66045 and 66058, November 1, 2005

[11] In discussing the implementation of permitting under Title V of the Clean Air Act, USEPA states, "In the preamble to the proposal, the USEPA stated that in the past some permitted entities have been using PM_{10} emissions as a surrogate for $PM_{2.5}$ emissions in permit applications, or in corrections or supplements to applications. The USEPA stated that upon promulgation of this rule, the USEPA will no longer accept the use of PM_{10} as a surrogate for $PM_{2.5}$. Circumstances necessitating the quantification of $PM_{2.5}$ emissions and the submittal of this information include: (1) Determining all of the pollutants for which a source is major; (2) determining whether an applicable requirement or program applies, e.g., determining the applicability of a SIP requirement or a PSD or nonattainment NSR program, etc.; or (3) determining

USEPA's guidance recommending use of PM_{10} as a surrogate for $PM_{2.5}$ has not expired. The USEPA's statements in its April 2007 rulemaking with respect to Title V permitting are not relevant to implementation for NA NSR. Moreover, even for Title V permitting, the USEPA indicates that the extent to which $PM_{2.5}$ emissions will need to be quantified in a Title V application will depend upon the circumstances of the application.[12] Because the NSR portion of the $PM_{2.5}$ rule has not been finalized, the Illinois EPA must continue to use Illinois nonattainment major NSR program for particulate matter, which addressed emissions of PM_{10}, as the means to address the potential applicability of nonattainment major NSR for emissions of $PM_{2.5}$. As also explained elsewhere in this Responsiveness Summary, the determination whether the proposed cogeneration boiler project is a major project for emissions of particulate matter for purposes of NA NSR was appropriately made during the permitting of the project using emissions of PM10 as a surrogate for emissions of $PM_{2.5}$.

8. Illinois EPA's reliance on "USEPA interim guidance" in this case is misplaced because the technical difficulties upon which USEPA initially justified the use of PM_{10} as a surrogate for $PM_{2.5}$ have been resolved.[13] When USEPA published the Proposed $PM_{2.5}$ Implementation Rule in November 2005, it stated that the technical difficulties referenced in the Seitz Memo had been resolved or were addressed in the proposal rule.[14] US

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what fees a source owes a permitting authority as a result of considering $PM_{2.5}$ emissions. ….
In summary, the purpose of the statements made in the preamble to the proposal was to notify sources that as of the promulgation of this final rule, the EPA will no longer accept the use of PM_{10} emissions information as a surrogate for $PM_{2.5}$ emissions information given that both pollutants are regulated by a National Ambient Air Quality Standard and therefore are considered regulated air pollutants." 72 FR 20659 - 20060, April 25, 2007

[12] **With respect to Title V permit applications, USEPA also states, "The degree of quantification of $PM_{2.5}$ emissions required in an application (including an initial, modification or renewal application), or in a correction or supplement to an existing application, depends on the types of determinations that a permitting authority needs to address for a particular source, the requirements of title V, and the information needs and requirements of the particular State in question." 72 FR 20660, April 25, 2007.**

[13] In 1997, in the Seitz Memorandum in which USEPA recommended use of PM_{10} as a surrogate for $PM_{2.5}$, it explained that this interim approach was based on technical concerns. "In view of the significant technical difficulties that now exist with respect to $PM_{2.5}$ monitoring, emissions estimation, and modeling…, EPA believes that PM_{10} may properly be used as a surrogate for $PM_{2.5}$ in meeting NSR requirements until these difficulties are resolved." Seitz Memorandum, Paragraph 1

[14] "The 1997 guidance stated that sources would be allowed to use implementation of a PM_{10} program as a surrogate for meeting $PM_{2.5}$ NSR requirements until certain difficulties were resolved, primarily the lack of necessary tools to calculate the emissions of $PM_{2.5}$ and related precursors, the lack of adequate modeling techniques to project ambient impacts, and the lack of $PM_{2.5}$ monitoring sites. As discussed in this preamble, those difficulties

Steel has also shown by certain actions on its part that the technical difficulties noted by USEPA in 1997 with respect to $PM_{2.5}$ have been resolved. In particular, US Steel has submitted Annual Emissions Reports to Illinois EPA that present separate and distinctly different data for emissions for PM_{10} and $PM_{2.5}$.[15] The Illinois EPA also has sufficient information regarding $PM_{2.5}$ emissions to identify the region's highest-emitting sources and the extent of their emissions.

US Steel claimed to net out of NA NSR for the project's $PM_{2.5}$ emissions based on a PM_{10} netting analysis, claiming that it could not determine its $PM_{2.5}$ emissions. This claim was supported solely by the fact that USEPA has not yet promulgated a standard test method for measuring $PM_{2.5}$ emissions. However, there cannot be a legitimate claim that US Steel cannot determine its $PM_{2.5}$ emissions associated with the cogeneration boiler project.

Since 1997, many of the technical difficulties posed for the implementation of the $PM_{2.5}$ NAAQS have been resolved, especially as related to ambient monitoring and development of attainment demonstrations. However, certain critical issues for direct implementation of NA NSR in terms of PM emissions have not. Specifically, stack tests have not been conducted to measure emissions of $PM_{2.5}$ from the Boilers 1 through 10 and other existing units at the Granite City Works that will have decreases in particulate matter emission as part of this project. In this regard, while USEPA has provided guidance on testing of emissions of $PM_{2.5}$ with publication of a Conditional Test Method for emissions of $PM_{2.5}$, it has not conducted rulemaking to adopt a Reference Test Method. This is an important step for authoritative emissions testing to be performed for a pollutant and is especially critical for $PM_{2.5}$ as a physical separation of collected particles based on their sizes must be made during testing Lacking a Reference Method, one cannot be assured of consistent and reliable measurements among the tests that have been conducted, which have been conducted by different methods and which may not reflect the test methodology eventually adopted by USEPA. As stated elsewhere in this Responsiveness Summary, the permitting for the proposed project has appropriately addressed the potential applicability of NA NSR to this project for its emissions of particulate matter using PM_{10} as a surrogate of emissions of $PM_{2.5}$.

In addition, the various actions and events identified in this comment, which are not directly related to determination of applicability of NA NSR, do not

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have been resolved in most respects, and where they have not been, the proposal contains appropriate provisions to account for it. These issues will be finally resolved by the Agency upon promulgation of these proposed revisions." 70 FR 65984. at 66043 (November 1, 2005).

[15] In the 2003 Annual Emission Report submitted to Illinois EPA, US Steel separately reported PM_{10} and $PM_{2.5}$ emissions from all point sources at the Granite City Works that combusted coke oven gas or blast furnace gas including Slab Furnaces 1 through 4, Boilers 1 through 12, and the existing blast furnace gas flare. For most emission points, US Steel used emission factors to calculate $PM_{2.5}$ emissions that were distinctly different from the PM_{10} emission factors.

show that it is inappropriate to use emission of PM_{10} as a surrogate for emissions of $PM_{2.5}$ for purposes of evaluating applicability of NA NSR. In particular, the fact that US Steel has provided $PM_{2.5}$ data in its annual emission report does not show that such data is of suitable quality for use in a permit application and permitting. A source may update an Annual Emission Report to reflect new information merely by submitting a revised report. By way of contrast, the emission information submitted by a source in a permit application routinely leads to the establishment of enforceable limits that reflect the information in the application. Those limits may only be changed by issuance of a revised permit by the Illinois EPA. In the event underlying data changes, the limits in a permit do not automatically change to reflect the new data and enforcement may be initiated for failure to comply with the established limits.

9. The Illinois EPA's reliance on "USEPA interim guidance" in this case is also misplaced because USEPA guidance cannot subvert the clear requirements of federal and state law and regulations, which establish $PM_{2.5}$ as a pollutant separate and distinct from PM_{10}, requiring specific permit requirements and emissions controls for $PM_{2.5}$. USEPA guidance memoranda are not regulations and do not have the force of law. They may not be relied on to avoid complying with statutes and regulations. As non-legislative rules that are not subject to notice and comment, guidance documents do not establish "binding norm[s]," are not "finally determinative of the issues or rights to which they are addressed" and may leave agency officials "free to exercise discretion to follow, or not to follow, the [announced] policy in an individual case." In recognition of this, the Seitz Memo states clearly that it does "not bind State and local governments and the public as a matter of law." As USEPA stated in the Final $PM_{2.5}$ Implementation Rule: "...the EPA will no longer accept the use of PM_{10} emissions information as a surrogate for $PM_{2.5}$ emissions information given that both pollutants are regulated by a National Ambient Air Quality Standard and therefore are considered regulated air pollutants." USEPA promulgated the $PM_{2.5}$ NAAQS by regulation in 1997. Neither Illinois EPA nor US Steel may justify ignoring the $PM_{2.5}$ NAAQS by reliance on informal USEPA guidance (even if it supported their position, which it does not at this time).

The Illinois EPA's reliance on USEPA guidance in this case is not misplaced. This comment does not demonstrate that the USEPA guidance is contradicted by the express terms of the Clean Air Act, other than to note that PM_{10} and $PM_{2.5}$ are considered different air pollutants under the provisions of the Clean Air Act. The Illinois EPA has appropriately addressed applicability of NA NSR to the emissions of particulate matter from the proposed cogeneration boiler. For this purpose, emissions of PM_{10} have been used as a surrogate for emissions of $PM_{2.5}$ since a significant emission rate has not been adopted or otherwise formally established for emissions of particulate matter measured as $PM_{2.5}$.

10. The convoluted permit application history since July 2006 raises troubling questions and makes meaningful public comments difficult. Simply understanding the chronology of US Steel's permit application is

not a task for the faint of heart.[16] Of particular concern is that in August 2007, US Steel submitted a replacement application for the cogeneration boiler project. This application showed that the boiler project was a separate project from Gateway's proposed coke oven plant and would net out entirely of NSR. Before this, both US Steel and the Illinois EPA had treated both projects as being parts of a single larger project that was major project to emissions of particulate matter.[17] This suggests that the projects were restructured to minimize applicable emission control requirements, which is troubling for a source that already has a large impact on ambient air quality.

It is not uncommon for permit applications for netting projects to have several revisions or addenda. In this case, the formal separation of the cogeneration boiler and coke plant projects did not occur until US Steel submitted necessary information to fully explain the absence of any significant functional or economic relationships between the two projects. In fact, given the lack of such information in the initial application, the Illinois EPA originally understood that both projects were part of a single

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[16] In July 2006, US Steel initially filed two applications, one for various projects to reduce emissions, including construction of a coke oven gas desulfurization system and one for a new cogeneration boiler and coke conveyor system. At the same time, Gateway Energy and Coke Company (Gateway) filed an application to construct a new heat recovery coke plant at the Granite City Works. In its applications, US Steel described the Gateway plant as "directly related" to its applications. US Steel also claimed that its proposed new emission units would net out entirely of NSR.

In December 2006, US Steel revised its application, transferring four activities from the application for emission reduction projects to the cogeneration boiler application. US Steel continued to maintain that the coke plant was related to its cogeneration boiler project: "The three applications were submitted together because all the projects are related to the development of a heat-recovery coke oven battery and associated cogeneration facility." Then, in January 2007, US Steel supplemented its application for the cogeneration boiler project with a LAER and BACT analysis for PM emission, stating that this analysis was submitted based on guidance from Illinois EPA staff.

In August 2007, the definition of the projects took another turn. US Steel submitted a replacement application, redefining the nature of the project. US Steel now asserted that its cogeneration boiler project was quite separate from the Gateway heat recovery coke oven project. US Steel again claimed that the cogeneration boiler project would net out entirely of NSR.

[17] It is noteworthy that in its January 2007 second addendum to the application, US Steel stated that because of the interrelationship between the proposed Gateway coke oven plant and the proposed cogeneration boiler project and emission reduction activities, the coke plant project's emissions were considered in its overall netting analysis. As a result, US Steel could not net out of PM_{10} and $PM_{2.5}$ emissions for the cogeneration boiler project and submitted a BACT and LAER analysis as required for a major projects for PM_{10} and $PM_{2.5}$. In July 2007, Illinois EPA provided US Steel a preliminary draft permit which reflected the cogeneration boiler project being major project for $PM_{2.5}$ emissions, subject to the requirements of NA NSR, including LAER.

larger project. It was not until later in the review of the projects that it became apparent that the projects were appropriately treated as separate projects, with relevant supporting information then supplied to the Illinois EPA by US Steel and Gateway. This development was a direct result of the Illinois EPA's response to the initial application for the cogeneration boiler project, which did not treat the project as separate from the proposed coke plant because US Steel had not provided an application with relevant information to support the project being a separate project from the proposed coke plant.

The Illinois EPA was aware that this change in the definition of the projects could be confusing. This is why it was decided that US Steel should submit a complete, new application in August 2007 rather than simply submit another addendum to the original application.

11. The draft permit would improperly allow the proposed cogeneration boiler project to net out of NA NSR and PSD because the Illinois EPA did not document, or inform the public regarding, the netting calculations on which it proposed to let the cogeneration boiler project net out of NA NSR and PSD requirements. The Project Summary, Section III, states that potential annual emissions of the new emission units are presented in Attachment 1 to the draft permit.[18] Attachment 1 reports total emissions of the entire project, but does not contain individual emission information for the boiler, a cooling tower; and flare. It also does not provide information on the projected actual emissions from these units. Without this information, it is impossible to assess the accuracy of the netting analysis.

    The draft permit would let the cogeneration boiler project escape both NA NSR and PSD requirements based on US Steel's claim, unsubstantiated in the draft permit or project summary, that the project will not involve a significant net emission increase of any regulated pollutants. As summarized below, US Steel's netting claim suffers from several critical errors and omissions.

A summary of the netting analysis for the cogeneration boiler project was present in Attachment 1 of the draft permit and is contained in Attachment 1 of the issued permit. Accordingly, the Illinois EPA has publicly documented the netting analysis on which the permit is based. The details of the netting analysis are contained in the permit applications, including the information in the most recent version of the application for the boiler project. This information was sufficient to allow review and comment on the netting analysis by the public.

As Attachment 1 of the permit provides a summary of the netting analysis, it does not provide emissions for the boiler project on a unit-by-unit basis. There is not a need to identify each emission unit in this summary. Conditions within the permit limit the emissions of the units. In

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[18] In addition, the Project Summary, Section III, incorrectly states that a netting analysis for the cogeneration boiler project is presented in Attachment 2 to the draft permit, when it is actually part of Attachment 1.

particular, for $PM_{2.5}$, Attachment 1 shows project emissions of 232.25 tons per year, which reflects emissions of up to 228.39 tons per year from the new boilers and new flare, in combination, as allowed by Condition 3.1.6(b)(ii), and up to 3.86 tons per year from the new cooling tower, as allowed by Condition 3.3.6(b).

Information on the projected actual emissions from the new emission units is not relevant for the netting analysis. This is because these units are "new units" and their emissions are appropriately evaluated in the netting analysis in terms of their potential or permitted emissions, not their projected actual emissions which would be lower than their potential emissions. Information on projected actual emissions of units would only be relevant for netting under the PSD rules for existing units for which modifications were proposed.

12. The use of PM_{10} as a surrogate for $PM_{2.5}$ in the netting analysis violate applicable provisions for such analyses in Illinois' NA NSR rules, 35 IAC Part 203. These rules define a major modification in terms of emissions of the specific pollutant for which an area is nonattainment,[19] which in this case would be emissions of $PM_{2.5}$. Neither US Steel nor Illinois EPA has conducted a netting analysis for $PM_{2.5}$ emissions. Even if the calculated PM_{10} emission decreases equal or exceed the projected PM_{10} emission increases, there is no reason to assume - without analysis or documentation - that the same will be true for $PM_{2.5}$ emissions. Numerous different activities and processes are involved on both the decrease and increase side of the netting analysis, and they are likely to have different proportions of $PM_{2.5}$ in their particulate matter emissions.

The netting analysis for the cogeneration boiler project is consistent with 35 IAC Part 203. For particulate matter, these rules provide that a net emission increase is significant if the increase is equal to or in excess of 15 ton per year measured as PM_{10} (35 IAC 203.209(a)(4)). These rules do not set a significant emission rate for particulate measured as $PM_{2.5}$, as is necessary for a netting analysis to be explicitly conducted in terms of $PM_{2.5}$ emissions.

In addition, the netting analysis for the project reasonably considers emissions of $PM_{2.5}$. In particular, most of the project's particulate matter emissions would come from the proposed cogeneration boiler and flare, as they burn blast furnace gas. A comparable amount of the contemporaneous emissions decreases come from Boilers 1 through 10, which also burned blast furnace gas. The comment lacks any support for the notion that proportions of $PM_{2.5}$ in the particulate matter emissions of these units are different. The Illinois EPA is not aware of information that would suggest that the character of the particulate matter emissions of the proposed new boiler will be significantly different than those of the ten existing boilers that are to be shut down.

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[19] "[A] physical change, or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant for which the area is designated a nonattainment area, shall constitute a major modification of a source." 35 IAC 203.207(a).

13. The draft permit would improperly let the proposed cogeneration boiler project net out of NA NSR because relevant rules preclude the use of PM_{10} as a surrogate for determining $PM_{2.5}$ emissions decreases. An emission reduction may not be used to net out an emission increase unless the reduction is "creditable" and an emission reduction is not creditable unless "[i]t has approximately the same qualitative significance for public health and welfare as that attributed to the increase from the particular change." 35 IAC 203.208(c) and (c)(2). In setting a separate NAAQS for $PM_{2.5}$ as distinct from that for PM_{10}, USEPA made clear a decade ago that the two pollutants pose different threats to public health and welfare, and indeed that $PM_{2.5}$ is of greater public health significance.[20] Accordingly, use of a netting analysis for PM_{10} does not suffice as a netting analysis for $PM_{2.5}$ and would be in violation of governing Illinois regulations. The absence of any documentation from US Steel regarding $PM_{2.5}$ emissions before or after the cogeneration boiler project precludes it from netting out of NA NSR review for $PM_{2.5}$. It also violates Illinois' rules requiring complete application information. Unless and until US Steel provides a sound netting demonstration with respect to $PM_{2.5}$ emissions foe the proposed cogeneration boiler project, the project must comply with NA NSR requirements for $PM_{2.5}$ emissions.

As already explained, the particulate matter emissions decreases from the existing boilers used in the netting analysis for this proposed project certainly have approximately the same qualitative significance as the particulate matter increases. In addition, this comment reads more into the cited language than does USEPA as the cited language is also found in the federal NA NSR rules (40 CFR 51.166(b)((3)(vi)(c)). USEPA's guidance for interim implementation of NA NSR for $PM_{2.5}$ clearly shows that the USEPA does not consider that the adoption of NAAQS for $PM_{2.5}$ directly triggered a requirement that netting for particulate matter in $PM_{2.5}$ nonattainment areas must be conducted in terms of $PM_{2.5}$. Finally, US Steel has adequately described the particulate matter emissions of the proposed units in a manner consistent with established practice in Illinois for the completeness of construction permit applications.

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[20] Based on the recent health effects evidence and the fundamental physical and chemical differences between fine and coarse fraction particles, the Criteria Document and Staff Paper conclude that fine and coarse fractions of PM_{10} should be considered separately. … [F]ine particles are a better surrogate for those components of PM that are linked to mortality and morbidity effects at levels below the current standards. …
The proposal states that the main basis for separating the fine and coarse fractions of PM_{10} is that, because they are fundamentally different PM components with significantly different physico-chemical properties and origins, separate standards would permit more effective and efficient regulation of PM. … [T]he preponderance of the available evidence suggests that strategies to control fine particles will more effectively reduce population exposure to substances associated with health effects in the recent epidemiological studies.

14. US Steel improperly calculated baseline actual emissions for the proposed project using data that does not reflect actual emissions from the units with emissions decreases. Both NA NSR and PSD evaluate whether a modification involves a "significant net emissions increase" by comparing "actual emissions" prior to the project with actual or potential emissions with the project. Both programs make clear that the pre-project "actual emissions" are to reflect the amount of pollutants that units in fact emitted during the pre-project or baseline, timeframe. However, without accurate baseline information, it is impossible to demonstrate that claimed decreases reflect actual decreases in emissions.

US Steel provided an acceptable determination in its application of the actual emissions of existing emission units. While emission data from continuous emission monitoring equipment or data from more recent stack tests on more of the subject units would certainly have been preferable, in practice, that level of data is only rarely available for a netting analysis. Available emission factors must routinely be used with appropriate operating data to determine actual emissions of existing units and this practice is clearly accommodated by the relevant rules.[21]

15. For Boilers 1 through 10, US Steel calculated baseline NO_x emissions using an emission factor based on a stack test conducted a number of years before the baseline period. A one-time stack test conducted before the baseline period cannot serve per se in lieu for actual emissions data during this period. Stack tests are conducted under "optimal" conditions and do not capture the variability inherent in the operation of combustion units from variability in fuel quality and combustion conditions.

The data from this stack test was appropriately used to establish a NO_x emission factor for burning of coke oven gas. This emission factor was then used with data on actual usage of coke oven gas during the baseline time period to calculate actual emissions associated with burning of coke oven gas during the baseline time period. The test was not used nor could it ever be used by itself to directly determine the actual emissions during the baseline time period. Notwithstanding possible variability in the operation of emission units and the nature of stack testing, this emission factor from testing of a representative emission unit burning coke oven gas generated at the Granite City Works, the source under review, is preferable to a generic emission factor for the determination of actual emissions.

16. US Steel's use of NO_x emission data from stack tests on Boiler 12 and Slab Furnace 4 calculate baseline emissions for Boilers 1 through 10 and Slab Furnaces 1 through 3 is questionable. The sizes and ages of

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[21] **Both NA NSR and PSD provide that "…Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored or combusted during the selected time period…." 35 IAC 203.104 and 40 CFR 52.21(b)(21)(ii) .**

the boilers are significantly different.[22] Second, the Emission Reduction Credit Permit Application indicates that the baseline coke oven gas NO_x emission factor for the slab furnaces was calculated base on a natural gas stack test on Furnace 4 and two stack tests on Boiler 12 (natural gas and coke oven gas). The application also does not explain why stack test results from a boiler with a rated heat input capacity of 225 mmBtu per hour are representative of emissions from furnaces rated at 495 and 322 mmBtu per hour.

When determining actual emissions, preference is given to emission factors from stack tests as such factors are generally considered more reliable than generic emission factors. This principle is relevant here because fuel bound nitrogen contributes to the NO_x emissions from burning of coke oven gas, unlike natural gas and blast furnace gas for which fuel-bound nitrogen is not significant. Accordingly, US Steel used stack tests to develop a site-specific emission factor that is applicable for the coke oven gas that is produced from its existing coke oven battery. This factor was derived from stack tests on Boiler 12, which has its own stack and can burn both 100 percent natural gas and 100 percent coke oven gas, which the slab furnaces are unable to do. The resulting emission factor is reasonably applied to all units burning of coke oven gas as it reflects the significant contribution of fuel bound NO_x.

17. For Boilers 1 through 10 for emissions of pollutants other than NO_x, (e.g., CO and VOM), US Steel calculated actual emissions using emissions factors from USEPA's *Compilation of Air Pollutant Emissions Factors*, AP-42, rather than historic emission data for the subject period. US Steel also used emission factors from AP-42 to calculate baseline emissions from the shutdown of the Coke Oven Gas Pump system. This also does not satisfy the requirement that baseline emissions be "actual." Further, AP-42 emission factors are industry wide averages; so that the actual emission rates from some units are lower and the actual rates from other higher. Thus, these factors cannot be used to determine actual emissions.

Emission factors developed from stack tests on particular emission units would be preferable to the use of generic emission factors from AP-42 or tests on similar units. However, lacking such better emission factors, as is the case here, generic emission factors from AP-42 may be used in the calculation of historic actual emissions of units during the baseline time period.

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[22] Boiler 12, with a rated heat input capacity of 225 mmBtu/hour, is a "large" boiler while Boilers 1 through 10, with rated heat input capacity of 60 mmBtu/hour each, are "small" boilers, which places the boilers in different emission categories with substantially different emission factors under USEPA's *Compilation of Air Pollutant Emissions Factors*, AP-42. Boiler 12 is also much newer than the boilers that are to be shut down, which date back to the 1920s. Slab Furnace 4 with a rated heat input capacity of 495 mmBtu per hour is larger than Slab Furnaces 1 through 3, which are each rated at 322 mmBtu per hour.

18. In its netting analysis, US Steel improperly relies on certain decreases in NO_x emissions from the shutdown of Boilers 1 through 10 and the installation of low-NO_x burners at Slab Furnaces 1 through 4 that are not surplus. A significant portion of these emissions decreases cannot be used for netting because they must be made under state and federal regulations that require Reasonably Available Control Technology (RACT) for emissions of NO_x.[23] In particular, Illinois EPA has drafted proposed NO_x RACT rules[24] that would require the decreases in NO_x emissions from these units that US Steel is claiming are "voluntary" or surplus reductions. Additionally, these emissions decreases are already counted to demonstrate reasonable further progress under Illinois' ozone State Implementation Plan. 35 IAC 203.208(c)(4) precludes the use for netting purposes of emissions decreases previously relied upon for demonstrating attainment or reasonable further progress in the nonattainment area affected by the decreases. For this purpose, the Illinois EPA has made a commitment to implement NO_x RACT in the St. Louis Metro-East Nonattainment Area. The various corrections to the netting analysis for NO_x emissions recommended by comments lower the net change in NO_x emissions with the cogeneration boiler project from a net decrease of 681 tons/year to a net decrease of only 169 tons/year. Accordingly, the cogeneration boiler project would still net out of NA NSR and PSD review for NO_x emissions. However, these corrections to the netting analysis are also applicable to the netting analysis for the proposed Gateway heat recovery coke plant, as will be addressed in comments on the draft permit for that project.

The emissions decreases relied upon for the cogeneration boiler project are not required at the present time and accordingly are surplus. This is because, as the comment observes, there are currently no state or federal regulations that require these emissions decreases. As observed by the comment, the Illinois EPA has only drafted proposed NOx rules. The Illinois EPA is still receiving comments from certain stakeholders on its proposal. When the proposal is finalized, it will still have to be submitted to the Pollution Control Board for rulemaking. The Pollution Control Board is a governmental body separate from the Illinois EPA, that has the authority to adopt emission standards in Illinois. It has the responsibility to hear testimony from potentially affected sources and other interested parties and

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[23] Because the St. Louis Metro-East area is designated a moderate nonattainment area for the 8-hour ozone NAAQS, effective June 15, 2004, Illinois is required to develop a State Implementation Plan for the area and implement certain requirements under the Clean Air Act, including implementation of Reasonably Available Control Technology (RACT) to control emissions of NO_x from major source, pursuant to Section 182(f) of the Clean Air Act. (The only exception to this requirement would be if the USEPA approves a NO_x RACT waiver for the Metro-East area, which has not occurred.) US Steel's Granite City Works are a major source of NO_x emissions, with reported NO_x emissions of 3910, 2315 and 3767 tons in 2002, 2003, and 2004, respectively.

[24] The Illinois EPA released a draft of its proposed NO_x RACT rules for public comment on July 30, 2007.

to adopt emissions limits that it determines will be technically feasible and economically reasonable to comply with based on the record of the rulemaking. There is not any certainty that the rules and emissions limits proposed by the Illinois EPA will be the same as those adopted by the Pollution Control Board. Accordingly, the NO_x emissions decreases calculated by US Steel for the netting analysis are surplus and it is not appropriate to adjust those decreases as suggested by this comment.

In addition, assuming for purposes of argument that such unilateral action by the Illinois EPA would be sufficient to affect the status of emissions decreases, the Illinois EPA has not relied upon these decreases for attainment planning. In particular, the reductions required for the proposed coke plant (which overlap with the reductions required for the cogeneration boiler project) were not included in the future year inventory in the draft 8-hour ozone attainment demonstration for the Metro-East Nonattainment Area.[25]

19. None of the NO_x emissions decreases from the Slab Furnaces is creditable because they are required by RACT and are not surplus. The netting analysis for the draft permit includes NO_x decreases of 427.94 tons from the installation of low-NO_x burners on Slab Furnaces 1 through 4 (Refer to Attachment 1). The draft NO_x RACT rule would apply to these four units. US Steel submitted detailed netting calculations for the slab furnaces. US Steel calculated baseline actual NO_x emissions to be 1152.03 tons per year. US Steel calculated future NO_x emissions of 724.09 tons per year which is established as an annual emissions limit in the emissions reduction credit permit (Permit 06070022). However, application of NO_x RACT would require lower future emissions from these units.[26] The NO_x emission limit for the furnaces in the draft of proposed NO_x RACT rules is 0.18 lb NO_x/mmBtu. Future NO_x emissions allowed with this RACT limit, calculated using the same method used by US Steel with a future total fuel usage of 7,169,150 mmBtu per year[27], would only be 645.22 tons per year, not 724.09 tons per year. Thus, none of the NO_x decreases claimed from the installation of low-NO_x burners on the slab furnaces is creditable.

While adoption of NO_x RACT rules could potentially affect the status of certain decreases in NOx emissions for netting, at this time, NO_x RACT rules have not been finalized. These emissions decreases do not cease to be surplus because of the preparation of a draft regulatory proposal. While the slab furnaces are targeted for further control under the draft NO_x RACT rule proposal, US Steel is entitled to rely upon these decreases because rules

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[25] http://www.epa.state.il.us/air/sip/metro-east-8hr-attainment-demo-draft.pdf, page 27.

[26] Proposed 35 IAC 217.244 would establish NO_x RACT limit for reheat furnaces with rated heat input capacity equal to or greater than 100 mmBtu per hour at 0.18 lb/mmBtu. All four slab furnaces are rated heat at greater than 100 mmBtu per hour, with Slab Furnaces 1 through 3 at 322 mmBtu each and Slab Furnace 4 at 495 mmBtu.

[27] 0.18 lb NO_x/mmBtu) x (7,169,150 mmBtu/year) x (1 ton/2000 lb) = 645.22 tons NO_x/year

have not been finalized. In addition, these decreases have not been included in the future year emissions inventory.

20. Some of the NO_x emission decreases from the shutdown of Boilers 1 through 10 are not creditable for netting because the decreases are required by NO_x RACT. A proposed NO_x RACT rule, 35 IAC 217.164, would apply to these boilers requiring use of combustion tuning. The Illinois EPA assumed in its attainment demonstration modeling for the Metro-East ozone nonattainment area that combustion tuning would result in a 30 percent reduction in NO_x emissions. Accordingly, a NO_x emissions decrease of 278.89 tons per year from the shutdown of existing Boilers 1 through 10, based on the historic actual emissions of these boilers, cannot be relied as would occur in the draft permit. Instead, the emissions decrease from the shutdown of these boilers must be reduced by 30 percent, with only a decrease of 195.22 tons of NO_x from these boilers claimed as surplus and used for netting. This is because the netting analysis must discount the actual NO_x emissions by this factor for implementation of this NO_x RACT control measure.

As previously discussed, it would not be appropriate to proceed in the manner recommended by this comment, adjusting the amount of NO_x emissions decreases available for purposes of netting for the issued permit.

21. How did Illinois EPA make the decision, as reflected in the draft permit prepared for the coke plant proposed by Gateway Energy, to let that project net out of PSD and NA NSR for emissions of certain pollutants by using contemporaneous emissions decreases from US Steel? Is there any documentation for how the Illinois EPA concluded that these projects are occurring at a single source?

Comments EPA on the coke plant project and associated conveyor system and the draft permits prepared by the Illinois EPA for these facilities will be addressed in a separate Responsiveness Summary when the Illinois EPA takes action on the permit applications for those proposed facilities. These application and the comments submitted to the Illinois EPA on these projects are still under review by the Illinois EPA.

22. Even though PSD and NA NSR do not apply to the cogeneration boiler project, US Steel committed to use of Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) equivalent technology for the particulate matter (PM) emissions of the project. However the PM limits in the draft permit, which are the limits from US Steel's BACT and LAER analysis, do not represent BACT or LAER as that analysis was inadequate and failed to identify BACT and LAER limits with a reasoned analysis.[28]

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[28] US Steel's BACT and LAER analysis addressed the boiler and lacks analyses for the flare and cooling tower. It lacks a complete and reasoned five-step Top-Down BACT analysis. In particular, it lacks Step 1, a list of all feasible control options, and Step 2, in which infeasible options are eliminated. Steps 4 and Step 5 are overly simplistic, as all other alternative control options are rejected based on cost and existing control

While these comments identify certain deficiencies in the scope and content of the BACT and LAER analysis submitted by US Steel, they do not show that the PM emissions of the cogeneration boiler project will not be effectively and appropriately controlled. In addition, as relevant for the attainment demonstration, the analysis submitted by US Steel confirms that cleaning of the raw blast furnace gas (BFG) prior to combustion with high-energy scrubbing as currently occurs for the BFG fuel supply continues to be the appropriate method to control PM emissions. "Add-on," post-combustion control for PM emissions, which is not currently used in the steel industry on units designed to burn BFG, should not be installed on the proposed cogeneration boiler. As US Steel must invest in additional control systems to better control PM emissions from the Granite City Works, such investment is better directed at existing units, to achieve greater reductions in emissions.

Moreover, as observed by the comment, this project is not subject to PSD or NA NSR. As such, the rigor of the BACT and LAER analysis is academic. The Illinois EPA's action on the application for the proposed project is constrained by applicable laws and regulations. Accordingly, the Illinois EPA did not perform its own BACT and LAER analysis as one is not required for the project. The permit establishes limits for the particulate content of BFG and the PM emissions of the cogeneration boiler at the levels proposed as BACT and LAER by US Steel in the application.

23. A critical deficiency in US Steel's BACT and LAER analysis was that cost-effectiveness values for add-on control were overstated by a factor of ten by the assumption about the further emission reductions that would be achieved. Cost-effectiveness was calculated assuming that add-on control devices would achieve 99.9% further reduction in PM_{10} emissions. However, baghouses, the top-ranked control devices, are known to achieve 99.99% PM_{10} reductions from units at steel mills. The use of a higher control efficiency, which would not significantly affect cost, would substantially improve cost effectiveness. In addition, the emission reductions only address filterable PM_{10}, whereas condensable particulate can comprise over 50% of the particulate from combustion of gaseous fuels. US Steel also used economic factors that greatly overstate the annualized cost of purchase and installation of add-on control equipment.

The changes recommended by this comment with respect to calculation of emission reductions would not noticeably change the cost-effectiveness

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measures are selected as both BACT and LAER. The analysis focused on the control of filterable PM_{10} and did not separately consider control of condensable particulate or filterable $PM_{2.5}$. The analysis did not specifically document that the costs for use of add-on control for the proposed boiler would be extreme compared to the costs expended for control of BFG boilers at other steel mills. Certain assumptions in the cost analysis for alternative control options inflated the costs of those options.

analysis.[29] This is because the further reduction in overall emissions with increased efficiency is small given the reduction in emissions that has already been accounted for. Moreover, given the levels of PM emissions achieved with pre-combustion cleaning of BFG, it is questionable whether baghouses would achieve the efficiency assumed by US Steel, much less the efficiency suggested by this comment. This is because these values for control efficiency of baghouses represent the nominal performance of baghouses on process units or solid fuel combustion units without any precombustion fuel cleaning. In addition, as conventional PM control devices, like baghouse and electrostatic precipitators, do not control condensable particulate, it is also unreasonable to assume any further control of condensable particulate would be provided by use of such devices. Emissions of condensable particulate are more appropriately controlled by the cleaning of the BFG prior to combustion to remove constituents in the BFG that contribute to the formation of condensable particulate.

The recommended changes to the economic factors used in the cost-effectiveness analysis for of add-on control devices also not would alter the conclusions of the analysis. This is because of the magnitude of the capital costs of such devices and the fact this cost is only one component of the annualized cost of control. [30]

24. The Illinois EPA has not adequately explained why the draft permit would not set limits for emissions of Hazardous Air Pollutants (HAPs) from the proposed project, which limits would represent application of Maximum Achievable Control Technology (MACT) for HAP emissions. The draft permit and the Illinois EPA's project summary only provide conclusory reasons why the permit does not set such limits, which leaves questions about the validity of the approach that has been taken to MACT limits.

    This is a concern because the DC Court of Appeals vacated the National Emissions Standards for Hazardous Air Pollutants (NESHAP) Standards for Industrial Commercial and Institutional Boilers and Process Heaters 40 CFR 63 Subpart DDDDD (the Boiler MACT Rules) on July 30, 2007. This vacatur results in a potential change in the applicable requirements

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[29] With a cost for add-on control of $3,000,000 per year and a further reduction of 64.3 tons of PM achieved assuming 99.9% control of PM, typical of US Steel's analysis, the theoretical value of cost-effectiveness of add-on control is $46,660 per ton ($3,000,000 ÷ 64.3 = $46,660).

If the efficiency of the add-on control system is 99.99%, rather than 99.9%, as recommended by this comment, the further reduction in emissions would increase slightly to 64.36 tons, with a theoretical value of cost-effectiveness of $46,610 per ton.

Similarly, if the efficiency is only 99.0% or 98%, the further reduction becomes 63.72 or 63.08 tons, with cost-effectiveness values of $47,080 or $47,560 per ton, respectively.

[30] US Steel used a capital recovery factor of 0.11756 based on a 20 year equipment life and an annual interest rate of 10 percent. At an annual interest rate of 7 percent, the capital recovery factors are still 0.0944 and 0.0806 for equipment lives of 20 and 30 years, respectively.

for the project. In its application, US Steel acknowledges the vacatur of this NESHAP standard, which would not have set any emission standards for the proposed boiler.[31] However, the application does not address the consequences of the vacatur of this NESHAP for the permitting of the proposed boiler. In this regard, the application does not provide data on the HAP emissions from the boiler or suggest case-by-case MACT standards for the boiler.

The Illinois EPA did address the consequences of the vacatur of the boiler MACT regulations, concluding that a case-by-case MACT determination was not required as part of the processing of the permit for the cogeneration boiler project. In the draft permit, Illinois EPA states that a case-by-case MACT determination is not required because the proposed boiler is not a "major source" triggering the case-by-case MACT requirement of Section 112(g). The only explanation offered in support of this conclusion in the permit is that the "affected unit" will be at a "developed site" and that its HAP emissions will be below the major source threshold. However, the governing regulations define "major source" to encompass not only the proposed boiler, but also all other emissions units at the source. The project summary does not clarify this matter, as it refers to the possible need for a case-by-case MACT determination under Section 112(j) of the Clean Air Act, not Section 112(g) of the Clean Air Act, with a MACT determination that would not occur in the construction permit for the project, but instead as part of the CAAPP permit for source. In this regard, a CAAPP permit has never been issued for the source[32] and it is inappropriate for the Illinois EPA not to act under Section 112(g) and instead defer action until it eventually acts on the elusive CAAPP permit.

The implementation of case-by-case MACT determinations under Section 112 of the Clean Air Act is governed by specific USEPA rules at 40 CFR Part 63, Subpart B. It is not governed by the provisions of the general regulations for emissions of HAPs, referred to by this comment. For the purpose of case-by-case MACT determinations under Section 112(g) of the Clean Air Act, a proposed new emission unit at an existing source is only subject to a case-by-case determination if the unit itself would be a major "process or production unit" as defined by 40 CFR 63.41. While the proposed boiler would be a new process or production unit, it is not a major unit for emissions of HAPs. This approach to proposed modifications at existing sources, determining applicability for individual process or production units, was

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[31] Had the Boiler MACT Rules not have been vacated, the proposed cogeneration boiler would have met the exclusion for boilers fired with blast furnace gas at 40 CFR 63.7491(o), so that the emission standards for HAPs in the Boiler MACT rules would not have applied to the proposed boiler.

[32] US Steel's Granite City Works has been operating for almost 12 years under the CAAPP application shield, with the CAAPP application pending with the Illinois EPA since 1996. While a draft CAAPP permit was released in 2003 it was then retracted, and only now is a new draft CAAPP permit apparently nearing completion,

clearly set out by USEPA during the adoption of 40 CFR Part 63 Subpart B.[33] In this regard, under the general framework of the Clean Air Act for stationary sources of HAP emissions, the proposed project is appropriately addressed as a possible major modification of the existing Granite City Works. Whether the project is a major modification for this purpose is governed by USEPA rules that were specifically developed and adopted by USEPA to implement Section 112(g) of the Clean Air Act.

Case-by-case MACT determinations can also be triggered for a particular category of emission unit pursuant to Section 112(j) of the Clean Air Act if the USEPA lags more than 18 months behind schedule in adopting MACT NESHAP standards for the category of units. A general consequence of the vacatur of the boiler MACT rules in July 2007 is that USEPA is now more than 18 months behind schedule in adopting MACT standards for the boiler category. This triggered Section 112(j) of the Clean Air Act for boilers, as a category of emission unit. However, this does not provide a legal basis to make a case-by-case determination of MACT in a construction permit for the proposed cogeneration boiler. Sections 112(j)(3) and (4) of the Clean Air Act specifically provide for case-by-case MACT determinations made in Title V permits, which in Illinois means in CAAPP permits, not in construction permits. In addition, the USEPA already determined when originally adopting the boiler MACT NESHAP that it was not appropriate or necessary to set specific MACT emission standards for boilers fired with blast furnace gas. To the extent case-by-case MACT limits were set, they would only be in effect on an interim basis until USEPA readopts a MACT NESHAP for boilers. Finally, as case-by-case MACT limits do need to be made for sources pursuant to Section 112(j) of the Clean Air Act as a consequence of the vacatur of the boiler MACT rules, such MACT limits are more appropriately determined during processing of a CAAPP permit, so as to comprehensively address all boilers at a source that is major for HAPs.

25. The Illinois EPA does not indicate, either in the draft permit or the project summary, what it understands to be the projected HAP emissions from the project. The US Steel application is also unenlightening on this critical point. Thus, it is impossible to understand or critique the Illinois EPA's conclusion that projected HAP emissions from the proposed boiler will be less than 10 tons per year of any individual HAP and less than 25 tons per year of any combination of HAPs.

The issued permit includes explicit emission limits to ensure that new units are not major sources of emissions for HAPs. In the draft permit, emissions

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[33] The preamble to the rulemaking discusses when Section 112(g) would be applied to new equipment proposed at existing sources, "Addition of Equipment at an Existing Plant Site. This rule treats addition of a new "process or production unit" as construction, as discussed above, and requires application of new source MACT to that process or production unit. This ensures that new major-emitting process or production units (that is, those emitting more than 10 tons/year of a HAP, or 25 tons/year from all HAP, or amounts exceeding a lesser quantity cutoff), which generally would represent sizeable investments, will be built with state-of-the art control technology." 61 FR 68392, December 27, 1996.

of HAPs from the cogeneration boiler and flare were indirectly addressed, as these emissions will be a component of the VOM and PM emissions and were addressed by the emission limits for VOM and PM.[34]

26. Will a case-by-case MACT determination be made during the processing of the CAAPP permit for the Granite City Works? Is there a date when that permit will be issued?

At this time, the Illinois EPA is making its final edits on a draft of a CAAPP permit for the Granite City Works that does not include case-by-case MACT determinations. Depending upon the nature of comments received during the public comment period on this draft permit, it is possible that the CAAPP permit for the Granite City Works could be issued in as little as six months. Section 112(j) of the Clean Air Act provides a minimum of 18 months[35] for case-by-case determinations of MACT to be made so the processing of this CAAPP permit does not need to include such determinations. Making case-by-case determinations of MACT in this CAAPP permit would delay issuance of this permit, which is most significant as it addresses existing iron, steel and coke making operations at the Granite City Works, not the boilers which are all fired on gaseous fuels.

27. Why didn't US Steel address emissions of carbon dioxide (CO_2) in the application for the cogeneration boiler and why didn't the Illinois EPA evaluate CO_2 emissions when reviewing the application?

US Steel did not provide data for CO_2 emissions in its application and the Illinois EPA did not perform any evaluation of CO_2 emissions because CO_2 is currently not a pollutant regulated under the Clean Air Act. Accordingly, there is not a legal basis for requiring information on CO_2 emissions to be part of the application nor is there a reason for the Illinois EPA to perform an independent evaluation for emissions of CO_2.

While emissions of CO_2 and greenhouse gases were not addressed during permitting of this project, this does not mean that they are not of concern, only that the permit for this project is not currently a means by which they can be addressed. In particular, in 2006, Governor Blagojevich announced a climate change initiative by the State of Illinois to address emissions of greenhouse gases, to build on Illinois' role as a national leader in protecting public health and the environment. The Illinois Climate Change Advisory Group has evaluated a full range of policies and strategies to

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[34] As the draft permit would limit the boiler's VOM emissions to less than 1 ton per year, the emissions of organic HAPs that are present in VOM emissions from the boiler cannot be major. As the draft permit would limit PM emissions of the boiler, particulate HAP was also addressed, although not as directly since PM emissions are limited to 228 tons per year. However, as PM emissions would be composed mainly of iron oxide and mineral materials, particulate HAPs also would not be present in sufficient quantities for the boiler to be major for HAPs.

[35] Section 112(j) of the Clean Air Act also provides that a source may have up to 18 months to supplement its application for a case-by-case MACT determination if the initial application is determined to be incomplete.

reduce Illinois' emissions of greenhouse gases and is finalizing its report to Governor Blagojevich. This initiative marks the beginning of serious efforts by Illinois to address global climate change and builds on steps that Illinois was already taking to lower emissions of greenhouse gases, such as providing incentives for energy efficiency and encouraging the use of wind power and biofuels.

At the same time, until specific regulations are put into place by Illinois or on a national level, ad-hoc action to address global warming by projects like this proposed project through conventional environmental permitting programs would be capricious. Even if such action were taken, it would probably provide only illusory benefits, as it would not reach or affect existing sources, which contribute the majority of emissions of concern. Such action might also have a stifling effect on the continuing development and deployment of new technology to improve energy efficiency and reduce emissions of greenhouse gases, such as use of cogeneration technology, as will occur with this project.

28. The federal Clean Air Act requires the Illinois EPA to set Best Available Control Technology (BACT) limits in the permit for the proposed cogeneration boiler for emissions of CO_2 and other greenhouse gases from the project. This is because a PSD permit for a proposed major modification must set BACT limits for each pollutant subject to regulation under the Clean Air Act that would be emitted in a significant amount. In April 2007, the Supreme Court resolved any doubt on this question and held that CO_2 and other greenhouses gases are air pollutants under the Clean Air Act.[36] Moreover, the Court's ruling makes clear that CO_2 and other greenhouse gases are "subject to regulation" under the Clean Air Act. The Supreme Court's ruling is important here because the Court held that the definition of "air pollutant" in the Clean Air Act encompasses CO_2 and other greenhouse gases Second, the Court's held that the USEPA has the statutory authority to regulate the emissions of these pollutants, which indicates that they are "subject to regulation" under the Clean Air Act.

This comment reflects a flawed understanding of the United States Supreme Court's ruling in *Massachusetts v. EPA*, 127 S.Ct. 1438, 167 L.Ed.2d 248 (2007). According to the comment, the Supreme Court's ruling in the *Massachusetts* decision established that "greenhouse gases are 'subject to regulation' under the Clean Air Act." However, this assertion is not

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[36] In Massachusetts v. EPA, 127 S. Ct., the Supreme Court found that "The Clean Air Act's sweeping definition of "air pollutant" includes 'any air pollution agent or combination of such agents, including any physical, chemical ... substance or matter which is emitted into or otherwise enters the ambient air …' §7602(g) (emphasis added). On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word 'any.'" p. 1438

"Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt "physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air. The statute is unambiguous." p. 1460.

supported by even the most basic reading of the Court's opinion. The facts in the case centered around USEPA's refusal to grant a rulemaking petition, initiated by states and other interested parties under Title II of the Clean Air Act, that proposed mobile source emissions standards for CO_2. In support of its decision, USEPA argued, among other things, that greenhouse gases did not fall within the scope of the definition of "air pollutant" in the Clean Air Act and that the overall statutory scheme of the Clean Air Act did not evidence congressional intentions to regulate such gases. The Supreme Court rejected USEPA's argument, finding instead that CO_2 and other greenhouse gases fell within the "capacious definition" of "air pollutant" in the Clean Air Act. *See, Massachusetts v. EPA*, 127 S.Ct. at 1462. As such, the Court rejected USEPA arguments and found that USEPA possessed the necessary authority to regulate greenhouse gases emitted by new motor vehicles.

However, while the Court's ruling recognized that CO_2 emissions may be considered an air pollutant, USEPA has yet to make any final judgment that CO_2 emissions cause "air pollution" under Title II of the Clean Air Act or, more relevant here, under the PSD program found in Title I.[37] Moreover, the Court's ruling does not address or give meaning to the phrase "subject to regulation." The thrust of this comment is that CO_2 is "subject to regulation" and, hence, that emissions of CO_2 must be addressed with a BACT limit. However, the Supreme Court's ruling, while significant in its own right, did not directly address this issue. In this regard, the phrase "subject to regulation" is not the same as the term "air pollutant." The terms are plainly different and possess separate usages, each denoting a different thing or concept. An attempt to blur one term with the other would render one or the other term superfluous. The proper meaning of the phrase "subject to regulation" must rest on its own statutory construction, rather than on the clarification of the meaning of the term "air pollutant" provided by the *Massachusetts* ruling.

29. BACT limits must also be established for the project's emissions of CO_2 because CO_2 is also "subject to regulation" under the Clean Air Act as CO_2 is already regulated under the Act's acid rain provisions.[38] Recordkeeping and reporting requirements constitute "regulation," so CO_2 is currently regulated under the Clean Air Act. A position that CO_2 is

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[37] The Court's ruling clearly says as much, observing throughout the majority opinion that the first step for initiating a Title II rulemaking (i.e., a finding of endangerment) has yet to occur. *See*, 127 S.Ct. at 1459 ("… the first question is whether §202(a)(1) of the [CAA] authorizes EPA to regulate greenhouse gas emissions from new motor vehicles *in the event* that it forms a 'judgment' that such emissions contribute to climate change {emphasis added})."

[38] In 1993, USEPA promulgated regulations requiring coal-fired power plants to monitor CO_2 emissions and report data to USEPA. 40 CFR Part 75. The regulations generally require monitoring of CO_2 emissions through the installation, certification, operation and maintenance of a continuous emission monitoring system or an alternative method, 40 CFR 75.1(b) and 75.10(a)(3), maintenance of certain records, 40 CFR.75.57, and reporting of information to USEPA, including electronic quarterly reports of CO_2 emissions data, 40 CFR 75.60 through 75.64.

not "subject to regulation" because neither USEPA nor Illinois has yet set standards for CO_2 emission is unfounded. USEPA has stated: "Technically, a pollutant is considered regulated once it is subject to regulation under the Act. A pollutant need not be specifically regulated by a Section 111 or 112 standard to be considered regulated." USEPA, Change to Definition of Major Source, 66 FR 59161, 59163 (Nov. 27, 2001)

This comment is also based upon a flawed understanding of the meaning of the phrase "subject to regulation" as found in both the Clean Air Act and in the definition of "regulated NSR pollutant" in the PSD rules. The comment contends that the phrase "subject to regulation" cannot be restricted to pollutants for which emission standards have not been developed. To support this position, the comment refers to language in the preamble from rulemaking by USEPA, "Technically, a pollutant is considered regulated once it is subject to regulation. A pollutant need not be specifically regulated by a Section 111 or 112 standard to be considered regulated." *See, 66 FR 59161, 59163* (Nov. 27, 2001). However, the quoted language merely states the unremarkable proposition that once emissions of a pollutant from one category of emission unit are regulated by adoption of emission standards for such units, emissions of that pollutant are considered to be regulated as a general manner. Emission standards do not need to be adopted for the emissions of the pollutant from other categories of emission units for emissions of the pollutants from those other units to also be considered regulated. The quoted passage does not support the broader interpretation argued for in the comment. In addition, a look at context reveals the comment's misplaced reliance on this statement by USEPA.[39]

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[39] The passage is from rulemaking that involved USEPA rules for implementation of permitting under Title V of the Clean Air Act and proposed changes to the definition of "major source" dealing with the catch-all source categories regulated by Sections 111 and 112 of the Clean Air Act. In context, it is clear that USEPA was addressing a particular comment that interpreted part of the proposal to allow for the counting of fugitive emissions for unregulated pollutants in making a major source determination. The affected proposal sought to delete the phrase "but only with respect to those air pollutants that have been regulated for that category" from the catch-all provision for all other source categories regulated under Sections 111 and 112. *See, 40 CFR 70.2(2)(xxvii)*. USEPA's response sought to allay concerns that deleted language from the rulemaking proposal would introduce "unregulated" pollutants into major source deliberations. In this regard, the underlying rationale of USEPA's quotation was twofold: first, that only "regulated" pollutants (i.e., those pollutants subject to regulation") can be considered in the major source determination, and second, that pollutants other than those captured by the catch-all source categories (i.e., categories regulated by Sections 111 and 112) are capable of making a source major under Part 70. This interpretation is further supported by USEPA's citation to another rulemaking, which immediately followed the last sentence in the quotation but is not referenced by the commenter's excerpt. In a proposal to revise requirements for the New Source Review programs, USEPA discussed several pollutants promulgated under Section 112 that were no longer subject to the PSD program's requirements and, conversely, identified

The USEPA considers the phrase "subject to regulation" in the Clean Air Act and the PSD rules to address those pollutants for which substantive emission limits (or actual control requirements) are established, rather than, as suggested by the comment, any manner of requirements. This usage is well established. For example, USEPA issued a guidance document in 1993 that discussed the types of pollutants "subject to regulation" under the Clean Air Act.[40] *See*, Memorandum from Lydia N. Wegman, USEPA's Office of Air Quality Planning and Standards to USEPA's Air Division Director for Regions I-X, dated April 26, 1993. In the memorandum, USEPA confines its discussion of regulated pollutants to pollutants for which emissions standards have been adopted or, more precisely stated, involve the "actual control of emissions." Significantly, in that same memorandum, USEPA expressly declined to consider CO_2 a regulated pollutant, notwithstanding certain elements of the acid rain program calling for the study and reporting of CO_2. This shows that the USEPA has applied the term "subject to regulation" to mean actual control of emissions. This has not occurred for CO_2 emissions under the acid rain program, which only provides for reporting of data for CO_2 emissions. The USEPA's usage for the phrase "subject to regulation" is also confirmed by actions by USEPA in other rulemakings.[41]

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a list of regulated pollutants that remained subject to the program, including those pollutants comprising the NAAQS and substances regulated by Title VI.

[40] The memorandum addressed this issue in the context of Title V permitting, however, the document confirmed the similarities in treatment with the PSD program.

[41] USEPA also adopted amendments to the PSD rules in 2002 that specifically defined the term "regulated NSR pollutant." *See*, 67 FR 80186 (December 31, 2002). The definition contains four categories of pollutants, three of which comprise pollutants that are specifically addressed by USEPA under significant rulemaking provisions of the Clean Air Act (i.e., NAAQS, NSPS and Title IV). The fourth category of the definition is a catch-all provision that covers "[a]ny pollutant that *otherwise is subject to regulation* under the Act…(emphasis added)" *See*, 40 CFR. §52.21(b)(50)(iv). It is this provision that the comment relies on to argue that CO_2 is "otherwise regulated" and is therefore subject to PSD. The argument is plainly mistaken. That each of three specific references in the definition would share a common characteristic (i.e., substantive emission standards or actual controls) lends considerable support for interpreting the catch-all category in a like manner. Not only is such an approach grammatically correct but is also consistent with legal principles employed by courts in construing laws and regulations. (i.e., the rule of *ejusdem generis*). To that end, the pollutants covered by the catch-all category, like those enumerated in the three preceding categories, must be pollutants for which substantive emission standards (or actual controls requirements) have been adopted. Moreover, a list of pollutants accompanying USEPA's final rulemaking identified those pollutants that were then regulated under the Clean Act and potentially subject to the PSD rules. The list did not include CO2 or, for that matter, any other pollutant not already subject to substantive emission standards pursuant to the Clean Air Act.

Finally, even assuming for purposes of argument that the statutory language is ambiguous, "subject to" and "regulation" are words of general usage and the particular meaning of terms can be either broadened or curbed depending upon the desired application. In the absence of clarity, an administrative agency charged with implementing a particular statute is afforded discretion in construing congressional text and that discretion is usually not disturbed by courts unless the agency's construction is found unreasonable.

30. The PSD rules require a major modification to comply with a BACT limit "for each regulated NSR pollutant for which it would result in a significant net emissions increase…."40 CFR 52.21(j)(3). For any regulated NSR pollutant that is not listed at 40 CFR 52.21(b)(23)(i), the significance level is "any net emission increase." 40 CFR 52.21(b)(23)(ii). CO_2 and other greenhouse gases are not listed. Therefore, a BACT limit is required for any net increase. As the cogeneration boiler project will emit CO_2 and other greenhouse gases, the significant emission threshold is satisfied.

As explained in response to earlier comments, CO_2 and other greenhouse gases are not currently pollutants under the PSD program. Moreover, it is not clear that the proposed project will actually result in net increases in emissions of CO_2 and other greenhouse gases. The project will be accompanied by decreases in emissions of these pollutants from the ten existing boilers that the cogeneration boiler will replace. In this regard, the cogeneration boiler will not directly affect the production of blast furnace gas at the Granite City Works, as blast furnace gas is a normal byproduct inherent in the operation of the blast furnaces. In addition, the blast furnace gas that is produced will be used more efficiently as it will be used for cogeneration of both electricity and steam.

31. I am concerned about the new flare that would be part of the cogeneration project. More protective limits on flaring should be required.

The permit contains provisions to address proper operation of the new flare, including that it be specifically designed for disposal of blast furnace gas and be operated to minimize visible emissions, consistent with the requirements of 40 CFR 60.18(f)(1). Because this new flare is part of the blast furnace gas fuel system, the flare would not pose the concerns that are potentially present with a flare that handles over-pressure and emergency releases from process units.

32. The draft permit would set combined limits for fuel usage and emissions for two independent units, the boiler and the flare. Although there are fuel usage limits for the flare, the emission limits in Condition 3.1.6(b)(ii) do not distinguish between emissions from the boiler and the flare. As such, it will be virtually impossible to ensure that the boiler and the flare are in compliance with these emission limits. This does not satisfy the requirement that permit limits be enforceable as a practical matter.

The emissions from the cogeneration boiler and the flare are appropriately limited with combined limits for different pollutants. This is because these units will operate together, in tandem, to handle BFG produced by the blast furnaces at the Granite City Works that is currently handled by the ten existing boilers that will be shut down. The Illinois EPA disagrees with the assertion that "it will be virtually impossible to ensure that either the boiler or the flare is in compliance with the permit's emission limits." The permit requires detailed recordkeeping for the operation of each unit, including monthly records of fuel usage. This data, and appropriate emissions factors, as developed from stack testing of the boiler or standard USEPA emission factors, would be used to determine emissions of each unit. Finally, if testing of the boiler does not show compliance with the applicable limits in pounds per million Btu for NOx or CO by a margin of at least 5 percent, the permit includes provisions that could require that continuous emissions monitoring be conducted.

33. Illinois' Environmental Protection Act invites Illinois EPA to consider an applicant's prior compliance history when evaluating permit applications. It also allows the Illinois EPA when granting permits to "impose reasonable conditions specifically related to the applicant's past compliance history…as necessary to correct, detect, or prevent noncompliance." Section 39(a) of the Act. In this case, to the best of my knowledge, an Illinois EPA-initiated enforcement action for air pollution violations at the Granite City Works is currently pending in the Illinois courts and is unresolved. Accordingly, Illinois EPA should impose conditions in this permit to cure US Steel's longstanding air pollution violations before authorizing it to construct yet additional emission units.

For the proposed cogeneration boiler project, the issued permit for the project, which is narrowly focused on the proposed project, is not an appropriate means to broadly address and correct compliance issues that have been posed by existing emission units at the Granite City Works. As noted by the comment, alleged violations by existing units at the source have been the subject of an enforcement action. This enforcement action was resolved on December 18, 2007, with the issuance of a Consent Order for the source. (See: People of the State of Illinois v. United States Steel Corporation, Inc., Illinois 3rd Circuit, No. 5-CH-750.) As compared to conditions imposed in a construction permit for unrelated emission units, this order, whose development was coordinated by the Illinois Attorney General's Office, is the preferable means of establishing the specific measures that must be implemented to address the various alleged violations at this source.

34. There are hundreds of young children with asthma in Granite City and neighboring Madison and Venice. There are thousands of our people with lung and heart disease.

The presence in the area of children and adults with respiratory diseases, including asthma, and other diseases affected by poor air quality is an important issue. However, it is not a basis to refuse to grant a permit for the proposed cogeneration boiler project, as the application for the project shows that it will comply with applicable regulatory requirements. The poor

air quality that poses a threat to individuals that are at particular risk is the cumulative result of emissions from the variety of existing sources that contribute to air pollution in urban areas, including manufacturing facilities, power plants, trucks, buses, cars, and the activities of individual households. On a long-term basis, emissions have been reduced and regulatory programs are ongoing to further reduce the emissions from these sources. This is appropriate and necessary because continuing improvements in urban air quality require that existing sources be better controlled or replaced with new, lower emitting sources.

At the same time, efforts also continue to be made to improve public awareness of daily air quality levels. This is particularly important for individuals with asthma or other chronic respiratory diseases because, in addition to other medical care and treatment, it allows such people to take appropriate measures to reduce any added risk to their health posed by poor air quality, by reducing time spent outdoors, avoiding physical exertion, and taking any extra medications that are prescribed during such conditions. To assist asthmatic individuals and others who are particularly sensitive to ambient air quality, the Illinois EPA uses the Air Quality Index to report air pollution levels on a daily basis. This enables people who may be affected by poor air quality to appropriately plan and adjust their activities.

35. The ambient air quality monitors in Granite City measure the highest levels of $PM_{2.5}$ in the state and some of the highest in the Midwest. This is because of the Granite City Works. On a list prepared by the American Lung Association, which is on its web site, Granite City is the tenth most polluted in particle pollution.

The ambient monitoring stations operated by the Illinois EPA in downtown Granite City near the Granite City Works do measure the highest levels of $PM_{2.5}$ in the state. These monitors are specifically sited to address the impact of the Granite City Works on particulate matter air quality. Illinois and USEPA are legally required by the federal Clean Air Act to ensure that air quality for $PM_{2.5}$ improves so that the air quality measured at these monitors complies with the NAAQS for $PM_{2.5}$.

36. US Steel's Granite City Works is responsible for the entire St. Louis region not meeting the NAAQS for $PM_{2.5}$.

This is not correct. While the Granite City Works may have a critical role on $PM_{2.5}$ air quality in Granite City, $PM_{2.5}$ air quality across the Greater Metropolitan St. Louis area is the combined result of the emissions of many sources, which share responsibility for the area violating air quality standards and being nonattainment. This is also the situation for air quality in Granite City, which is affected by the regional levels of air quality that exist in the St. Louis area. In this regard, there have been significant improvements in recent years in the $PM_{2.5}$ air quality measured on an annual basis in Granite City due to improvements in the regional air quality in the St. Louis area.

37. Why did the Illinois EPA hold a separate public hearing for the proposed cogeneration boiler project, instead of combining it with the public hearing for the coke oven plant project proposed by Gateway Energy?

The Illinois EPA held two public hearings because it was believed that it would help distinguish and differentiate between the two projects. In particular, the nature of the projects is different as the cogeneration boiler project would replace existing boilers, whereas the coke plant project would increase the source's capacity for production of coke. There are also significant differences in the regulatory requirements that apply to the projects, with the cogeneration boiler project not being a major project under NA NSR and PSD and the coke oven plant project being major for emissions of particulate matter.

38. It was not clear at which public hearing people could comment on which project. Also, since some people could not come both nights, is there some way that the Illinois EPA could just take the transcript of this hearing for the cogeneration boiler project and also apply it to tomorrow night's hearing for the proposed coke plant?

The subject of each hearing was clearly identified. Oral comments made at the hearing for the cogeneration boiler project will only be entered into the record for this project. A person who could only attend one hearing (or could not attend either hearing) could provide their comments in writing. Written comments submitted have just as much weight as oral comments made during a public hearing.

39. Can people get answers to their questions that were not answered at the hearing in time so that they can consider those answers in preparing their written comment?

The Illinois EPA responds to questions and comments made during the comment period in the responsiveness summary issued at the time a permit decision is made after the close of the comment period. If there are unanswered questions that a person wants an answer to for the formulation of their comments, that person should contact the Illinois EPA contact listed in the notice prior to the end of the comment period to see whether the desired information can be made available sooner.

40. At the public hearing, the Hearing Officer indicated that US Steel would be submitting written answers during the public comment period to the questions asked at the hearing. Will people have an opportunity to obtain a copy of the US Steel's answers and review them during the comment period?

US Steel did not choose to respond to any of the comments or questions made at the public hearing. As a legal matter, US Steel is not required to provide answers to the questions asked by the public during the hearing. If US Steel had responded, its responses would have been part of the public record and a copy could have been obtained from the Illinois EPA with a request under the Freedom of Information Act.

General Comments

1. With the new modern facility operating in compliance with environmental protection laws and the new standards for fine particulates that are being developed, my family and the workers at the Granite City Works should be healthier, US Steel will be healthier, and Granite City should prosper.

2. The existing boilers go back to the 1920s. These boilers have reached the end of their useful life and it is essential that they're replaced with a modern system, not only to continue the production of iron at the blast furnaces but also for the safety of the workers.

3. Granite City officials are looking forward to the rebuild of McKinley Bridge to bring new residents and economic growth to the city but people do not want to live and businesses do not want to relocate to one of the most polluted cities in the Midwest.

4. The Granite City Works has been an integral part of the Granite City community for over 100 years. Without the mill, the area would certainly suffer economically.

5. This project is important to keep the Granite City Works viable steel making facility.

6. US Steel needs the electric power that this project is going to generate.

For Additional Information

Questions about the public comment period and permit decision should be directed to

Bradley Frost, Community Relations Coordinator
Illinois Environmental Protection Agency
Office of Community Relations
1021 North Grand Avenue, East
P. O. Box 19506
Springfield, Illinois 62794-9506

217-782-7027 Desk Line
217-782-9143 TDD
217-524-5023 Facsimile

brad.frost@illinois.gov

LISTING OF SIGNIFICANT CHANGES BETWEEN THE DRAFT PERMIT AND THE ISSUED PERMIT

Condition 2.2.1: This condition, which addresses applicability of NA NSR and PSD for the proposed cogeneration boiler facility, has been expanded to explain the approach taken to address applicability of NA NSR for emissions of $PM_{2.5}$ and the implications for the condition of the permit.

Condition 2.6(a): This condition, which addresses emission decreases that were addressed in a construction permit for Emission Reduction Projects (Construction Permit 06070022), has been expanded to specifically require shut down of existing Boilers 1 through 10 and assure that the associated emissions decreases occur in a timely manner so that the proposed facility is not a major project.

Condition 3.1.5(a): Requirements related to control of particulate matter emissions are corrected to address only filterable particulate, rather than total particulate, so as to be consistent with the underlying information in the application.

Condition 3.1.5(c): A condition is added to require the operation of the proposed facility to operate as a cogeneration facility for the benefit of US Steel's Granite City Works, as the project is described in the application, rather than as a facility whose main purpose is to generate electricity to be put on the power grid and sold.

Condition 3.1.6(b): Limits for emissions of hazardous air pollutants (HAPs) (i.e., limits for HAP metals and total HAPs) are added for the cogeneration boiler and flare to better assure that these two units, by themselves, are not major for emissions of HAPs.

Condition 3.1.7: Provisions are added to this condition, which addresses emission testing of the cogeneration boiler, to also require testing for emissions of volatile organic material (VOM), as the boiler will emit VOM and limits on VOM emissions are being used to address emissions of organic HAPs.

Condition 3.1.7(b): Provisions are added to address testing of emissions of HAP metals from the cogeneration boiler if the Permittee chooses to directly test such emissions rather determine such emissions from data for PM emissions and the composition of the particulate matter in blast furnace gas (BFG).

Condition 3.1.8-2: Conditions are added requiring sampling and analysis of BFG and the material collected by the BFG pretreatment system to address requirements limiting the loading of particulate in cleaned BFG and the emission of HAP metals from the burning of BFG and to support the determination of SO_2 emissions from the proposed facility.

Attachment 1: Corrections made to the summary of emissions and netting for this proposed facility to show that this project is not major for particulate matter. Other clarifying changes were also made to this Attachment.

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

March 2, 2015

Mr. Ray Pilapil
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794

VIA HAND DELIVERY

RE: U.S. Steel - Granite City Works, Granite City, Ill
Facility ID No. 119813AAI
Increase in Natural Gas Usage due to Coke Plant Shutdown

Dear Mr. Pilapil,

U. S. Steel Granite City Works intends to shut down Coke Oven Batteries A and B, and associated equipment as identified in CAAPP Permit No. 96030056 Sections 7.2 and 7.3. Shutdown is expected on March 2, 2015. This will significantly reduce emissions from the Granite City Works as shown in emission calculations. However, it will require an increase in the usage of natural gas to make up for the elimination of Coke Oven Gas (COG) as a fuel for the facility.

For the following emission units the future natural gas usage will potentially exceed the monthly and annual limit in the CAAPP Permit (Condition 5.6.2.a.ii.A):

- Blast Furnace Stoves A and B
- Boilers #11 and #12
- Ladle Drying Preheaters
- Blast Furnace Gas (BFG) Flare #1

The monthly and annual usage limits for these emission units need to be adjusted as follows:

- 225 million ft^3 per month increased to 370 million ft^3 per month
- 1,346 million ft^3 per year increased to 3,450 million ft^3 per year

As shown in the attached application, the shutdown of the batteries and associated increase in natural gas usage will result in a net decrease in Nitrogen Oxide (NOx) emissions from the Granite City Works. For other pollutants there will also be overall decreases in emissions but it is not likely necessary to rely on "netting".

Please find the following items enclosed in this application:

1. 199-CAAP form
2. 197-fee determination form
3. Check for $8,000
4. Emission Calculations – to be submitted separately

U. S. Steel appreciates the agency's attention to this matter. If you have any questions or require any additional information, please contact Victoria Morton at VLMorton@uss.com or by phone at 412-433-5915 or contact Bryan Kresak at BMKresak@uss.com or by phone at 618-451-3391.

Sincerely,

Richard Veitch

Richard Veitch
General Manager
Granite City Works
United States Steel Corporation

Enclosures

cc: Mr. Chris Romaine
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1848

Mr. Minesh Patel
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1855

Illinois Environmental Protection Agency
Division Of Air Pollution Control – Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.:
	Appl. No.:
	Date Rec'd:
	Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
U. S. Steel Granite City Works Coke Battery Shutdown

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 1 1 9 8 1 3 A A I

3. Does this application request a revision to an existing construction permit issued by the BOA?
☒ No ☐ Yes If Yes, provide Permit Number: _ _ _ _ _ _ _ _ _ _

4. Brief Description of Proposed Project:
Increase in natural gas usage to be used in lieu of coke oven gas due to Coke Plant shutdown (Coke Oven Batteries A and B) that results in a net emissions decrease.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☒ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: 3 3 1 2 or NAICS: _ _ _ _ _ _
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☐ Owner ☒ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Bryan Kresak/Environmental Director

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: United States Steel Corporation		
2. Address: 600 Grant Street		
3. City: Pittsburgh	4. State: PA	5. Zip code: 15216

* Is this information idifferent than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name United States Steel Corporation - Granite City Works		
2. Address: 1951 State Street		
3. City: Granite City	4. State: IL	5. Zip code: 62040

* Is this information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☒ Applicant's contact ☐ Consultant	
2. Applicant's technical contact person for application: Victoria Morton/Environmental Engineer	
3. Contact person's telephone number(s) (412) 433-5915	4. Contact person's e-mail address: vlmorton@uss.com
5. Consultant for application: None	
6. Consultant's telephone number(s): N/A	7. Consultant's e-mail address: N/A

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.	
1. Address for billing Site Fees for the source: ☒ Source ☐ Other (provide below):	
2. Contact person for Site Fees: Bryan Kresak	3. Contact person's telephone number: (618) 451-3391
4. Address for Annual Emission Report for the source: ☒ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report: Bryan Kresak	6. Contact person's telephone number: (618) 451-3391

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☐ Yes ☒ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☐ Yes ☐ No ☒ N/A* * Source not major ☐ Project not major ☒
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: Richard Veitch
AUTHORIZED SIGNATURE

General Manager
TITLE OF SIGNATORY

Richard Veitch
TYPED OR PRINTED NAME OF SIGNATORY

3 2 15
DATE

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: _____ Permit #: _____

☐ Complete ☐ Incomplete Date Complete: _____

Check Number: _____ Account Name: _____

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: Coke Battery Shutdown
3. Source ID #: (if applicable) 119813AAI
4. Contact Name: Bryan Kresak
5. Contact Phone #: (618) 451-3391

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $8,000.00 = $8,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

$0.00
Section 1 Subtotal

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee.** If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

Addition or replacement of control devices on permitted units.
Pilot projects/trial burns by a permitted unit
Land remediation projects $0.00
Revisions related to methodology or timing for emission testing
Minor administrative-type change to a permit

Section 3: Fees for Current or Projected Non-Major Sources

9.	This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)	9.
10.	This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)	10.
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 7 x $1,000.	15. $7,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 1 x $3,000.	20. $3,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23.
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	25. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. _____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $8,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: Richard Veitch — Signature

General Manager — Title of Signatory

Richard Veitch — Typed or Printed Name of Signatory

3/2/15 — Date

R000594

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

March 2, 2015

Mr. Ray Pilapil
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794

VIA HAND DELIVERY

RECEIVED
STATE OF ILLINOIS
MAR 09 2015
Environmental Protection Agency
BUREAU OF AIR

RE: U.S. Steel - Granite City Works, Granite City, Ill
Facility ID No. 119813AAI
Increase in Natural Gas Usage due to Coke Plant Shutdown

Dear Mr. Pilapil,

U. S. Steel Granite City Works intends to shut down Coke Oven Batteries A and B, and associated equipment as identified in CAAPP Permit No. 96030056 Sections 7.2 and 7.3. Shutdown is expected on March 2, 2015. This will significantly reduce emissions from the Granite City Works as shown in emission calculations. However, it will require an increase in the usage of natural gas to make up for the elimination of Coke Oven Gas (COG) as a fuel for the facility.

For the following emission units the future natural gas usage will potentially exceed the monthly and annual limit in the CAAPP Permit (Condition 5.6.2.a.ii.A):

IEPA - DIVISION OF AIR POLLUTION CONTROL
RECEIVED
JUN 16 2015
REVIEWER JPH

- Blast Furnace Stoves A and B
- Boilers #11 and #12
- Ladle Drying Preheaters
- Blast Furnace Gas (BFG) Flare #1

The monthly and annual usage limits for these emission units need to be adjusted as follows:

- 225 million ft^3 per month increased to 370 million ft^3 per month
- 1,346 million ft^3 per year increased to 3,450 million ft^3 per year

As shown in the attached application, the shutdown of the batteries and associated increase in natural gas usage will result in a net decrease in Nitrogen Oxide (NOx) emissions from the Granite City Works. For other pollutants there will also be overall decreases in emissions but it is not likely necessary to rely on "netting".

Please find the following items enclosed in this application:

1. 199-CAAP form
2. 197-fee determination form
3. Check for $8,000
4. Emission Calculations – to be submitted separately

U. S. Steel appreciates the agency's attention to this matter. If you have any questions or require any additional information, please contact Victoria Morton at VLMorton@uss.com or by phone at 412-433-5915 or contact Bryan Kresak at BMKresak@uss.com or by phone at 618-451-3391.

Sincerely,

Richard Veitch

Richard Veitch
General Manager
Granite City Works
United States Steel Corporation

Enclosures

cc: Mr. Chris Romaine
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1848

Mr. Minesh Patel
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1855

Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

R000596

Construction Permit Application for a Proposed Project at a CAAPP Source

For Illinois EPA use only
ID No.:
Appl. No.:
Date Rec'd:
Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
U. S. Steel Granite City Works Coke Battery Shutdown

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 1 1 9 8 1 3 A A 1

3. Does this application request a revision to an existing construction permit issued by the BOA?
☒ No ☐ Yes If Yes, provide Permit Number: _ _ _ _ _ _ _ _ _

4. Brief Description of Proposed Project:
Increase in natural gas usage to be used in lieu of coke oven gas due to Coke Plant shutdown (Coke Oven Batteries A and B) that results in a net emissions decrease.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☒ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: 3 3 1 2 or NAICS: _ _ _ _ _ _
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☐ Owner ☒ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Bryan Kresak/Environmental Director

RECEIVED
STATE OF ILLINOIS
MAR 09 2015
Environmental Protection Agency
BUREAU OF AIR

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: United States Steel Corporation		
2. Address: 600 Grant Street		
3. City: Pittsburgh	4. State: PA	5. Zip code: 15216

* Is this information idifferent than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name United States Steel Corporation - Granite City Works		
2. Address: 1951 State Street		
3. City: Granite City	4. State: IL	5. Zip code: 62040

* Is this information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☒ Applicant's contact ☐ Consultant	
2. Applicant's technical contact person for application: Victoria Morton/Environmental Engineer	
3. Contact person's telephone number(s) (412) 433-5915	4. Contact person's e-mail address: vlmorton@uss.com
5. Consultant for application: None	
6. Consultant's telephone number(s): N/A	7. Consultant's e-mail address: N/A

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.	
1. Address for billing Site Fees for the source: ☒ Source ☐ Other (provide below):	
2. Contact person for Site Fees: Bryan Kresak	3. Contact person's telephone number: (618) 451-3391
4. Address for Annual Emission Report for the source: ☒ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report: Bryan Kresak	6. Contact person's telephone number: (618) 451-3391

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☐ Yes ☒ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☐ Yes ☐ No ☒ N/A* * Source not major ☐ Project not major ☒
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: Richard Veitch
AUTHORIZED SIGNATURE

General Manager
TITLE OF SIGNATORY

Richard Veitch
TYPED OR PRINTED NAME OF SIGNATORY

3 2 15
DATE

R000600

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: 119813AAI Permit #: 15030001

☑ Complete ☐ Incomplete Date Complete: 4-20-15

Check Number: 06201127769 Account Name: U.S. STEEL CORP.

Rec'd. $3,000

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: Coke Battery Shutdown
3. Source ID #: (if applicable) 119813AAI
4. Contact Name: Bryan Kresak
5. Contact Phone #: (618) 451-3391

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $8,000.00 = $8,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

RECEIVED STATE OF ILLINOIS MAR 09 2015 Environmental Protection Agency BUREAU OF AIR

$0.00 Section 1 Subtotal

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee**. If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

Addition or replacement of control devices on permitted units.

Pilot projects/trial burns by a permitted unit

Land remediation projects $0.00

Revisions related to methodology or timing for emission testing

Minor administrative-type change to a permit

RECEIVED STATE OF ILLINOIS APR 20 2015 Environmental Protection Agency BUREAU OF AIR

Section 3: Fees for Current or Projected Non-Major Sources

9.	This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)	9.
10.	This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)	10.
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 7 x $1,000.	15. $7,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 1 x $3,000.	20. $3,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23.
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	25. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. _____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $8,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

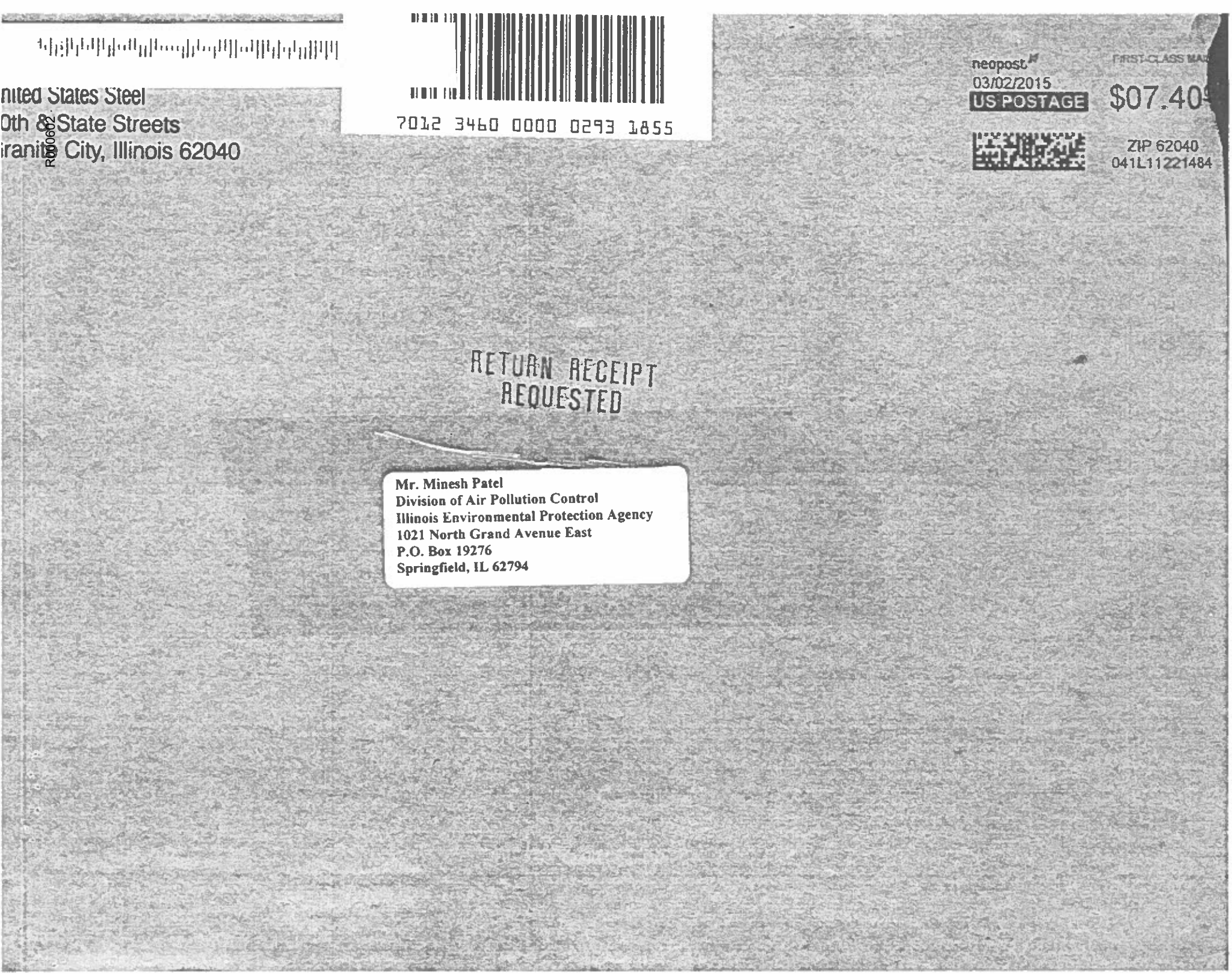
29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: Richard Veitch — Signature

General Manager — Title of Signatory

Richard Veitch — Typed or Printed Name of Signatory

3/2/15 — Date



nited States Steel
0th & State Streets
iranite City, Illinois 62040

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7012 3460 0000 0293 1855

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03/02/2015
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$07.40
ZIP 62040
041L11221484

RETURN RECEIPT
REQUESTED

Mr. Minesh Patel
Division of Air Pollution Control
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794

R000603

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: 119813AAI
Permit #: 15030001
☒ Complete ☐ Incomplete
Date Complete: 3-2-15
Check Number: 62012910
Account Name: U.S. STEEL CORP.

Rec'd. $8,000.

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

MAR 02 2015

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: Coke Battery Shutdown
3. Source ID #: (if applicable) 119813AAI
4. Contact Name: Bryan Kresak
5. Contact Phone #: (618) 451-3391

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $8,000.00 = $8,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

RECEIVED STATE OF ILLINOIS APR 20 2015 Environmental Protection BUREAU OF AIR

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

$0.00 Section 1 Subtotal

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee**. If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

Addition or replacement of control devices on permitted units.
Pilot projects/trial burns by a permitted unit
Land remediation projects $0.00
Revisions related to methodology or timing for emission testing
Minor administrative-type change to a permit

Section 3: Fees for Current or Projected Non-Major Sources

9.	This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)	9.
10.	This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)	10.
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 7 x $1,000.	15. $7,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 1 x $3,000.	20. $3,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23.
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	25. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. ____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $8,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: Richard Veitch — Signature

General Manager — Title of Signatory

Richard Veitch — Typed or Printed Name of Signatory

3/2/15 — Date

RECEIVED
STATE OF ILLINOIS
APR 20 2015
Environmental Protection Agency
BUREAU OF AIR

Chris,

The check for the balance of the Coke plant Shutdown Permit Application is attached.

Thanks.

Bryan

Granite City Works
United States Steel
20th & State Streets
Granite City, Illinois 62040

7012 3460 0000 0293 1992

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$06.48⁰

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Mr. Chris Romaine
Division of Air Pollution Control
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794

62794927676

R000606

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

R000607

March 2, 2015

Mr. Ray Pilapil
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794

MAR 0 5 2015

VIA HAND DELIVERY

RE: U.S. Steel - Granite City Works, Granite City, Ill
Facility ID No. 119813AAI
Increase in Natural Gas Usage due to Coke Plant Shutdown

Dear Mr. Pilapil,

U. S. Steel Granite City Works intends to shut down Coke Oven Batteries A and B, and associated equipment as identified in CAAPP Permit No. 96030056 Sections 7.2 and 7.3. Shutdown is expected on March 2, 2015. This will significantly reduce emissions from the Granite City Works as shown in emission calculations. However, it will require an increase in the usage of natural gas to make up for the elimination of Coke Oven Gas (COG) as a fuel for the facility.

For the following emission units the future natural gas usage will potentially exceed the monthly and annual limit in the CAAPP Permit (Condition 5.6.2.a.ii.A):

- Blast Furnace Stoves A and B
- Boilers #11 and #12
- Ladle Drying Preheaters
- Blast Furnace Gas (BFG) Flare #1

The monthly and annual usage limits for these emission units need to be adjusted as follows:

- 225 million ft^3 per month increased to 370 million ft^3 per month
- 1,346 million ft^3 per year increased to 3,450 million ft^3 per year

As shown in the attached application, the shutdown of the batteries and associated increase in natural gas usage will result in a net decrease in Nitrogen Oxide (NOx) emissions from the Granite City Works. For other pollutants there will also be overall decreases in emissions but it is not likely necessary to rely on "netting".

Please find the following items enclosed in this application:

1. 199-CAAP form
2. 197-fee determination form
3. Check for $8,000
4. Emission Calculations – to be submitted separately

U. S. Steel appreciates the agency's attention to this matter. If you have any questions or require any additional information, please contact Victoria Morton at VLMorton@uss.com or by phone at 412-433-5915 or contact Bryan Kresak at BMKresak@uss.com or by phone at 618-451-3391.

Sincerely,

Richard Veitch

Richard Veitch
General Manager
Granite City Works
United States Steel Corporation

Enclosures

cc: Mr. Chris Romaine
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1848

Mr. Minesh Patel
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1855

Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

R000609

Construction Permit Application for a Proposed Project at a CAAPP Source

For Illinois EPA use only
ID No.:
Appl. No.:
Date Rec'd:
Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
U. S. Steel Granite City Works Coke Battery Shutdown

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 1 1 9 8 1 3 A A I

3. Does this application request a revision to an existing construction permit issued by the BOA?
☒ No ☐ Yes If Yes, provide Permit Number: _ _ _ _ _ _ _ _ _ _

4. Brief Description of Proposed Project:
Increase in natural gas usage to be used in lieu of coke oven gas due to Coke Plant shutdown (Coke Oven Batteries A and B) that results in a net emissions decrease.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☒ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: 3 3 1 2 or NAICS: _ _ _ _ _ _
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☐ Owner ☒ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Bryan Kresak/Environmental Director

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: United States Steel Corporation		
2. Address: 600 Grant Street		
3. City: Pittsburgh	4. State: PA	5. Zip code: 15216

* Is this information idifferent than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name United States Steel Corporation - Granite City Works		
2. Address: 1951 State Street		
3. City: Granite City	4. State: IL	5. Zip code: 62040

* Is this information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☒ Applicant's contact ☐ Consultant	
2. Applicant's technical contact person for application: Victoria Morton/Environmental Engineer	
3. Contact person's telephone number(s) (412) 433-5915	4. Contact person's e-mail address: vlmorton@uss.com
5. Consultant for application: None	
6. Consultant's telephone number(s): N/A	7. Consultant's e-mail address: N/A

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.	
1. Address for billing Site Fees for the source: ☒ Source ☐ Other (provide below):	
2. Contact person for Site Fees: Bryan Kresak	3. Contact person's telephone number: (618) 451-3391
4. Address for Annual Emission Report for the source: ☒ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report: Bryan Kresak	6. Contact person's telephone number: (618) 451-3391

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☐ Yes ☒ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☐ Yes ☐ No ☒ N/A* * Source not major ☐ Project not major ☒
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: Richard Veitch
AUTHORIZED SIGNATURE

General Manager
TITLE OF SIGNATORY

Richard Veitch
TYPED OR PRINTED NAME OF SIGNATORY

3 2 15
DATE

Illinois Environmental Protection Agency

R000613

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: _____ Permit #: _____

☐ Complete ☐ Incomplete Date Complete: _____

Check Number: _____ Account Name: _____

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: Coke Battery Shutdown
3. Source ID #: (if applicable) 119813AAI
4. Contact Name: Bryan Kresak
5. Contact Phone #: (618) 451-3391

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $8,000.00 = $8,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

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☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

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$0.00 Section 1 Subtotal

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Pilot projects/trial burns by a permitted unit

Land remediation projects $0.00

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Minor administrative-type change to a permit

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11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 7 x $1,000.	15. $7,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 1 x $3,000.	20. $3,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23.
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	25. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. ____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $8,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: Richard Veitch — Signature

General Manager — Title of Signatory

Richard Veitch — Typed or Printed Name of Signatory

3/2/15 — Date

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

119813AAI
15030001

Hand delivered 3/2/15

March 2, 2015

Mr. Ray Pilapil
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794

VIA HAND DELIVERY

RE: U.S. Steel - Granite City Works, Granite City, Ill
Facility ID No. 119813AAI
Increase in Natural Gas Usage due to Coke Plant Shutdown

Dear Mr. Pilapil,

U. S. Steel Granite City Works intends to shut down Coke Oven Batteries A and B, and associated equipment as identified in CAAPP Permit No. 96030056 Sections 7.2 and 7.3. Shutdown is expected on March 2, 2015. This will significantly reduce emissions from the Granite City Works as shown in emission calculations. However, it will require an increase in the usage of natural gas to make up for the elimination of Coke Oven Gas (COG) as a fuel for the facility.

For the following emission units the future natural gas usage will potentially exceed the monthly and annual limit in the CAAPP Permit (Condition 5.6.2.a.ii.A):

- Blast Furnace Stoves A and B
- Boilers #11 and #12
- Ladle Drying Preheaters
- Blast Furnace Gas (BFG) Flare #1

The monthly and annual usage limits for these emission units need to be adjusted as follows:

- 225 million ft^3 per month increased to 370 million ft^3 per month
- 1,346 million ft^3 per year increased to 3,450 million ft^3 per year

As shown in the attached application, the shutdown of the batteries and associated increase in natural gas usage will result in a net decrease in Nitrogen Oxide (NOx) emissions from the Granite City Works. For other pollutants there will also be overall decreases in emissions but it is not likely necessary to rely on "netting".

Please find the following items enclosed in this application:

1. 199-CAAP form
2. 197-fee determination form
3. Check for $8,000
4. Emission Calculations – to be submitted separately

U. S. Steel appreciates the agency's attention to this matter. If you have any questions or require any additional information, please contact Victoria Morton at VLMorton@uss.com or by phone at 412-433-5915 or contact Bryan Kresak at BMKresak@uss.com or by phone at 618-451-3391.

Sincerely,

Richard Veitch
General Manager
Granite City Works
United States Steel Corporation

Enclosures

cc: Mr. Chris Romaine
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1848

Mr. Minesh Patel
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1855

Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.: 119813AAI
	Appl. No.: 15030001
	Date Rec'd: 3-9-15
	Chk No./Amt: 62012 1910 $6,000

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
U. S. Steel Granite City Works Coke Battery Shutdown

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 1 1 9 8 1 3 A A I

3. Does this application request a revision to an existing construction permit issued by the BOA?
☒ No ☐ Yes If Yes, provide Permit Number: _ _ _ _ _ _ _ _ _ _

4. Brief Description of Proposed Project:
Increase in natural gas usage to be used in lieu of coke oven gas due to Coke Plant shutdown (Coke Oven Batteries A and B) that results in a net emissions decrease.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☒ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: 3 3 1 2 or NAICS: _ _ _ _ _ _
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☐ Owner ☒ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Bryan Kresak/Environmental Director

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: United States Steel Corporation		
2. Address: 600 Grant Street		
3. City: Pittsburgh	4. State: PA	5. Zip code: 15216

* Is this information idifferent than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name United States Steel Corporation - Granite City Works		
2. Address: 1951 State Street		
3. City: Granite City	4. State: IL	5. Zip code: 62040

* Is this information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☒ Applicant's contact ☐ Consultant	
2. Applicant's technical contact person for application: Victoria Morton/Environmental Engineer	
3. Contact person's telephone number(s) (412) 433-5915	4. Contact person's e-mail address: vlmorton@uss.com
5. Consultant for application: None	
6. Consultant's telephone number(s): N/A	7. Consultant's e-mail address: N/A

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.	
1. Address for billing Site Fees for the source: ☒ Source ☐ Other (provide below):	
2. Contact person for Site Fees: Bryan Kresak	3. Contact person's telephone number: (618) 451-3391
4. Address for Annual Emission Report for the source: ☒ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report: Bryan Kresak	6. Contact person's telephone number: (618) 451-3391

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☐ Yes ☒ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☐ Yes ☐ No ☒ N/A* * Source not major ☐ Project not major ☒
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: Richard Veitch
AUTHORIZED SIGNATURE

General Manager
TITLE OF SIGNATORY

Richard Veitch
TYPED OR PRINTED NAME OF SIGNATORY

3 2 15
DATE

R000621

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

March 27, 2015

Mr. Ray Pilapil
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794

CERTIFIED MAIL NO: 7012 3460 0000 0293 0551

RE: U.S. Steel - Granite City Works, Granite City, IL
Facility ID No. 119813AAI
Supplemental Submittal for March 2, 2015 Coke Battery Shutdown Application

Dear Mr. Pilapil,

U. S. Steel Granite City Works notified the agency of its intention to shut down Coke Oven Batteries A and B and associated equipment on March 2, 2015. This will significantly reduce emissions from the Granite City Works as shown in the attached emission calculations. However, shutting the batteries down will require an increase in the usage of natural gas to compensate for the elimination of Coke Oven Gas (COG) as a fuel for the facility.

For the following emission units the future natural gas usage will potentially exceed the monthly and annual limit in the CAAPP Permit (Condition 5.6.2.a.ii.A):

- Blast Furnace Stoves A and B
- Boilers #11 and #12
- Ladle Drying Preheaters and
- Blast Furnace Gas (BFG) Flare #1

MAR 30 2015

As requested in the March 2, 2015 application, the monthly and annual usage limits in CAAPP Permit (Condition 5.6.2.a.ii.A) need to be adjusted as follows:

- 225 million ft^3 per month increased to 370 million ft^3 per month
- 1,346 million ft^3 per year increased to 3,450 million ft^3 per year

As shown in the attached emissions calculations, the shutdown of the batteries and associated increase in natural gas usage will result in an overall decrease of emissions. Particulate Matter 2.5 (PM2.5) and Nitrogen Oxide (NOx) from the Granite City Works relied on "netting" to also demonstrate a decrease in their emissions.

In addition to the natural gas usage change required due to battery shutdown, Granite City Works is submitting a separate application for the proposed Coke Unloading and Screening Project to allow additional coke delivery and screening. This coke supply will replace the coke formerly supplied by Granite City Works' A and B Batteries and supplement coke produced by Sun Coke. Project emission calculations are accounted for in the Project Emissions total of the attached emission calculations.

Granite City Works is planning on temporarily idling the facility which will have implications for stack testing and reporting requirements as testing will not be able to be performed when the facility is not operating.

Please find the following items enclosed in this supplemental submittal to March 2, 2015 application:

1. Revised 197-fee determination form
2. Check for $3,000
3. Emission Calculations
4. Copy of March 2, 2015 Application

U. S. Steel appreciates the agency's attention to this matter. If you have any questions or require any additional information, please contact Victoria Morton at VLMorton@uss.com or by phone at 412-433-5915 or me at BMKresak@uss.com or by phone at 618-451-3391.

Sincerely,

Bryan Kresak
Director – Environmental Granite City Works
United States Steel Corporation

Enclosures

cc: Mr. Chris Romaine
Manager of Permit Section
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 3460 0000 0293 1381

Mr. Minesh Patel
Division of Air Pollution Control
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794
CERTIFIED MAIL NO: 7012 1640 0002 4002 8560

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: _____ Permit #: _____

☐ Complete ☐ Incomplete Date Complete: _____

Check Number: _____ Account Name: _____

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: Coke Battery Shutdown
3. Source ID #: (if applicable) 119813AAI
4. Contact Name: Bryan Kresak
5. Contact Phone #: (618) 451-3391

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $11,000.00 = $11,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

$0.00
Section 1 Subtotal

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee**. If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

Addition or replacement of control devices on permitted units.
Pilot projects/trial burns by a permitted unit
Land remediation projects $0.00
Revisions related to methodology or timing for emission testing
Minor administrative-type change to a permit

Section 3: Fees for Current or Projected Non-Major Sources

R000624

9.	This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)	9.
10.	This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)	10.
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 7 x $1,000.	15. $7,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 2 x $3,000.	20. $6,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23.
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	25. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. ____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $11,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: Richard Veitch
Signature

General Manager
Title of Signatory

Richard Veitch
Typed or Printed Name of Signatory

3/25/15
Date

Project Related Emissions Summary

Pollutant	TPY
PM	-132.93
PM10	-62.56
PM2.5 [1]	-43.00
NOx [1]	-28.99
SO2	-293.82
VOM	-135.40
CO	-300.55
Lead	0.00
CO2e	50,034.35

[1] PM2.5 and NOx values include contemporaneous increases and decreases.

Baseline Emissions Calculations - Natural Gas Usage Units

Hot Strip Mill Fuel Usage - Baseline

	Slab Reheat Furnace #1		Slab Reheat Furnace #2		Slab Reheat Furnace #3		Slab Reheat Furnace #4	
Month-Year	Coke Oven Gas [MMBTU]	Natural Gas [MMBTU]	Coke Oven Gas [MMBTU]	Natural Gas [MMBTU]	Coke Oven Gas [MMBTU]	Natural Gas [MMBTU]	Coke Oven Gas [MMBTU]	Natural Gas [MMBTU]
Jan-13	16,121	109,424	8,162	72,329	24,968	86,566	12,100	131,661
Feb-13	7,999	115,556	22,985	100,057	4,261	60,194	13,619	116,769
Mar-13	7,934	144,391	16,732	94,026	2,283	147,708	0	42,354
Apr-13	0	57,717	1,729	84,019	2,522	116,880	1,897	106,139
May-13	3,920	130,124	12,192	65,748	7,402	130,029	12,971	104,343
Jun-13	9,888	126,976	41,385	91,569	150	82,486	18,423	59,208
Jul-13	2,085	120,595	38,471	85,960	0	117,659	0	0
Aug-13	0	96,126	36,356	106,307	5,353	131,764	6,101	73,272
Sep-13	0	121,888	12,075	55,577	11,369	116,871	5,722	114,305
Oct-13	5,576	92,602	11,190	80,530	9,867	86,905	8	17,946
Nov-13	5,879	132,588	16,771	118,503	1,995	105,550	25,400	141,146
Dec-13	12,752	118,620	19,341	98,531	9,088	118,458	2,581	8,034
Jan-14	2,818	77,670	34,727	120,921	15,473	96,513	0	70,944
Feb-14	5,543	85,409	1,903	48,690	20,326	92,767	0	61,939
Mar-14	3,535	123,595	30,474	96,395	8,031	80,818	0	89,924
Apr-14	0	127,871	36,752	91,394	12,802	102,918	868	35,734
May-14	0	76,666	28,243	102,859	3,796	111,547	5,665	111,268
Jun-14	0	127,030	7,510	67,222	3,945	125,953	6,590	80,891
Jul-14	0	122,377	10,552	108,688	1,922	60,719	6,016	80,203
Aug-14	0	126,765	2,255	121,603	81	114,646	0	0
Sep-14	0	55,738	0	122,340	0	104,677	0	79,451
Oct-14	0	97,806	0	97,768	0	82,618	0	0
Nov-14	0	135,484	0	60,743	0	140,301	0	78,324
Dec-14	0	126,451	0	115,418	0	25,185	0	44,099
Total	**84,050**	**2,649,471**	**389,805**	2,207,197	145,634	**2,439,731**	**117,961**	1,647,953
Annual	**42,025**	**1,324,736**	**194,903**	1,103,599	72,817	**1,219,866**	58,981	823,976

Slab Reheat Furnace #1

Slab Reheat Furnace #1 - PSD - Baseline Emission Calculations

	COG				NG			
	555 BTU/CF				1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.94	6.04
PM10	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.94	6.04
PM2.5 (2012)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.94	6.04
NOx	0.072 lb/mmbtu	Stack test 10/19/2012	1.51	0.044 lb/mmbtu	Stack test 1/8/2010	29.14	30.66
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	0.77	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.39	1.16
CO	0.001 lb/mmbtu	Stack test 3/24/10	0.02	0.0097 lb/mmbtu	Stack test 1/8/2010	6.42	6.45
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	1,754.40	59.55 tons/mmcf	40 CFR 98 Subpart C	77,341.19	79,095.59
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.00	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.14	0.15
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.02	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.43	1.45
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	1,756.49	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	77,419.48	79,175.97

Could Have Accomodated 100% NG: 1,366,761 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	Could Have Accommodated TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.09
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.09
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.09
NOx	0.044 lb/mmbtu	Stack test 1/8/2010	30.07
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.40
CO	0.0097 lb/mmbtu	Stack test 1/8/2010	6.63
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	79,794.71
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.15
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.47
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	79,875.48

Slab Reheat Furnace #1 - NA - Baseline Emission Calculations

	COG				NG			
	555 BTU/CF				1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM2.5 (1997)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.94	6.04
NOx (Ozone)	0.072 lb/mmbtu	Stack test 10/19/2012	1.51	0.044 lb/mmbtu	Stack test 1/8/2010	29.14	30.66
VOM	1.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	0.05	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.57	3.62
Lead	-	N/A	-	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00	0.00

R000628

Slab Reheat Furnace #2

Slab Reheat Furnace #2 - PSD - Baseline Emission Calculations

	COG			NG			
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	5.12	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.11	9.23
PM10	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	5.12	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.11	9.23
PM2.5 (2012)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	5.12	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.11	9.23
NOx	0.104 lb/mmbtu	Stack test 10/18/2012	10.13	0.064 lb/mmbtu	Stack test 1/7/2010	35.32	45.45
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	3.59	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.32	3.91
CO	0.001 lb/mmbtu	Stack test 3/23/10	0.10	0.0003 lb/mmbtu	Stack test 1/7/2010	0.17	0.26
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	8,136.53	59.55 tons/mmcf	40 CFR 98 Subpart C	64,430.69	72,567.21
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.02	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.12	0.14
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.11	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.19	1.30
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	8,146.22	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	64,495.91	72,642.13

Could Have Accomodated 100% NG: 1,298,501 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	Could Have Accommodated TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.84
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.84
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.84
NOx	0.064 lb/mmbtu	Stack test 1/7/2010	41.55
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.38
CO	0.0003 lb/mmbtu	Stack test 1/7/2010	0.19
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	75,809.55
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.14
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.40
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	75,886.29

Slab Reheat Furnace #2 - NA - Baseline Emission Calculations

	COG			NG			
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM2.5 (1997)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	5.12	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.11	9.23
NOx (Ozone)	0.104 lb/mmbtu	Stack test 10/18/2012	10.13	0.064 lb/mmbtu	Stack test 1/7/2010	35.32	45.45
VOM	1.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	0.21	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	2.98	3.19
Lead	-	N/A	-	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00	0.00

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Slab Reheat Furnace #3

Slab Reheat Furnace #3 - PSD - Baseline Emission Calculations

	COG			NG			
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.91	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.54	6.46
PM10	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.91	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.54	6.46
PM2.5 (2012)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.91	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.54	6.46
NOx	0.118 lb/mmbtu	Stack test 10/18/2012	4.30	0.068 lb/mmbtu	Stack test 1/6/2010	41.48	45.77
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	1.34	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.36	1.70
CO	0.0013 lb/mmbtu	Stack test 3/23/10	0.05	0.0014 lb/mmbtu	Stack test 1/6/2010	0.85	0.90
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	3,039.87	59.55 tons/mmcf	40 CFR 98 Subpart C	71,218.62	74,258.49
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.01	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.13	0.14
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.04	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.32	1.36
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	3,043.49	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	71,290.71	74,334.20

Could Have Accomodated 100% NG: 1,292,683 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	Could Have Accommodated TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.82
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.82
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.82
NOx	0.068 lb/mmbtu	Stack test 1/6/2010	43.95
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.38
CO	0.0014 lb/mmbtu	Stack test 1/6/2010	0.90
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	75,469.85
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.14
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.39
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	75,546.24

Slab Reheat Furnace #3 - NA - Baseline Emission Calculations

	COG			NG			
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM2.5 (1997)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.91	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.54	6.46
NOx (Ozone)	0.118 lb/mmbtu	Stack test 10/18/2012	4.30	0.068 lb/mmbtu	Stack test 1/6/2010	41.48	45.77
VOM	1.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	0.08	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.29	3.37
Lead	-	N/A	-	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00	0.00

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Slab Reheat Furnace #4

Slab Reheat Furnace #4 - PSD - Baseline Emission Calculations

	COG			NG			
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.55	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.07	4.62
PM10	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.55	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.07	4.62
PM2.5 (2012)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.55	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.07	4.62
NOx	0.125 lb/mmbtu	Stack test 10/31/2012	3.69	59.84 lb/mmcf	Average of Furnace #1-#3 Stack Tests	24.17	27.86
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	1.09	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.24	1.33
CO	0.0312 lb/mmbtu	Stack test 3/25/10	0.92	3.876 lb/mmcf	Average of Furnace #1-#3 Stack Tests	1.57	2.49
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	2,462.24	59.55 tons/mmcf	40 CFR 98 Subpart C	48,105.68	50,567.92
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.01	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.09	0.10
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.03	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.89	0.92
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	2,465.17	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	48,154.38	50,619.55

Could Have Accomodated 100% NG: 882,957 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	Could Have Accommodated TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.29
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.29
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.29
NOx	59.84 lb/mmcf	Average of Furnace #1-#3 Stack Tests	25.90
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.26
CO	3.876 lb/mmcf	Average of Furnace #1-#3 Stack Tests	1.68
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	51,549.10
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.10
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.95
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	51,601.28

Slab Reheat Furnace #4 - NA - Baseline Emission Calculations

	COG			NG			
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM2.5 (1997)	29.14 lb/mmcf	Furnace #4 Stack Test 8/11/2010 (COG and NG mix)	1.55	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.07	4.62
NOx (Ozone)	0.125 lb/mmbtu	Stack test 10/31/2012	3.69	59.84 lb/mmcf	Average of Furnace #1-#3 Stack Tests	24.17	27.86
VOM	1.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	0.06	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	2.22	2.29
Lead	-	N/A	-	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00	0.00

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Boiler #11 Fuel Usage - Baseline

Month-Year	Natural Gas [MMCF]
Jan-13	0.00
Feb-13	0.00
Mar-13	0.00
Apr-13	0.00
May-13	0.09
Jun-13	32.01
Jul-13	29.29
Aug-13	29.11
Sep-13	30.12
Oct-13	13.45
Nov-13	15.51
Dec-13	16.20
Jan-14	18.43
Feb-14	18.38
Mar-14	19.79
Apr-14	22.13
May-14	23.16
Jun-14	44.47
Jul-14	51.83
Aug-14	52.75
Sep-14	63.25
Oct-14	91.68
Nov-14	45.16
Dec-14	73.37
Total	**690.18**
Annual	**345.09**

Boiler #11 - Baseline Emissions Calculations

	NG			
Pollutant	Emission Factor		Reference	TPY
PM	7.6	lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.31
PM10	7.6	lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.31
PM2.5	7.6	lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.31
NOx	46.016	lb/mmcf	Stack test 7/7/2011	7.94
SO2	0.6	lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.10
VOM	5.5	lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.95
CO	11.964	lb/mmcf	Stack test 7/7/2011	2.06
Lead	0.0005	lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00
CO2	59.55	tons/mmcf	40 CFR 98 Subpart C	20,550.11
N2O	0.00011	tons/mmcf	40 CFR 98 Subpart C	0.04
CH4	0.0011	tons/mmcf	40 CFR 98 Subpart C	0.38
CO2e	-		Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	20,570.91

Boiler #12 Fuel Usage - Baseline

Month-Year	Coke Oven Gas [MMCF]	Natural Gas [MMCF]
Jan-13	61.92	16.41
Feb-13	59.26	16.86
Mar-13	65.55	9.73
Apr-13	38.35	41.60
May-13	34.81	43.32
Jun-13	20.28	6.56
Jul-13	88.92	12.72
Aug-13	102.70	10.41
Sep-13	29.56	30.94
Oct-13	74.55	38.45
Nov-13	89.61	27.44
Dec-13	109.29	33.49
Jan-14	109.61	36.16
Feb-14	126.22	24.95
Mar-14	65.97	24.28
Apr-14	30.47	4.80
May-14	103.73	21.69
Jun-14	112.53	18.85
Jul-14	121.33	22.31
Aug-14	26.56	43.16
Sep-14	0.00	47.70
Oct-14	0.00	62.84
Nov-14	0.00	48.13
Dec-14	27.85	57.14
Total	**1499.08**	**699.94**
Annual	**749.54**	**349.97**

Boiler #12 - PSD - Baseline Emission Calculations

	COG			NG			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM	6.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	2.32	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.33	3.65
PM10	4.35 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	1.63	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.33	2.96
PM2.5 (2012)	3.219 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	1.21	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.33	2.54
NOx	80 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	29.98	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	17.50	47.48
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	7.66	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.10	7.77
CO	18.4 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	6.90	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	14.70	21.59
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	17,366.37	59.55 tons/mmcf	40 CFR 98 Subpart C	20,840.71	38,207.08
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.05	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.04	0.09
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.24	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.38	0.62
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	17,387.06	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	20,861.81	38,248.87

Boiler #12 - NA - Baseline Emission Calculations

	COG			NG			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TOTAL TPY
PM2.5 (1997)	3.219 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	1.21	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.33	2.54
NOx (Ozone)	80 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	29.98	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	17.50	47.48
VOM	1.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	0.45	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.96	1.41
Lead	-	N/A	-	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00	0.00

NG 1020.00 btu/cf
BFG 100.00 btu/cf

NOX
34.66% ng 65.34% bfg
0.097 lb/mmbtu 0.3466 NG
995.27 btu/cf 0.6534 BFG
33.4612 lb/mmcf AP-42 NOx
FGR 100.00 lb/mmcf

100.00 lb/mmcf NOx in NG
418.87 mmbtu/mmcf mixed
40.63 lb NOx/mmcf mixed
9.14 lb NOx/mmcf - BFG

CO
34.66% ng 65.34% bfg
0.7196 lb/mmbtu
995.27 btu/cf
248.2336 lb/mmcf

84.00 lb/mmcf CO in NG

AP-42 CO
84.00 lb/mmcf
0.3466 NG
0.6534 BFG

418.87 mmbtu/mmcf mixed
301.42 lb CO/mmcf mixed
416.75 lb CO/mmcf - BFG

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Blast Furnace Stoves A and B - Baseline Emissions Calculations

Blast Furnace Stoves A and B - PSD - Baseline Emission Calculations

	COG		
Pollutant	Emission Factor	Reference	TPY
PM	6.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	4.43
PM10	4.35 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	3.11
PM2.5 (2012)	3.219 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	2.30
NOx	80 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	57.13
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	14.60
CO	18.4 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	13.14
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	33,090.06
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.09
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.45
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A: Table A-1	33,129.48

Could Have Accomodated: 356 MMCF/yr NG
1,072 MMCF/yr COG
1,428 MMCF/yr Total

	COG			NG			Could Have Accommodated
	555 BTU/CF			1020 BTU/CF			
Pollutant	Emission Factor	Reference	TPY	Emission Factor	Reference	TPY	TPY
PM	6.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	3.32	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.35	4.68
PM10	4.35 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	2.33	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.35	3.68
PM2.5 (2012)	3.219 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	1.73	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.35	3.08
NOx	80 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	42.88	280 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	49.84	92.72
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	10.96	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.11	11.06
CO	18.4 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	9.86	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	14.95	24.81
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	24,837.59	59.55 tons/mmcf	40 CFR 98 Subpart C	21,199.80	46,037.39
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.07	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.04	0.11
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.34	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.39	0.73
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A: Table A-1	24,867.17	-	Global Warming Potentials - 40 CFR 98 Subpart A: Table A-1	21,221.26	46,088.43

Blast Furnace Stoves A and B - NA - Baseline Emission Calculations

	COG		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	3.219 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	2.30
NOx (Ozone)	80 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	57.13
VOM	1.2 lb/mmcf	FIRE v6.25 (1-02-007-07) - External combustion boiler COG	0.86
Lead	-	N/A	-

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Blast Furnace Stoves A and B - Baseline

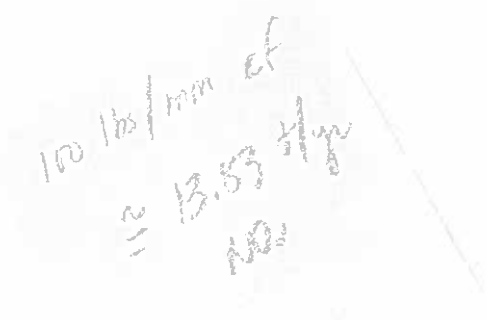
Month-Year	Coke Oven Gas [MMCF]
Jan-13	108.00
Feb-13	110.84
Mar-13	122.29
Apr-13	144.22
May-13	136.36
Jun-13	144.87
Jul-13	119.50
Aug-13	136.40
Sep-13	128.17
Oct-13	93.90
Nov-13	142.67
Dec-13	119.19
Jan-14	141.83
Feb-14	146.50
Mar-14	128.91
Apr-14	126.57
May-14	132.86
Jun-14	163.83
Jul-14	147.42
Aug-14	138.51
Sep-14	163.69
Oct-14	59.83
Nov-14	0.00
Dec-14	0.00
Total	**2,856**
Annual	**1,428**

Ladle Preheaters Fuel Usage - Baseline

Month-Year	Natural Gas [MMBTU]
Jan-13	29,677
Feb-13	29,677
Mar-13	29,677
Apr-13	29,677
May-13	29,677
Jun-13	31,660
Jul-13	27,486
Aug-13	26,817
Sep-13	32,743
Oct-13	29,677
Nov-13	29,677
Dec-13	29,677
Jan-14	16,334
Feb-14	16,334
Mar-14	16,334
Apr-14	16,334
May-14	16,334
Jun-14	16,166
Jul-14	16,757
Aug-14	14,134
Sep-14	18,280
Oct-14	16,334
Nov-14	16,334
Dec-14	16,334
Total	**552,131.00**
Annual	**276,065.50**

Ladle Preheaters - Baseline Emission Calculations

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.03
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.03
PM2.5	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.03
NOx	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	13.53
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.08
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.74
CO	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	11.37
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	16,117.35
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.03
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.30
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	16,133.67



Blast Furnace Flare #1 Fuel Usage - Baseline

Month-Year	Natural Gas [MMBTU]
Jan-13	2,109
Feb-13	1,909
Mar-13	2,103
Apr-13	1,998
May-13	1,958
Jun-13	1,951
Jul-13	2,074
Aug-13	2,018
Sep-13	1,944
Oct-13	2,058
Nov-13	2,028
Dec-13	2,124
Jan-14	2,636
Feb-14	1,932
Mar-14	2,182
Apr-14	1,988
May-14	2,036
Jun-14	1,890
Jul-14	2,026
Aug-14	2,016
Sep-14	1,962
Oct-14	2,059
Nov-14	2,041
Dec-14	2,121
Total	**49,163.00**
Annual	**24,581.50**

Blast Furnace Flare #1 - Baseline Emission Calculations

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.09
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.09
PM2.5	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.09
NOx	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	1.20
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.01
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.07
CO	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	1.01
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	1,435.13
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.00
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.03
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	1,436.58

Potential Emissions Calculations - Natural Gas Usage Units

Hot Strip Mill - Potential Emissions Calculations

Slab Reheat Furnace #1

Slab Reheat Furnace #1 - PSD - Projected Actual Emissions Calculations

Usage 1,600,000 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
NOx	0.044 lb/mmbtu	Stack test 1/8/2010	35.20
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.47
CO	0.0097 lb/mmbtu	Stack test 1/8/2010	7.76
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	93,411.76
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.17
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.73
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	93,506.32

Slab Reheat Furnace #1 - NA - PTE Emissions Calculations

Usage 1,654,304 MMBTU/yr (1)

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	6.16
NOx (Ozone)	0.09 lb/mmbtu	NOx RACT - Title 35 Section 217.244 a	74.44
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.46
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

Slab Reheat Furnace #2

Slab Reheat Furnace #2 - PSD - Projected Actual Emissions Calculations

Usage 1,600,000 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
NOx	0.064 lb/mmbtu	Stack test 1/7/2010	51.20
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.47
CO	0.0003 lb/mmbtu	Stack test 1/7/2010	0.24
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	93,411.76
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.17
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.73
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	93,506.32

Slab Reheat Furnace #2 - NA - PTE Emissions Calculations

Usage 1,654,304 MMBTU/yr (1)

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	6.16
NOx (Ozone)	0.09 lb/mmbtu	NOx RACT - Title 35 Section 217.244 a	74.44
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.46
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

Hot Strip Mill - Potential Emissions Calculations

Slab Reheat Furnace #3

Slab Reheat Furnace #3 - PSD - Projected Actual Emissions Calculations

Usage 1,600,000 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.96
NOx	0.068 lb/mmbtu	Stack test 1/6/2010	54.40
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.47
CO	0.0014 lb/mmbtu	Stack test 1/6/2010	1.12
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	93,411.76
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.17
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.73
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	93,506.32

Slab Reheat Furnace #3 - NA - PTE Emissions Calculations

Usage 1,654,304 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	6.16
NOx (Ozone)	0.09 lb/mmbtu	NOx RACT - Title 35 Section 217.244 a	74.44
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.46
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

Slab Reheat Furnace #4

Slab Reheat Furnace #4 - PSD - Projected Actual Emissions Calculations

Usage 1,400,000 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.22
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.22
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.22
NOx	59.84 lb/mmcf	Average of Furnace #1-#3 Stack Tests	41.07
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.41
CO	3.876 lb/mmcf	Average of Furnace #1-#3 Stack Tests	2.66
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	81,735.29
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.15
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.51
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	81,818.03

Slab Reheat Furnace #4 - NA - PTE Emissions Calculations

Usage 2,206,238 MMBTU/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	8.22
NOx (Ozone)	0.09 lb/mmbtu	NOx RACT - Title 35 Section 217.244 a	99.28
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.95
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

[1] Slab Reheat Furnaces #1 and #2 do not have permitted heat input restrictions nor is it appropriate. Potential annual gas usage for Slab Reheat Furnaces #1 and #2 were estimated as the split difference of remainder of the total allowable heat input for all four furnaces minus the allowance heat input for Slab Reheat Furnaces #3 and #4 (CAAPP Permit Condition 7.7.7.a).

Boiler #11 - Potential Emissions Calculations

Boiler #11 - PSD - Projected Actual Emissions Calculations

Usage 765 MMCF/yr

	NG		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	2.91
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	2.91
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	2.91
NOx	46.016 lb/mmcf	Stack test 7/7/2011	17.60
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.23
CO	11.964 lb/mmcf	Stack test 7/7/2011	4.58
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	45,555.75
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.08
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.84
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	45,601.86

Boiler #11 - NA - PTE Emissions Calculations

Usage 1,932 MMCF/yr [1]

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	7.34
NOx (Ozone)	0.08 lb/mmbtu	NOx RACT - Title 35 Section 217.164 a	78.84
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.31
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

[1] Usage from Description of Boilers 11 and 12 provided in CAAPP Permit section 7.10.1.

Boiler #12 - Potential Emissions Calculations

Boiler #12 - PSD - Projected Actual Emissions Calculations

Usage 900 MMCF/yr

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.42
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.42
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	3.42
NOx	0.08 lb/mmbtu	NOx RACT - Title 35 Section 217.164 a	36.72
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.27
CO	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	37.80
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	53,595.00
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.10
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.99
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	53,649.25

Boiler #12 - NA - PTE Emissions Calculations

Usage 1932 MMCF/yr [1]

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	7.34
NOx (Ozone)	0.08 lb/mmbtu	NOx RACT - Title 35 Section 217.164 a	78.84
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.31
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

[1] Usage from Description of Boilers 11 and 12 provided in CAAPP Permit section 7.10.1.

Blast Furnace Stoves A and B - Potential Emissions Calculations

Blast Furnace Stoves A and B - PSD - Projected Actual Emissions Calculations

Usage 1,465 MMCF/yr

	NG		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.57
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.57
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.57
NOx	280 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	205.10
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.44
CO	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	61.53
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	87,240.75
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.16
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	1.61
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	87,329.06

Blast Furnace Stoves A and B - NA - PTE Emissions Calculations

Usage 1,560 MMCF/yr [1]

	NG		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	5.93
NOx (Ozone)	280 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	218.40
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	4.29
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

[1] Blast Furnace Stoves A and B do not have permitted heat input restrictions nor is it appropriate.

Ladle Preheaters - Potential Emissions Calculations

Ladle Preheaters - PSD - Projected Actual Emissions Calculations

Usage 276,066 MMBTU/yr [1]

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.03
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.03
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.03
NOx	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	13.53
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.08
CO	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	11.37
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	16,117.35
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.03
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.30
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	16,133.67

Ladle Preheaters - NA - PTE Emissions Calculations

Usage 360,000 MMBTU/yr [2]

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	1.34
NOx (Ozone)	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	17.65
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.97
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

[1] Ladle preheaters are not affected by removal of COG from fuel mix. Projected actuals equal to baseline emissions to demonstrate lack of change in emissions from source.
[2] Ladle Preheaters do not have permitted heat input restrictions nor is it appropriate.

Blast Furnace Flare #1 - Potential Emissions Calculations

Blast Furnace Flare #1 - PSD - Projected Actual Emissions Calculations

Usage 24,582 MMBTU/yr [1]

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.09
PM10	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.09
PM2.5 (2012)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.09
NOx	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	1.20
SO2	0.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.01
CO	84 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	1.01
CO2	59.55 tons/mmcf	40 CFR 98 Subpart C	1,435.13
N2O	0.00011 tons/mmcf	40 CFR 98 Subpart C	0.00
CH4	0.0011 tons/mmcf	40 CFR 98 Subpart C	0.03
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	1,436.58

Blast Furnace Flare #1 - NA - PTE Emissions Calculations

Usage 36,000 MMBTU/yr [2]

	NG		
	1020 BTU/CF		
Pollutant	Emission Factor	Reference	TPY
PM2.5 (1997)	7.6 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.13
NOx (Ozone)	100 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-1	1.76
VOM	5.5 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.10
Lead	0.0005 lb/mmcf	AP-42 Chapter 1.4 Table 1.4-2	0.00

[1] Blast Furnace Flare #1 is not affected by removal of COG from fuel mix. Projected actuals equal to baseline emissions to demonstrate lack of change in emissions from source.

[2] Blast Furnace Flare #1 does not have permitted heat input restrictions nor is one appropriate.

Baseline Emissions Calculations - Permanent Shutdown Units

A Battery - Baseline Emissions Calculations - Permanent Shutdown

A Battery Decarbonizing

Pollutant	Emission Factor	Reference	TPY
CO	0.008 lb/ton coal charged	ACCCI Enclosure 5, Table 5-2, Revised 4/30/97	1.01

A Battery Lids and Standpipes/Offtake Leaks/Oven Charging/Oven Doors

Pollutant	TPY
PM	2.81
PM10	2.64
PM2.5	2.11
VOM	3.44
CO	1.72
Lead	0.00

A Battery Oven Pushing

Pollutant	Emission Factor	Reference	TPY
PM	0.036 lb/ton coke produced	Stack Tests 10/12-14/2010 and 3/16-18/2010	3.20
PM10	0.016 lb/ton coke produced	Stack Tests 10/12-14/2010 and 3/16-18/2010; AP-42 Chapter 12.2-6: 46% PM	1.42
PM2.5	0.008 lb/ton coke produced	Stack Tests 10/12-14/2010 and 3/16-18/2010; AP-42 Chapter 12.2-6: 23% PM	0.71
NOx	0.019 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	2.39
SO2	0.098 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	12.32
VOM	0.077 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	9.68
CO	0.063 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	7.92
Lead	0.000015 Weight %	Granite City Coal Blend Analysis 10/20/1992	0.00

A Battery Soaking

Pollutant	Emission Factor	Reference	TPY
PM	0.015 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	1.89
PM10	0.015 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	1.89
PM2.5	0.015 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	1.89
NOx	0.001 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	0.13
SO2	0.099 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	12.44
VOM	0.006 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	0.75
CO	0.002 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	0.25

A Battery Underfire

2014 Fuel Usage 1526.21 MMCF/yr

Pollutant	Emission Factor		TPY
PM	0.067 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	8.42
PM10	0.067 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	8.42
PM2.5	0.067 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	8.42
NOx	1.64 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-16	206.14
SO2	0.23 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	28.91
VOM	0.094 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-16	11.82
CO	0.68 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-16	85.47
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	35,361.35
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.10
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.48
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	35,403.48

B Battery - Baseline Emissions Calculations - Permanent Shutdown

B Battery Decarbonizing

Pollutant	Emission Factor	Reference	TPY
CO	0.008 lb/ton coal charged	ACCCI Enclosure 5, Table 5-2, Revised 4/30/97	0.94

B Battery Lids and Standpipes/Offtake Leaks/Oven Charging/Oven Doors

Pollutant	TPY
PM	3.36
PM10	3.16
PM2.5	2.53
VOM	4.11
CO	2.06
Lead	0.00

B Battery Oven Pushing

Pollutant	Emission Factor	Reference	TPY
PM	0.036 lb/ton coke produced	Stack Tests 10/12-14/2010 and 3/16-18/2010	3.00
PM10	0.016 lb/ton coke produced	Stack Tests 10/12-14/2010 and 3/16-18/2010; AP-42 Chapter 12.2-6: 46% PM	1.34
PM2.5	0.008 lb/ton coke produced	Stack Tests 10/12-14/2010 and 3/16-18/2010; AP-42 Chapter 12.2-6: 23% PM	0.67
NOx	0.019 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	2.24
SO2	0.098 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	11.56
VOM	0.077 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	9.08
CO	0.063 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-9	7.43
Lead	0.000015 Weight % of PM	Granite City Coal Blend Analysis 10/20/1992	0.00

B Battery Soaking

Pollutant	Emission Factor	Reference	TPY
PM	0.015 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	1.77
PM10	0.015 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	1.77
PM2.5	0.015 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	1.77
NOx	0.001 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	0.12
SO2	0.099 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	11.67
VOM	0.006 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	0.71
CO	0.002 lb/ton coal charged	U. S. Steel Clairton Works 1995 Standpipe Test results	0.24

B Battery Underfire

2014 Fuel Usage 1573.03 MMCF/yr

Pollutant	Emission Factor		TPY
PM	0.067 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	7.90
PM10	0.067 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	7.90
PM2.5	0.067 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	7.90
NOx	1.64 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-16	193.38
SO2	0.23 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-13	27.12
VOM	0.094 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-16	11.08
CO	0.68 lb/ton coal charged	AP-42 Chapter 12.2 Table 12.2-16	80.18
CO2	23.17 tons/mmcf	40 CFR 98 Subpart C	36,446.15
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart C	0.10
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart C	0.50
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	36,489.56

Coke Oven By-Products Flare - Baseline Emissions Calculations - Permanent Shutdown

Coke Oven By-Products Flare

2014 Fuel Usage 1652.4 MMCF/yr

COG			
Pollutant	Emission Factor		TPY
NOx	37.74 lb/mmcf	AP-42 Chapter 13.5 Table 13.5-1	31.18
SO2	20.44 lb/mmcf	Assumes all H2S in raw COG is converted to SO2	16.89
VOM	34.965 lb/mmcf	AP-42 Chapter 13.5 Table 13.5-1	28.89
CO	205.35 lb/mmcf	AP-42 Chapter 13.5 Table 13.5-1	169.66
CO2	23.17 tons/mmcf	40 CFR 98 Subpart Y	38,285.10
N2O	0.000066 tons/mmcf	40 CFR 98 Subpart Y	0.11
CH4	0.00032 tons/mmcf	40 CFR 98 Subpart Y	0.52
CO2e	-	Global Warming Potentials - 40 CFR 98 Subpart A; Table A-1	38,330.71

Coal Processing - Baseline Emissions Calculations - Permanent Shutdown

2014 Coal Processed 512,770.34 TPY

Coal Crushing

Pollutant	Emission Factor		TPY
PM	0.054 lb/ton	AP-42 Chapter 12.2 Table 12.2-18	13.84
PM10	0.054 lb/ton	AP-42 Chapter 12.2 Table 12.2-18	13.84
PM2.5	0.054 lb/ton	AP-42 Chapter 12.2 Table 12.2-18	13.84

Coal Pulverizing

Pollutant	Emission Factor		TPY
PM	0.00018 lb/ton	AP-42 Chapter 12.2 Table 12.2-18	0.05
PM10	0.00018 lb/ton	AP-42 Chapter 12.2 Table 12.2-18	0.05
PM2.5	0.00018 lb/ton	AP-42 Chapter 12.2 Table 12.2-18	0.05

Desulfurization - Baseline Emissions Calculations - Permanent Shutdown

Desulfurization Plant

COG			
Pollutant	Emission Factor		TPY
PM	4.03 lb/hr	Sulfur Recovery Unit Exhaust Stack Test 12/17/2010	16.38
PM10	4.03 lb/hr	Sulfur Recovery Unit Exhaust Stack Test 12/17/2010	16.38
PM2.5	4.03 lb/hr	Sulfur Recovery Unit Exhaust Stack Test 12/17/2010	16.38
NOx	1.2 lb/hr	Sulfur Recovery Unit Exhaust Stack Test 12/17/2010	4.88
SO2	35.7 lb/hr	Sulfur Recovery Unit Exhaust Stack Test 12/17/2010	145.09
CO	0.005 lb/hr	Sulfur Recovery Unit Exhaust Stack Test 12/17/2010	0.02

Miscellaneous Natural Gas Usage at Desulfurization Plant

Pollutant	TPY
PM	0.05
PM10	0.01
PM2.5	0.01
NOx	0.70
SO2	0.00
VOM	0.04
CO	0.59
Lead	0.00
CO2	840.71
N2O	0.002
CH4	0.02
CO2e	841.56

Coke - Baseline Emissions Calculations - Permanent Shutdown

Coke Conveyor Baghouse

2014 Coke Processed 345,971.00 TPY

Pollutant	Emission Factor		TPY
PM	0.00084 lb/ton	Stack Test 4/22/2010	0.15
PM10	0.00084 lb/ton	Stack Test 4/22/2010	0.15
PM2.5	0.00084 lb/ton	Stack Test 4/22/2010	0.15

Coke Quench (East Quencher)

2014 Coke Quenched 9,364.25 TPY

Pollutant	Emission Factor		TPY
PM	0.31 lb/ton	AP-42 Chapter 12.2 Table 12.2-12	1.45
PM10	0.03 lb/ton	AP-42 Chapter 12.2 Table 12.2-12	0.14
PM2.5	0.02 lb/ton	AP-42 Chapter 12.2 Table 12.2-12	0.09

Coke Quench (West Quencher)

2014 Coke Quenched 477,156.02 TPY

Pollutant	Emission Factor		TPY
PM	0.31 lb/ton	AP-42 Chapter 12.2 Table 12.2-12	73.96
PM10	0.03 lb/ton	AP-42 Chapter 12.2 Table 12.2-12	7.16
PM2.5	0.02 lb/ton	AP-42 Chapter 12.2 Table 12.2-12	4.77

Miscellaneous Sources - Baseline Emissions Calculations - Permanent Shutdown

Ammonium Sulfate Handling

2014 Usage 5632 TPY

Pollutant	Emission Factor		TPY
PM	0.13 lb/ton	AP-42 Chapter 12.2 Table 12.2-13	0.37
PM10	0.06 lb/ton	AP-42 Chapter 12.2 Table 12.2-13	0.17
PM2.5	0.01404 lb/ton	AP-42 Chapter 12.2 Table 12.2-13	0.04

Miscellaneous VOM Sources

Emission Unit	VOM [TPY]
By-Products Plant - Edges/Flanges	0.05
By-Products Plant - Exhauster Leaks	0.14
By-Products Plant - Pump Leaks	0.41
By-Products Plant - Valve Leaks	4.70
Light Oil Condenser/SEP Vent with Gas Blanketing	0.90
Light Oil Storage Tanks (6) with Gas Blanketing	0.06
Light Oil Transfer to Tanker Cars	40.63
NH3 Liquor Collector Tank Gas Blanketing	0.13
NH3 Liquor Storage Tanks with Gas Blanketing	0.01
Tar Collecting Tank	3.11
Tar Condensate Sump with Gas Blanketing	0.97
Tar Decanters (4) with Gas Blanketing	0.80
Tar Dehyrdration Tanks (2) with Gas Blanketing	0.21
Tar Storage Tank with Gas Blanketing	3.11
Wash Oil Recirculation Tank with Gas Blanketing	0.04
Wash Oil Still	18.68
Coal Tar Tank Loading	0.66
Total	74.61

Project Emissions Summary

Project Emissions Summary - Permanent Shutdown Units

Emission Unit	Pollutant	Baseline TPY	Potential TPY	Decrease TPY
A Battery Decarbonizing	CO	1.01	0	-1.01
A Battery Lids and Standpipes/Offtake Leaks/Oven Charging/Oven Doors	PM	2.81	0	-2.81
	PM10	2.64	0	-2.64
	PM2.5	2.11	0	-2.11
	VOM	3.44	0	-3.44
	CO	1.72	0	-1.72
	Lead	0.00	0	0.00
A Battery Oven Pushing	PM	3.20	0	-3.20
	PM10	1.42	0	-1.42
	PM2.5	0.71	0	-0.71
	NOx	2.39	0	-2.39
	SO2	12.32	0	-12.32
	VOM	9.68	0	-9.68
	CO	7.92	0	-7.92
	Lead	0.00	0	0.00
A Battery Soaking	PM	1.89	0	-1.89
	PM10	1.89	0	-1.89
	PM2.5	1.89	0	-1.89
	NOx	0.13	0	-0.13
	SO2	12.44	0	-12.44
	VOM	0.75	0	-0.75
	CO	0.25	0	-0.25
A Battery Underfire	PM	8.42	0	-8.42
	PM10	8.42	0	-8.42
	PM2.5	8.42	0	-8.42
	NOx	206.14	0	-206.14
	SO2	28.91	0	-28.91
	VOM	11.82	0	-11.82
	CO	85.47	0	-85.47
	CO2e	35,403.48	0	-35,403.48
B Battery Decarbonizing	CO	0.94	0	-0.94
B Battery Lids and Standpipes/Offtake Leaks/Oven Charging/Oven Doors	PM	3.36	0	-3.36
	PM10	3.16	0	-3.16
	PM2.5	2.53	0	-2.53
	VOM	4.11	0	-4.11
	CO	2.06	0	-2.06
	Lead	0.00	0	0.00
B Battery Oven Pushing	PM	3.00	0	-3.00
	PM10	1.34	0	-1.34
	PM2.5	0.67	0	-0.67
	NOx	2.24	0	-2.24
	SO2	11.56	0	-11.56
	VOM	9.08	0	-9.08
	CO	7.43	0	-7.43
	Lead	0.00	0	0.00
B Battery Soaking	PM	1.77	0	-1.77
	PM10	1.77	0	-1.77
	PM2.5	1.77	0	-1.77
	NOx	0.12	0	-0.12
	SO2	11.67	0	-11.67
	VOM	0.71	0	-0.71
	CO	0.24	0	-0.24

Project Emissions Summary - Permanent Shutdown Units

Emission Unit	Pollutant	Baseline TPY	Potential TPY	Decrease TPY
B Battery Underfire	PM	7.90	0	-7.90
	PM10	7.90	0	-7.90
	PM2.5	7.90	0	-7.90
	NOx	193.38	0	-193.38
	SO2	27.12	0	-27.12
	VOM	11.08	0	-11.08
	CO	80.18	0	-80.18
	CO2e	36,489.56	0	-36,489.56
Coke Oven By-Products Flare	NOx	31.18	0	-31.18
	SO2	16.89	0	-16.89
	VOM	28.89	0	-28.89
	CO	169.66	0	-169.66
	CO2e	38,330.71	0	-38,330.71
Coal Crushing	PM	13.84	0	-13.84
	PM10	13.84	0	-13.84
	PM2.5	13.84	0	-13.84
Coal Pulverizing	PM	0.05	0	-0.05
	PM10	0.05	0	-0.05
	PM2.5	0.05	0	-0.05
Coke Conveyor Baghouse	PM	0.15	0	-0.15
	PM10	0.15	0	-0.15
	PM2.5	0.15	0	-0.15
Coke Quench (East Quencher)	PM	1.45	0	-1.45
	PM10	0.14	0	-0.14
	PM2.5	0.09	0	-0.09
Coke Quench (West Quencher)	PM	73.96	0	-73.96
	PM10	7.16	0	-7.16
	PM2.5	4.77	0	-4.77
Desulfurization Plant	PM	16.43	0	-16.43
	PM10	16.39	0	-16.39
	PM2.5	16.39	0	-16.39
	NOx	5.58	0	-5.58
	SO2	145.10	0	-145.10
	VOM	0.04	0	-0.04
	CO	0.61	0	-0.61
	Lead	0.00	0	0.00
	CO2e	841.56	0	-841.56
Ammonium Sulfate Handling	PM	0.37	0	-0.37
	PM10	0.17	0	-0.17
	PM2.5	0.04	0	-0.04
Misc. VOM Sources	VOM	74.61	0	-74.61

Shutdown Summary	
PM	-138.60
PM10	-66.44
PM2.5	-61.33
NOx	-441.16
SO2	-266.01
VOM	-154.21
CO	-357.49
Lead	0.00
CO2e	-111,065.31

Project Emissions Summary - Battery Shutdown Affected Units

Emission Unit	Pollutant	Baseline TPY	Could Have Accommodated TPY	PSD Potential TPY	NA Potential TPY	PSD Difference TPY	NA Difference TPY
Slab Reheat Furnace #1	PM	6.04	5.09	5.96	-	-0.08	-
	PM10	6.04	5.09	5.96	-	-0.08	-
	PM2.5 (2012)	6.04	5.09	5.96		-0.08	
	NOx	30.66	30.07	35.20	-	4.54	-
	SO2	1.16	0.40	0.47	-	-0.69	-
	CO	6.45	6.63	7.76	-	1.13	-
	CO2e	79,175.97	79,875.48	93,506.32	-	13,630.84	-
	PM2.5 (1997)	6.04	-	-	6.16	-	0.12
	NOx (Ozone)	30.66	-	-	74.44	-	43.79
	VOM	3.62	-	-	4.46	-	0.84
	Lead	0.00	-	-	0.00	-	0.00
Slab Reheat Furnace #2	PM	9.23	4.84	5.96	-	-3.27	-
	PM10	9.23	4.84	5.96	-	-3.27	-
	PM2.5 (2012)	9.23	4.84	5.96		-3.27	
	NOx	45.45	41.55	51.20	-	5.75	-
	SO2	3.91	0.38	0.47	-	-3.44	-
	CO	0.26	0.19	0.24	-	-0.02	-
	CO2e	72,642.13	75,886.29	93,506.32	-	17,620.03	-
	PM2.5 (1997)	9.23	-	-	6.16	-	-3.06
	NOx (Ozone)	45.45	-	-	74.44	-	28.99
	VOM	3.19	-	-	4.46	-	1.27
	Lead	0.00	-	-	0.00	-	0.00
Slab Reheat Furnace #3	PM	6.46	4.82	5.96	-	-0.50	-
	PM10	6.46	4.82	5.96	-	-0.50	-
	PM2.5 (2012)	6.46	4.82	5.96		-0.50	
	NOx	45.77	43.95	54.40	-	8.63	-
	SO2	1.70	0.38	0.47	-	-1.23	-
	CO	0.90	0.90	1.12	-	0.22	-
	CO2e	74,334.20	75,546.24	93,506.32	-	17,960.08	-
	PM2.5 (1997)	6.46	-	-	6.16	-	-0.29
	NOx (Ozone)	45.77	-	-	74.44	-	28.67
	VOM	3.37	-	-	4.46	-	1.09
	Lead	0.00	-	-	0.00	-	0.00
Slab Reheat Furnace #4	PM	4.62	3.29	5.22	-	0.60	-
	PM10	4.62	3.29	5.22	-	0.60	-
	PM2.5 (2012)	4.62	3.29	5.22		0.60	
	NOx	27.86	25.90	41.07	-	13.21	-
	SO2	1.33	0.26	0.41	-	-0.92	-
	CO	2.49	1.68	2.66	-	0.17	-
	CO2e	50,619.55	51,601.28	81,818.03	-	30,216.75	-
	PM2.5 (1997)	4.62	-	-	8.22	-	3.60
	NOx (Ozone)	27.86	-	-	99.28	-	71.42
	VOM	2.29	-	-	5.95	-	3.66
	Lead	0.00	-	-	0.00	-	0.00
Boiler #11	PM	1.31	-	2.91	-	1.60	-
	PM10	1.31	-	2.91	-	1.60	-
	PM2.5 (2012)	1.31	-	2.91	-	1.60	
	NOx	7.94	-	17.60	-	9.66	-
	SO2	0.10	-	0.23	-	0.13	-
	CO	2.06	-	4.58	-	2.51	-
	CO2e	20,570.91	-	45,601.86	-	25,030.95	-
	PM2.5 (1997)	1.31	-	-	7.34	-	6.03
	NOx (Ozone)	7.94	-	-	78.84	-	70.90
	VOM	0.95	-	-	5.31	-	4.36
	Lead	0.00	-	-	0.00	-	0.00
Boiler #12	PM	3.65	-	3.42	-	-0.23	-
	PM10	2.96	-	3.42	-	0.46	-
	PM2.5 (2012)	2.54	-	3.42	-	0.88	-
	NOx	47.48	-	36.72	-	-10.76	-
	SO2	7.77	-	0.27	-	-7.50	-
	CO	21.59	-	37.80	-	16.21	-
	CO2e	38,248.87	-	53,649.25	-	15,400.38	-
	PM2.5 (1997)	2.54	-	-	7.34	-	4.81
	NOx (Ozone)	47.48	-	-	78.84	-	31.36
	VOM	1.41	-	-	5.31	-	3.90
	Lead	0.00	-	-	0.00	-	0.00

Project Emissions Summary - Battery Shutdown Affected Units

Emission Unit	Pollutant	Baseline TPY	Could Have Accommodated TPY	PSD Potential TPY	NA Potential TPY	PSD Difference TPY	NA Difference TPY
Blast Furnace Stoves	PM	4.43	4.68	5.57	-	0.89	-
	PM10	3.11	3.68	5.57	-	1.88	-
	PM2.5 (2012)	2.30	3.08	5.57	-	2.49	-
	NOx	57.13	92.72	205.10	-	112.38	-
	SO2	14.60	11.06	0.44	-	-14.16	-
	CO	13.14	24.81	61.53	-	36.72	-
	CO2e	33,129.48	46,088.43	87,329.06	-	41,240.63	-
	PM2.5 (1997)	2.30	-	-	5.93	-	3.63
	NOx (Ozone)	57.13	-	-	218.40	-	161.27
	VOM	0.86	-	-	4.29	-	3.43
	Lead	-	-	-	0.00	-	0.00
Ladle Preheaters	PM	1.03	-	1.03	-	0.00	-
	PM10	1.03	-	1.03	-	0.00	-
	PM2.5 (2012)	1.03	-	1.03	-	0.00	-
	NOx	13.53	-	13.53	-	0.00	-
	SO2	0.08	-	0.08	-	0.00	-
	CO	11.37	-	11.37	-	0.00	-
	CO2e	16,133.67	-	16,133.67	-	0.00	-
	PM2.5 (1997)	1.03	-	-	1.34	-	0.31
	NOx (Ozone)	13.53	-	-	17.65	-	4.11
	VOM	0.74	-	-	0.97	-	0.23
	Lead	0.00	-	-	0.00	-	0.00
Blast Furnace Flare #1	PM	0.09	-	0.09	-	0.00	-
	PM10	0.09	-	0.09	-	0.00	-
	PM2.5 (2012)	0.09	-	0.09	-	0.00	-
	NOx	1.20	-	1.20	-	0.00	-
	SO2	0.01	-	0.01	-	0.00	-
	CO	1.01	-	1.01	-	0.00	-
	CO2e	1,436.58	-	1,436.58	-	0.00	-
	PM2.5 (1997)	0.09	-	-	0.13	-	0.04
	NOx (Ozone)	1.20	-	-	1.76	-	0.56
	VOM	0.07	-	-	0.10	-	0.03
	Lead	0.00	-	-	0.00	-	0.00
Coke Unloading/Screening	PM	-	-	6.66	-	6.66	-
	PM10	-	-	3.19	-	3.19	-
	PM2.5 (2012)	-	-	0.58	-	0.58	-
	PM2.5 (1997)	-	-	-	0.58	-	0.58

Project Related Increases

Pollutant	TPY	Limit TPY	Netting Required?
PM	9.75	25	No
PM10	7.73	15	No
PM2.5	19.12	10	Yes
NOx	441.07	40	Yes
SO2	0.13	40	No
VOM	18.81	40	No
CO	56.96	100	No
Lead	0.00	0.6	No

Additional Project Emission Information

Pollutant	TPY
CO2e Increases	161,099.66
CO2e Decreases	-111,065.31

Project Related Decreases from Permanent Shutdown

Pollutant	TPY
PM2.5	-61.33
NOx	-441.16

Additional Project Related Decreases

Pollutant	TPY
PM2.5	-3.35

Other Contemporaneous Increases and Decreases

Emission Unit	Pollutant	TPY
#1 Caster Modification	PM2.5	2.56
	NOx	-28.90

Pollutant	Project Increases	Project Decreases	Contemporaneous Period	Netting Total TPY	PSD Significant Emission Rate TPY	Subject to NNSR/PSD Review?
PM2.5	19.12	-64.68	2.56	-43.00	10	No
NOx	441.07	-441.16	-28.90	-28.99	40	No

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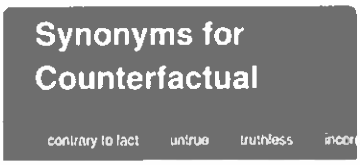

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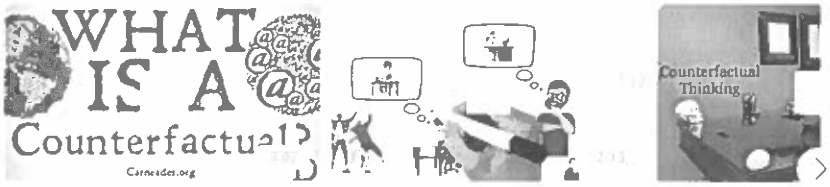

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CALCULATION SHEET

Facility U.S. Steel	I.D. 119813AAI
Anal. Eng. CPR Date 7 20 23	PN 95010001
Rev. Eng. _____ Date __ __ __	Date Rec. 10 7 22

Application for Revision of Construction Permit for the 1996 Production Increase

For reasons as set forth in the attached draft of a denial letter, it is recommended that this application be denied.

Because the requested revisions involve aspects of this permit that gave approval under PSD,* a public comment is required before final action would be taken on the application. Accordingly a copy of the draft denial and an accompanying Project Summary have been prepared and are hereby made available for public review and comment.

Chris Romaine

* The original permit addressed the PSD rules under a delegation agreement with USEPA under the federal rules at 40 CFR 52.21. As the application does revision of the permit is deficient with respect to PSD it was reviewed against Illinois' rules at 35 IAC 204 which have been approved by USEPA as part of Illinois' SIP

IL 532-0262
APC 268 3/80

Sheet 1 of 1

217/785-1705

CERTIFIED MAIL

DENIAL OF AN APPLICATION FOR REVISIONS TO A CONSTRUCTION PERMIT/PSD APPROVAL[1] (DRAFT)

(Draft July 2023)

U.S. Steel Granite City
Attn: Krista Armentrout - Environmental Manager
1951 State Street
Granite City, Illinois 62040

Permit/Application No.: 95010001 I. D. No.: 119813AAI
Date Permit Originally Issued: January 25, 1996
Date Application for Revisions Received: October 7, 2022
Subject of Permit: Production Increase
Location: Granite City Works, Southeastern Granite City

The Illinois EPA has reviewed your above application for revisions to the above-referenced construction permit/Prevention of Significant Deterioration (PSD) approval issued for the above referenced project. The permit application is DENIED because Sections 9.1, 39, 39.5(5)(c), 39.5(10)(a)(i) and 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act (Act) and Sections 201.142,201.160, 203.128, 203.601, 203.602, 204.560, 204.1100, 204.1110, 204.1120 and 204.1130 of Title 35 of the Illinois Administrative Code (IAC) might be violated.

The specific reasons why provisions of the Act and State regulations may not be met if this permit were revised as requested by this application are detailed in the Listing of Denial Points, Attachment 1 of this permit denial.

Before taking action to deny the above-referenced application, the Illinois EPA held a public comment permit on a draft of a proposed permit denial letter in accordance with 35 IAC Part 252, as provided for by 35 IAC 252.105(b).

If you have any questions on the denial of this application, please call Minesh Patel at 217/785-1705.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:mvp:tan

[1] In this application, US Steel request that the revision of this permit be processed with "Integrated Processing," as is provided for by Section 39.5(13)(a) and (c)(v) of the Act. Integrated Processing would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit.

U.S. Steel Granite City (I. D. No. 119813AAI)
Permit/Application No. 95010001
Application for Revisions to the Permit Received on October 7, 2022
Draft of Permit Denial Letter July 2023

ATTACHMENT 1: LISTING OF DENIAL POINTS

1. THE REVISED NETTING ANALYSIS FOR THE PROJECT FOR NITROGEN OXIDES (NOx) DOES NOT FULFILL RELEVANT REQUIREMENTS OF NEW SOURCE REVIEW (NSR) FOR SUCH ANALYSES

Overview

For NOx emissions, the 2022 application for revisions to the Construction Permit 95010001 for the Production Increase Project (Project)[1] does not address or show fulfillment of the substantive requirements of the Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NaNSR) programs related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the 2022 application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and NaNSR (35 IAC 203.301) for NOx emissions.[2, 3] This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx.[4] The 2022 application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project

[1] Permit 95010001 was initially issued in January 1996 for a "Production Increase" at the Granites City Works. It provides for increases in the allowable production rates of iron from 2,372,500 to 3,165,000 tons per year and of steel from 2,774,000 to 3,580,000 tons per year. This permit was preceded by Construction Permit 9209014, a permit for increases in production issued in September 1992. That permit provided for increases in the permitted production rate on a monthly average basis for iron from 5,600 to 6,500 tons per day (equivalent to production of 2,372,500 tons per year) and for steel from 6,900 to 7,600 tons per day (equivalent to production of 2,774,000 tons per year).

[2] The basic oxygen furnaces, at which the largest increase in permitted NOx emissions is requested, were not physically modified and would not become subject to requirements for BACT or LAER for NOx even if the Project were a major modification.

[3] The 2022 application also does not include an analysis of alternatives. This analysis would have been required to be included in the original application for the Project if it had been recognized in 1996 that the Project was a major modification for NOx. It is beyond the scope of the revisions of Permit 95010001 that are now requested to address the fact that such an analysis was not originally part of the construction permit application for the Project.

[4] Under the PSD program, the significant emission rate for NOx is 40 tons/year; under NaNSR, since Granite City is not in an area that is classified as serious, severe or extreme nonattainment for ozone air quality, the significant emissions rate for NOx is also 40 tons/year. An increase in NOx emissions or, if the source elects to evaluate the net increase in emissions, a net increase in NOx emissions from a project that is equal to or greater than this rate is considered significant. (35 IAC 204.660 and 35 IAC 203.209.)

would become a major modification for NOx with the requested revisions to Permit 95010001, the 2022 application must show for NOx that the relevant substantive requirements of PSD and NaNSR are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and NaNSR would be met for the Project for NOx.

In this regard, the 2022 application requests that the permitted NOx emissions of the casthouse on the blast furnaces and the basic oxygen furnaces be increased by 19.4 and 220.2 tons/year, respectively, for an overall increase of 239.6 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.)[5] The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[6] The requested increase in the permitted NOx emissions of the blast furnaces and basic oxygen furnaces, 239.6 ton/year combined, would not result in the Project becoming a major modification for NOx. For this purpose, the 2022 application indicates that the overall decrease in NOx emissions from Project-affected fuel burning units would now be 250.3 tons/year, comparing their revised baseline NOx emissions of 956.3 tons/year and future NOx emissions of 706 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) However, the 2022 application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the 2022 application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would not exceed 706.0 tons/year.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For

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[5] In the 2022 application, the increases in the NOx emissions of the blast and basic oxygen furnaces reflect proposed corrections to baseline emissions, as well as increases in the permitted emissions with the project. For the blast furnaces, the application indicates that baseline NOx emissions should be lowered from 15.6 to 4.6 tons/year. For the basic oxygen furnaces, baseline NOx emissions should be raised from 46.94 to 179.8 tons/year. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.")

[6] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

emission decreases to be relied on for the purpose of a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the 2022 application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The 2022 application proposes to rely upon the decreases in NOx emissions due to these changes, which decreases were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as the analysis does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed separately below, the 2022 application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

Application Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application indicates baseline NOx emissions of 131.8 and 123.2 tons/year from the use of blast furnace gas (BFG) and natural gas, respectively, in Boilers 1 through 12. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) Boilers 1 through 12 are the twelve boilers at the source in 1996 that were addressed by Permit 95010001. Ten of these boilers, Boilers 1 through 10, were shut down in 2009.[7] The 2022 application does not show that NOx emissions of these ten boilers, as existed in the period prior to 2009, were considered in the "future" NOx emissions with the Project of at most 706 tons/year from the Project-affected fuel burning units. In addition, with regard to Boilers 11 and 12, the two remaining old boilers at the source that continue in operation, flue gas recirculation systems have

[7] The shutdown of Boilers 1 through 10 was required by Condition 2.6(a) of Construction Permit 06070023, which was originally issued in July 2006. This permit addresses construction of a cogeneration boiler at the facility that would be designed to produce both high-pressure steam to generate electricity and lower pressure process steam. This boiler has been constructed and is in operation. The permitting of this new boiler relied upon contemporaneous decreases in NOx emissions from several actions, most notably, a decrease of 558.9 tons/year from addition of low NOx burners to four reheat furnaces. The permitting of the new cogeneration boiler also relied on a 33.41 tons/year decrease in NOx emissions from the shutdown of Boilers 1 through 10 as this eliminated use of natural gas by these boilers. The related application for emissions decreases that were contemporaneous with the new boiler did not rely on any decreases in the NOx emissions of these boilers from use of COG and BFG. This is because "...the boilers shutdowns will not result in any change in the amount of BFG and COG combusted at the Facility." (Application 06070022, Section 3.3.1. "Boilers 1 through 10 Shutdown Emission Calculations," p. 3-7.) The reliance of Permit 06070023 on emission decreases from the shutdown of these boilers is a further impediment to reliance on these decreases in a revised netting analysis for the Project.

been installed on these boilers pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to control NOx emissions to facilitate compliance with 35 IAC 217.164. The 2022 application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from Boilers 11 and 12 that are now being achieved with the new control systems, rather than their NOx emissions as previously existed with the Project in the period before these control systems were installed.

The application also indicates baseline NOx emissions of 461 tons/year from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12.[8] In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the 2022 application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[9]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application.[10] This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the

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[8] For Project-affected boilers, the 2022 application indicates that baseline NOx emissions from usage of COG are addressed only for Boilers 11 and 12. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.") This is likely erroneous since the application for Permit 06070022 indicates that Boilers 1 through 10 also had the ability to use COG.

[9] The 2022 application does reflect increased use of natural gas by Project-affected fuel burning units. The application explains that with the shutdown of the by-product coke oven batteries, COG is no longer available and more natural gas may need to be used (e.g., 2022 application, Section 6.3, Post-Project NOx Emissions Limitations"). Permit 95010001 currently limits annual use of natural gas by the Project-affected fuel burning units to 1,346 million cubic feet. The revised netting analyses in the 2022 application are based on a post-project annual natural gas usage of up to 1,980 million cubic feet (e.g., Tables 5-7, 6-6 and 7-3).

The decreases in NOx emissions that resulted from the shutdown of the coke oven batteries and elimination of COG in 2015 are contemporaneous with any increases in NOx emissions due to the accompanying use of more natural gas. However, these emissions decreases are not contemporaneous relative to the Project, which was undertaken in 1996. In addition, an application for revisions to Permit 95010001 is not an appropriate venue to address the use of more natural gas due to the shutdown of the coke oven batteries. The Project involved increases in production of iron and steel. The Project-affected fuel burning units do not include four slab furnaces that also used COG and now must use more natural gas. Lastly, the consequences of the shutdown of the coke oven batteries on the facility's NOx emissions, including the consequences for the slab reheat furnaces, are the subject of a separate construction permit application, Application 15030001, received March 5, 2015, which application is still pending.

[10] It should be noted that for purposes of applicability of NSR, for the same reasons that the 2022 application understates the net increase in emissions of NOx from Project-affected fuel burning units, the application also understates the increases or net increases in emissions of the Project for purposes of NSR for particulate matter (PM), particulate matter$_{10}$ (PM_{10}) and volatile organic material (VOM), i.e., pollutants other than NOx for which the requested revised permit for the Project would rely upon the increase or net increase in emissions not being significant.

requested increases in the permitted emissions of the blast furnaces and the basic oxygen furnaces. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the 2022 application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[11]

[11] With the requested revisions of Permit 95010001, it is unclear how, , the "future NOx emissions" of fuel burning units indicated in the 2022 application are NOx emissions that could have been allowed by this permit in 1996. The future NOx emissions of affected fuel burning units indicated in the 2022 application are less than the baseline NOx emissions, i.e., proposed future emissions of 706 tons/year compared to the claimed baseline of 956 tons/year. However, the Project did not include any elements that would lower the NOx emissions of fuel burning units. Rather, the production of more iron and steel would be accompanied by increased utilization of the blast furnace stoves and boilers as more blast air and steam are generally needed for blast furnaces to produce more iron. Accordingly, in 1996, the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions, as this permit addresses a project that involves use of more BFG and natural gas by Project-affected fuel burning units. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.)

Indeed, the future NOx emissions of the fuel burning units for purposes of any revised netting analysis should be expected to be substantially greater than their baseline emissions. If one assumes that the increases in emissions would be proportional to the permitted increase in iron production, future NOx emissions of the fuel burning units would be expected to increase by roughly 40 percent. If the baseline emissions of these units should have been 956 tons/year, as indicated in the 2022 application, this suggests future emissions of these units with the Project should be about 1,340 tons/year (956 tons/year x 1.4 = 1.338 ~ 1,340 tons/year). Alternatively, absent any decreases in NOx emissions from the twelve boilers and the discontinuation of COG, and disregarding increased use of natural gas in place of COG, the NOx emissions from the Project-affected fuel burning units for purposes of NSR applicability, as of 1996, would be on the order of 1,420 tons/year (Proposed future emissions of 706 tons/year + 131.8 tons/year attributable to use of BFG by the boilers + 123.2 tons/year attributable to use of natural gas by the boilers + 461 tons/year from the discontinuation of the use of COG in the stoves and Boilers 11 and 12 ~ 1,420 tons/year). If so, the calculated change in NOx emissions from Project-affected fuel burning units for purposes of NSR applicability would be a net increase on the order of 460 tons/year (1,420 – 956 = 464), rather than a net decrease of about 250 tons/year.

2. THE DETERMINATION OF BASELINE NOx EMISSIONS IN THE REVISED NETTING ANALYSIS CANNOT BE INDEPENDENTLY CONFIRMED

The new determination of baseline NOx emissions of Project-affected fuel burning units provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, as discussed below, concerns exist with the determination of the overall baseline NOx emissions for the Project.

Baseline Usage of Coke Oven Gas (COG)

As already discussed, the use of coke oven gas (COG) in Project-affected fuel burning units is introduced in the 2022 application for revisions to Permit 95010001.[12] This application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The annual usage of COG in the blast furnace stoves (374 million cubic feet/year) and in boilers (2,211 million cubic feet/year) is simply presented in the revised netting analysis for NOx. (2022 application, Appendix B - Emission Calculations, USS Granite City - 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis). The indicated usages of COG are not accompanied by any documentation or explanation.

Emission Factor for Use of COG in Boilers 11 and 12:

For COG, the 2022 application utilizes a NOx emission factor for Boilers 11 and 12[13] of 404 pounds/million cubic feet of COG.[14] The application states that this factor is based on emission testing conducted on the stack of A Coke Battery (2022 application, Table 6-4. "NOx Emission

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[12] It should be noted that the introduction in the revised netting analysis for the Project of NOx emissions from use of COG in Project-affected fuel burning units is not acknowledged in the section of the 2022 application in which historical production and operating rates are discussed. Section 6.2.1 of the application, "Historical Throughput Rates," states that "The pre-project actual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 6-3 [Pre-Project Production and Operating Rates for NOx]." This statement is clearly not accurate as the usage of and NOx emissions from COG were not quantified in the 1995 application. Moreover, Table 6-3 does not include information for the historical or baseline usage of COG.

[13] In the 2022 application, there is an inconsistency in the information for the baseline NOx emissions of boilers. In Table 6-5, "Pre-project Actual Emissions and Summary of Changes to Pre-Project NOx Emissions Factors for Affected Emissions Units," baseline NOx emissions of Boilers 1 through 10 do not appear to be addressed since this table shows that baseline emissions are provided for B11 and B12 (Boilers 11 and 12). In Appendix B, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis, baseline NOx emissions appear to be provided for all boilers, as information is shown as being for "boilers."

[14] For the stoves, the revised netting analysis utilizes a lower NOx emission factor of 80 pounds/million cubic feet of COG. The application states that this factor is based on an emission test for which the date is unknown (2022 application, Table 6-4, p. 6-3). As this factor is identical to the NOx emission factor in USEPA's WebFIRE data base for burning of COG in industrial boilers, this factor can be considered appropriate. (USEPA, Clearinghouse for Inventories & Emission Factors, Emission Factors & AP 42, WebFIRE, Search WebFIRE, with search conducted using the term "coke oven gas" in the field under Select options under Source Classification Code.)

Factors for Fuel Burning"). The application does not show that it is appropriate to utilize an emission factor developed from the results of emission testing on the combustion stack of a coke oven battery to calculate emissions of a boiler. There are significant differences between combustion of COG as occurs at coke ovens and combustion of fuel in a boiler. At a fundamental level, a combustion stack emits the products of combustion from the heating of coke ovens to the high temperature needed to convert coal into coke. Regenerative heat exchangers are utilized to efficiently achieve this temperature. Boilers 11 and 12 emit the products of combustion from burning fuel to achieve the temperature needed convert water into process steam.[15]

Emission Factor for Use of Natural Gas in Ladle Preheaters:

For use of natural gas, the 2022 application utilizes a single emission factor for NOx emissions from all Project-affected fuel burning units. This factor, 306 pounds/million cubic feet of natural gas reflects the results of emission testing conducted on Boiler 12 when using natural gas. The application does not show that it is appropriate to utilize this emissions factor for ladle preheaters, which are different types of emissions units than boilers. Moreover, the revised netting analysis for NOx in the application erroneously indicates that the estimated baseline NOx emissions of ladle preheaters were "Revised to use current AP-42 emission factor." (2022 application, Appendix B, Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) The current AP-42 NOx emission factor for small boilers (<100 million Btu/hour heat input) without low NOx burners or flue gas recirculation is only 100 pounds/million cubic feet of natural gas. (USEPA, *Compilation of Air Pollutant Emission Factors*, AP-42, Table 1.4-1.)

Emissions from Use of Natural Gas on the Continuous Casting Lines:

Unlike the original application, the 2022 application does not directly address NOx emissions associated with use of natural gas in continuous casting operations.[16] In this regard, this application states

> The pre-project actual emissions for the Continuous Caster Mold – Caster #1 and Caster 2 process, as presented by National Steel Corporation in the 1995 Application listed NOx emissions from this operation. USS Granite City evaluated this analysis and determined that there is no NOx formation from this operation. Any NOx emissions from this operation are due to combustion of natural gas and are already accounted for under the gaseous fuel burning activities listed above [Section 6.2.2.1, Fuel Burning Emissions Units

[15] Application 15030001, the pending application for a construction permit for use of more natural gas with the shutdown of the by-product coke oven batteries, utilizes an emission factor for use of COG of 80 pounds/million cubic feet for baseline NOx emissions of Boiler 12. This is the NOx emission factor in FIRE for use of COG in boilers. This factor is much lower than 404 pounds/million cubic feet, the factor for COG used in the 2022 application for the baseline emissions of Boilers 11 and 12.

It should be noted that Application 15030001 does not include a NOx emission factor for Boiler 11 for COG. This is likely because Boiler 11 did not use COG in the baseline period used for Boilers 11 and 12 (January 2013 through December 2014) for the net increase analysis in this application.

[16] As reflected in Permit 95010001, the original permitting of the Project accounted for NOx emissions of 89.5 tons/year from Caster Molds – Casting but did not account for any NOx emissions from Slab Cut-Off and Slab Ripping, for which only particulate emissions were addressed.

> Emissions (Revised)]. Therefore, in the revised analysis, NOx emissions are not included from this operation.
>
> 2022 application, Section 6.2.2.7, "Continuous Caster Mold Process Emissions (Revised)."

This is problematic for several reasons. First, the 2022 application does not address the NOx emissions of the natural gas-oxygen torches used in the slab cutting and slab ripping processes, which are part of the continuous casting lines.[17] Second, as the application indicates that NOx emissions are present from the mold processes on the casting lines, the application does not show that the same NOx emission factor is appropriate for this use of natural gas as utilized for ladle preheaters or, alternatively, separately account for the NOx emissions from use of natural gas in the casting process. Lastly, the 2022 application does not identify either the caster processes or the torches as units whose use of natural gas and resulting NOx emissions would be addressed with the emissions of other Project-affected fuel burning units (e.g., 2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units").

[17] Alternatively, if NOx is not formed by the torches given they are supplied with oxygen, the application does not confirm that usage of natural gas by the torches was not considered when the baseline NOx emissions from use of natural gas in Project-affected fuel burning units were determined.

3. THE APPLICATION LACKS INFORMATION FOR THE ACTUAL NOx EMISSIONS OF PROJECT-AFFECTED FUEL BURNING UNITS

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The 2022 application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically.

The 2022 application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

4. FOR THE BASIC OXYGEN FURNACES, THE 2022 APPLICATION DOES NOT ADDRESS THE POTENTIAL FOR UNCAPTURED EMISSIONS OF NOx, VOM AND CO THROUGH THE ROOF MONITOR FOR THESE FURNACES

For the basic oxygen furnaces, consistent with the original permitting of the Project, the 2022 application only quantifies stack emissions of NOx, VOM and CO. For these furnaces, the application does not address uncaptured emissions of these pollutants. (For these furnaces, the 2022 application does address uncaptured emissions of particulate and lead[18] for which Permit 95010001 limits emissions of these pollutants from the "BOF [Basic Oxygen Furnace] Roof Monitor," (Permit 95010001, Condition 18 and Table 2, Item 2)).

The revised netting analyses for NOx and VOM in the 2022 application assume that all emissions of these pollutants from the basic oxygen furnaces are now captured. That is, with the installation of the new baghouse control system on the furnaces to improve control of particulate emissions from the charging and tapping processes, all NOx and VOM emissions of these furnaces that originally were not captured and were emitted through the roof monitor now are captured and are emitted through the stack on the baghouse system. For example, as related to emissions of NOx, the application explains,[19, 20]

> At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF Shop roof monitor. No information was available at the time about the NOx emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. NOx emissions testing for the BOF Shop

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[18] The uncaptured lead emissions of the basic oxygen furnaces are summarily addressed by the 2022 application. In Section 2.2, this application states that changes to the current limits for lead emissions set by Permit 95010001 are not requested. As such, this application acknowledges the current limits for lead emissions in Permit 95010001, including the limits for uncaptured emissions from these furnaces that are emitted through the roof monitor (Permit 95010001 Condition 18 and Table 2, Item 2). Revisions to these limits are not requested.

[19] The 2022 application addresses uncaptured emission of VOM of the basic oxygen furnaces in a similar manner in Part 7 of the application. Refer to the second Section 7.2.2.1 in the application on p. 6-4, "BOF Baghouse – Secondary Emissions (New)."

[20] As reflected in this excerpt, the 2022 application refers to the NOx and VOM emissions of the baghouse system as "secondary emissions." This is inconsistent with the meaning of this term under the NESHAP for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, which only restricts this term to emissions of particulate matter. It is also misleading as it does not distinguish between captured and uncaptured emissions and suggests that capture of these emissions with a baghouse is sufficient to eliminate concerns for the existence of uncaptured emissions.

In this regard, as defined at 40 CFR 63.7852, "*Secondary emissions* mean **particulate matter** emissions (emphasis added) that are not controlled by a primary emissions control system, including emissions that escape from open and closed hoods, lance hole openings, and gaps or tears in the primary emission control system." For secondary emissions, 40 CFR 63 Subpart FFFFF recognizes the existence of both captured or stack emissions and uncaptured emissions, as would occur through a roof monitor. For basic oxygen furnaces, as well as setting emission limits for particulate emissions from primary control systems, this NESHAP also sets separate emission limits for 1) the particulate matter emissions from a control device used for the collection of secondary emissions, and 2) the opacity of secondary emissions that exit any opening in the furnace shop or other building housing a basic oxygen furnace.

> baghouse completed in the 2019-2020 time frame shows an average NOx rate of 0.0075 lb/ton for the BOF Shop Baghouse Stack. USS Granite City added the BOF Shop secondary NOx emission baseline based on the result of the stack test for the BOF Shop Baghouse stack.
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> 2022 application, Section 6.2.2.6. "BOF Baghouse – Secondary Emissions (New)."

This assumption made by the 2022 application for uncaptured emissions of NOx and VOM of the basic oxygen furnaces, i.e., that all emissions that were formerly uncaptured are now emitted through the baghouse system, is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were overlooked in the original permitting for the Project.[21]

Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing does not address the level of capture being achieved by the baghouse system. Rather it shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. (2022 application, Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase

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[21] In the original permitting of the Project, the uncaptured emissions of NOx and VOM from the basic oxygen furnaces appear to have been considered negligible. This was likely because the emissions of NOx and VOM of the furnaces were all attributed to the refining process, rather than to charging and tapping. During the refining step in a basic oxygen furnace, oxygen is injected into the molten iron charged to a furnace, which removes carbon from the iron by oxidation, converting the iron into steel. The oxidation of the carbon also provides heat to facilitate the melting of the scrap metal that is also charged to the furnace, so molten metal in the appropriate temperature range can be tapped from the furnace.

In 1996, the basic oxygen furnaces were only controlled by the electrostatic precipitator (ESP) system. While the ESP system only reduces or controls emissions of particulate and not emissions of NOx or VOM, the ESP system does capture NOx and VOM from these furnaces. As the capture efficiency for particulate emissions from refining is assumed to be at least 99.9 percent, it was also reasonable to assume that the ESP system also would achieve at least 99 percent capture for NOx and VOM. With these assumptions, i.e., that NOx and VOM are only generated during the refining step and at least 99.9 percent capture of these emissions is achieved by the ESP system, given the limits on emissions of NOx and VOM from the stack of the ESP set by Permit 95010001, i.e., 69.63 and 10.74 tons/year, respectively, the uncaptured emissions of NOx and VOM from these furnaces would have been projected to be no more than 0.07 and 0.01 tons/year, respectively,. (For example, for NOx, 69.63 tons/year ÷ (99.9 ÷ 100.0) x (100.0 – 99.9) ÷ 100.0 = 0.07 tons/year.) For purposes of determining applicability of NSR to the Project. the increases in NOx and VOM emissions of the furnaces with the Project would be less because these calculations for uncaptured emissions address all emissions of the furnaces, both baseline emissions and the increases in emissions from the Project.

Even with the correction to the emission data for the basic oxygen furnaces indicated in the 2022 application, if all NOx and VOM emissions of these furnaces were actually attributable to the refining step, uncaptured NOx and VOM emissions would still be very small. For example, the potential NOx emissions from the stack of the ESP are now shown to be 380.0 tons/year. With capture of at least 99.9 percent of the NOx by the ESP system, the potential uncaptured NOx emissions from these furnaces would still only be an additional 0.38 tons/year.

Analysis and Revised VOM PSD Net Emissions Increase Analysis.) For NOx, the application indicates baseline captured emissions of 179.8 tons/year, of which, based on the measured emissions from the new baghouse system, as much as 5.1 percent, i.e., 9.1 tons/year, would have been uncaptured in 1996; captured VOM emissions are 26.6 tons/year, of which as much as 15.8 percent, i.e., 4.2 tons/year, would have been uncaptured emissions in 1996. However, instead of assuming that all NOx and VOM emissions are now captured, it would not be unreasonable to assume that the new baghouse system improved capture of the emissions from charging and tapping such that the levels of captured emissions from the baghouse stack and the uncaptured emissions through the roof monitor are now identical.[22, 23]

Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the 2022 application to the particulate and lead emissions of these furnaces, for which it is assumed that there are uncaptured emissions that still occur through the roof monitor. In particular, the 2022 application requests that the revised permit establish prescribed emission factors for the particulate emissions of the basic oxygen furnaces

[22] It is reasonable to assume that the new baghouse that was installed to improve control of particulate emissions from charging and tapping of the basic oxygen furnaces reduced these emissions to less than half of their previous amounts. For example, the nominal control efficiency for charging and tapping went from 95 percent with only the ESP control system to 97.5 percent with the addition of the baghouse system. With this assumption, the potential NOx and VOM emissions from the baghouse stack from charging and tapping would be estimated to be about the same as the potential uncaptured emissions from charging and tapping that still occur through the roof monitor, with both being about 2.5 percent of the total emissions from the furnaces. The remainder of the NOx and VOM emissions from charging and tapping continue to occur through the ESP stack (95 percent of the total emissions of the furnaces).

[23] With this assumption, the potential NOx emissions of the basic oxygen furnaces with the Project would become 420.4 tons/year, rather than 400.0 tons/year (400.0 tons/year x (100% + 5.1%) ÷ 100% = 420.4 tons/year. The potential VOM emissions of these furnaces with the Project would become 52.1 tons/year, rather than 45.0 tons/year (45.0 tons/year x (100% + 15.8%) ÷ 100% = 52.1 tons/year.

that occur through the roof monitor.[24] For example, for pre-project actual emissions of the roof monitor, Section 5.2.2.7 of the application explains the following, [25]

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing prescribed emission factors for the BOF Shop Roof Monitor for which emissions testing is not feasible.[Footnote 33] For BOF Roof Shop Monitor, use PM emissions factor of 0.0296 lb/ton and filterable PM_{10} emission factor of 0.0198 lb/ton.
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> Footnote 33: PM and PM_{10} emissions factors are appropriately determined from the results of emission testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the BOF ESP and baghouse, Desulf/Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy.
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> 2022 application, Section 5.5.2.2. "Prescribed Emission Factors for Certain BOF Shop Operations."

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[24] The 2022 application requests that Permit 95010001 be revised to set "prescribed emission factors" for the emissions of certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the basic oxygen furnaces, which are also referred to as the emissions through the roof monitor of the basic oxygen furnace shop). For those units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 that address emissions in pounds/ton of input or production or in pounds/hour. For convenience, these provisions in the permit are generally referred to as "emission factor limits." The usage of this term extends to the provisions of the permit that address emission of lead that are in pounds per hour. In this regard, in Permit 95010001, Table 2, these limits for lead emissions are listed under the heading of "Emission Factor," along with the limits in pounds per ton of production for emissions of other pollutants.

Unlike the emission factor limits currently in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors that would be established in a revision to Permit 95010001 would not be enforceable. Instead, prescribed emission factors would be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit. The appropriateness of the various prescribed emissions factors that are selected would be a matter that would be considered during the processing of the revisions to Permit 95010001. Given the role of prescribed emission factors in determining compliance with annual emission limits set by the permit, it is expected that prescribed emission factors would only be set for units for which emissions testing is not feasible or is not warranted given the low levels of annual emissions predicted by engineering analysis and calculations. It is also expected that, as it is practical to do so, prescribed emission factors would be conservative, reflecting the maximum rates of emissions that could occur during the routine, compliant operation of emissions units.

[25] For pre-project actual emissions of particulate matter of the basic oxygen furnace through the roof monitor, Section 5.2.2.7 of the 2022 application explains the following,

> The BOF roof monitor actual emissions were calculated using the information from AP-42 Chapter 12.5 and AIRS (Aerometric Information Retrieval System) database. For pre-change actual PM and PM_{10} emissions, National Steel used 90% capture efficiency during the charging and tapping steps and 99% capture efficiency during the refining step for BOP operations. A detailed description of the baseline roof monitor PM and PM_{10} emission factors is provided in Appendix C of the 1995 Application. For the BOF operations, per particle size distribution in AP-42 Table 12.5-2, 67% of PM is PM_{10}. No changes are necessary for this emission factor.
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> 2022 application, Section 5.2.7.7, BOF Roof Monitor Emissions (No Change)

The fact that there are emissions of NOx and VOM from the basic oxygen furnaces that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO.[26] In this regard, the 2022 application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions, but the application does not propose any such revisions for the basic oxygen furnaces or explain why such revisions are not needed.[27]

[26] For the basic oxygen furnaces, uncaptured emissions of CO should generally be expected to be much greater than the uncaptured emissions of NOx or VOM because the permitted stack emissions of CO of these furnaces are much greater. In this regard, Permit 95010001 limits the CO emissions from the stack of the ESP system for these furnaces to 16,097 tons/year. (The 2022 application does not request an increase in this limit.) If only 99.9 percent capture of CO is assumed by the ESP system, the potential uncaptured CO emissions of these furnaces would be 16.1 tons/year. (16,097 tons/year ÷ {99.9 ÷ 100.0} x {100.0 – 99.9} ÷ 100.0 = 16.1 tons/year CO.) Of course, the capture efficiency of the ESP system for CO could be higher than the efficiency for NOx or VOM if CO is only formed during the refining step when oxygen is actually being injected into the furnace and not during the entire refining step. However, one approach to the revision of Permit 95010001 would be to conservatively assume that the capture efficiency of the ESP system for CO is the same as its capture efficiency for particulate.

[27] The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the basic oxygen furnaces, addressing the combined stack emissions of the ESP and the new baghouse, to the current limits for the CO emissions of the furnaces in Permit 95010001, which limits currently apply only to emissions from the stack of the ESP.

5. THE EMISSION INVENTORY FOR THE SOURCE USED IN THE AIR QUALITY ANALYSIS FOR CARBON MONOXIDE (CO) OMITS CERTAIN CO EMISSIONS

The results of the analysis of the impacts of the Project on ambient air quality for carbon monoxide (CO) cannot be relied upon because the inventory for the CO emissions of the source with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The 2022 application includes an air quality analysis because the Project was originally permitted as a major modification for CO under the Prevention of Significant Deterioration (PSD) program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted.[28] To support this request, an air quality analysis for CO must be part of the application pursuant to Illinois' PSD rules, 35 IAC 204.1130, Air Quality Analysis, since the request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program.

Uncaptured Emissions from the Casthouse on the Blast Furnaces

The air quality analysis in the 2022 application does not address the uncaptured emissions of the casthouse (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs"). The application indicates potential CO emissions of 13.6 tons/year from the roof monitor on the casthouse (2022 application, Section 4.4). These "uncaptured" CO emissions from the casthouse, which are not captured by the baghouse systems on the casthouse, must be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to provide for more CO emissions from the Project.

Uncaptured Emissions from the Basic Oxygen Furnaces

The air quality analysis in the 2022 application does not address uncaptured emissions of the basic oxygen furnaces. (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs.") As discussed earlier, the 2022 application does not address uncaptured emissions from these furnaces. The application also does not explain why uncaptured emissions would not be present as the application does not show 100 percent capture of the emissions of these furnaces by the control systems for emissions of particulate. As there are uncaptured CO emissions from these furnaces, these emissions must also be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to accommodate additional CO emissions from the Project.

By-product Coke Oven Batteries

[28] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse on the blast furnaces, for which CO was not addressed in the original permitting for the project (2022 application, Section 4.4, p. 4-4) . This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than Boilers 1 through 10, which are now retired (2022 application, Sections 4.2 and 4.3, pp. 4-2 and 4-3). For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas used in the blast furnaces stoves, understated CO emissions.

The 2022 application does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the source. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. On the other hand, the analysis addresses CO emissions of emission units that did not exist in 1996, as this analysis addresses the emissions of the heat recovery coke ovens adjacent to the Granite City Works, which were built and are now operated by Gateway Energy & Coke. [29]

In addition, the air quality analysis in the application uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.[30]

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[29] The modelling in the air quality analysis did address the CO emissions of the new coke oven batteries adjacent to the Granite City Works that are owned and operated by Gateway Energy & Coke. However, modeling of the CO emissions of new units would only compensate for the CO emissions of existing units if the new batteries were direct, in-kind replacements of the shutdown units, which is not the case. This is not the case. The batteries that were shut down by US Steel were by-product recovery batteries. They recovered chemicals from the off-gas from the coking process (e.g., benzene, toluene and naphthalene, with the gas then used as fuel for heating the coke ovens and in certain other units at the source. Gateway's batteries are heat recovery batteries, in which the off-gas from coking is combusted in the ovens and the heat is used to make steam and generate electricity. Moreover, the new batteries and the old batteries both operated for a period of several years before US Steel shut down its batteries.

[30] Under the PSD program, the air quality analysis for a project whose modelled maximum impact(s) by itself on air quality for a pollutant are above certain specified concentration(s) or "significant impacts levels" under the PSD program must also consider "background air quality." This accounts for the contribution to ambient air quality of mobile sources (e.g., cars, trucks and buses) and of other sources (e.g., residential and commercial heating), which contribution cannot be determined as part of the computerized dispersion modelling for discrete emission units performed as part of the analysis. The air quality analysis in the 2022 application shows that the maximum air quality impact of the Project with the requested increases in CO emissions would continue to be above the significant impact level for CO on an 8-hour average. (In the original air quality analysis, the Project's impacts were significant for CO on both a 1-hour and an 8-hours average.) The value for background in the current air quality analysis is based on data collected at an ambient air monitoring station in East St. Louis operated by the Illinois EPA. If US Steel shows that the air quality analysis for the revision to Permit 95010001 should address current ambient air quality for CO, the value for background air quality in the analysis should be updated. Since the Illinois EPA discontinued ambient monitoring for CO at its East St. Louis monitoring station in 2020, the new value for background would likely need to be based on data collected at an appropriate monitoring station in Missouri operated by the Missouri Department of Natural Resources.

It should be noted that the values for background used in the original air quality analysis were likely conservative, as they were based on data from a now retired monitoring station in Granite City that was less than a third of a mile from the Granite City Works. Given the location of that station, the ambient air quality data collected at that station may have included the contribution to air quality of units for which modelling was also conducted, so that the original analysis effectively counted the impacts of those units twice. Thus, it is reasonable for the current air quality analysis to use value(s) for background air quality based on data collected at a monitoring station other than the one that was originally used.

6. SCOPE OF PROPOSED GROUP EMISSION LIMITS

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate.[31, 32] In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two basic oxygen furnaces. These are principal emission units at this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two basic oxygen furnaces

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[31] For PM, PM_{10}, NOx and VOM (i.e., pollutants other than sulfur dioxide (SO_2), carbon monoxide (CO) and lead), the 2022 application requests that the revised permit not include the provisions in Permit 95010001 that the Illinois EPA considers would limit emissions of individual "processes" in pounds/ton of production or throughput and in tons/year. These provisions were set to ensure that the Project would not be a major modification for purposes of New Source Review (NSR). The removal from Permit 95010001 of the "emission factor limits" which limit emissions of various process operations relative to their production or throughput, would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, prior to issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing emission factors were considered to constitute enforceable limits on emissions. This was done in the Illinois EPA's "Statement of Basis for a Planned Revision of the Clean Air Act Permit Program (CAAPP) Permit for: U. S. Steel Corporation, Granite City Works, 20th and State Streets, Granite City, Illinois," of March 2011, pages 20 through 26. That these provisions set enforceable limits was then recognized by the USEPA in the Administrator's subsequent order of December 3, 2012, "In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056," Petition Number V-2011-2, pages 7 through 9).

[32] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes, the 2022 application requests "group limits" for the annual emissions of groups of related emission units. For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period. The requested limits would theoretically be less stringent than the current limits as US Steel could potentially compensate for any "overage" of emissions by unit(s) in a group of units with lower levels of emissions from other units in the group.

Incidentally, in these appeals, US Steel only challenges the emission factor limits for "processes," such as the casthouse, the basic oxygen furnaces, continuous casting operations, and discrete material handling operations. These appeals do not challenge the emission factor limits for fuel burning units affected by the Project. Those limits do not restrict the emissions of individual units or groups of similar units. Instead, they separately restrict the emissions from use of different fuels, i.e., blast furnace gas, natural gas and oil.

to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the basic oxygen furnaces should not both continue to be limited individually.[33]

In this regard, the 2022 application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted (2022 application, Section 3, "Discussion of Permit Conditions used to Restrict PTE [Potential to Emit]). The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[34, 35] However, the 2022 application does not show that the

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[33] In light of the construction permits issued by other permit authorities cited by the application as support for group limits, it would seem acceptable for a revised permit to set group limits for the emissions units or operations that do not qualify as principal units. For example, for the production of iron, a revised permit could set limits for the overall emissions from charging the blast furnaces and the slag pits. Alternatively, limits specifically for the emissions of the casthouse for the blast furnaces and the basic oxygen furnaces, i.e., the principal units at the facility for iron and steel production, could be accompanied by group limits for the overall emissions of these principal units and the other, "non-principal" units in these areas of the facility. For example, limits could be set for both emissions of the casthouse and for the emissions of the casthouse, charging of the blast furnaces, and the slag pits.

[34] The 2022 application, Appendix E - "Copies of EPA Determinations," contains two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[35] In a footnote, the 2022 application also refers to the USEPA's order responding to a petition to object to a Title V permit issued for a facility in Middletown, New York proposed by Masada (USEPA, Order, May 2, 2001, *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00001, Issued by the New York State Department of Environmental Conservation, Petition No.: II-2000-07.) As explained by US Steel in the application, in this order, the USEPA upheld the,

> ...use of annual emission caps with a rolling cumulative total methodology and rejected petitioners' "concerns that the permit appears to rely on after-the-fact monitoring, rather than engineering practices, test data or vendor guarantees" to establish restrictions on PTE. U. S. EPA based its findings on the fact that "[i]f the source has no room to operate under the PTE emission limiting cap, it must cease operation or face a violation" and that "all PTE limits rely on after the fact monitoring of some kind."

specific circumstances of the Project are such that the current limits for annual emission of the principal emission units should be replaced with group limits that apply to the combined emissions of principal emission units and other lesser emission units.[36] The circumstances of the Granite City Works are not the same as those presented by the cited permits. US Steel's Granite City Works is a manufacturing facility at which iron is produced from iron ore in blast furnaces and steel is produced from molten iron and scrap metal in basic oxygen furnaces. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station. The utilization of the individual generating units in the new facility would vary from day to day and season to season as the use of the units would be tied to the inability of other electrical generating facilities to meet the demand for electricity.[37]

2022 application, Footnote 11.

[36] For the casthouse on the blast furnaces, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the casthouse baghouse (i.e., the main baghouse for the casthouse), the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited, other than CO, for the permit to restrict the overall emissions of the pollutant from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the BOFs.

For the basic oxygen furnaces, the current permit separately addresses emissions of particulate and lead from the stack of the ESP and the roof monitor (uncaptured emissions.) For these furnaces, it would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of the pollutant from these furnaces. In particular, the revised permit would not set limits specifically for the emissions of the new baghouse system that was installed to improve control of particulate emissions from charging and tapping of these furnaces. Instead, the revised permit would address emissions that occur from this baghouse with limits for different pollutants for the overall emissions of these furnaces.

[37] At the Shell Off-Shore and Masada facilities, variability of utilization or operation of different emission units was a consideration in the permitting of these facilities. In its response to comments on the draft permit for Shell Offshore, USEPA Region 10 explains,

> The commenters are correct that EPA guidance does express a general preference for shorter time periods rather than 12-month rolling limits. See 1989 PTE Guidance at 9. As the commenter acknowledges, however, EPA has also recognized that longer rolling limits are appropriate for sources with substantial and unpredictable variations in emissions, as well as for those sources that curtail operation during part of a year on a regular seasonal cycle. Id. at 9 – 10. Such is the case here. Shell's planned exploratory operations are atypical as compared to other sources because emission units consist of multiple engines and generators with variable emission on the Kulluk and a fleet of numerous support vessels. Operations will vary from hour-to-hour, day-to-day month-to-month, and season-to-season based on factors such as the number of wells drilled, the activity being undertaken (drilling mud cellar lines, other drilling activity, or activity that does not involve drilling), the depth of wells drilled, whether emergency engines are being run for testing, and ice conditions. Given the variability in operations, and thus emissions expected from the source, and after considering a full

range of options for limiting the source's potential to emit, Region 10 determined that it was appropriate to establish longer-term rolling limits.

USEPA, Region 10, "Response for Comments for Outer Continental Shelf Permit to Construct and Title V Air Quality Operating Permit: Conical Drilling Unit Kulluk," October 2011, p. 26.

In the USEPA's order for Masada of April 8, 2002, USEPA observes that,

Masada's operations will have significant fluctuations due [sic] the variability of the processed waste, making an operating parameter-based PTE limit less appropriate. The emissions-based PTE limit discussed below recognizes this fact and provides Masada with operational flexibility accordingly. Moreover, Masada will be measuring its emissions on a real-time basis using CEMS [continuous emissions monitoring systems], obviating the need to limit and monitor operating parameters as a surrogate for emissions.[Footnote 6] Thus the petitioners have not demonstrated that it was inappropriate for the NYSDEC [New York State Department of Environmental Conservation] to restrict Masada's emissions directly, rather than its operation or production.

Although it is generally preferable that PTE limitations be as short-term as possible (e.g., not to exceed one month), EPA guidance [USEPA, "Guidance on Limiting Potential to Emit in New Source Permitting," June 13, 1989] also allows permits to be written with longer term limits if they are rolled (meaning recalculated periodically with updated data) on a frequent basis (e.g., daily or monthly). The 1989 guidance recognizes that such longer rolling limits may be appropriate for sources with 'substantial and unpredictable annual variation in production." 1989 Guidance at 9.

Footnote 6. This is consistent with prior EPA practice in appropriate circumstances. See e.g., Memorandum entitled "3M Tape Manufacturing Division Plant, St. Paul, Minnesota," from John Rasnic to David Kee, dated July 14, 1992 ("a federally enforceable emission limit may be used …to limit the potential to emit as long as a continuous emissions monitor (CEM) or an acceptable alternative is used."); and Memorandum entitled "Policy Determination on Limiting Potential to Emit for Koch Refining Company Clean Fuels Project," from John Rasnic to David Kee, dated March 13, 1992 ("Use of an emission limit to restrict potential to emit …is acceptable provided that emissions can be and are required to be readily determined or calculated.")

USEPA, Order, April 8, 2002, "*In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00003, Issued by the New York State Department of Environmental Conservation," Petition No.: II-2001-05, p. 6)

7. INADEQUATE JUSTIFICATION FOR ELIMINATION OR REVISION OF CURRENT LIMITS FOR PROJECT-AFFECTED FUEL BURNING UNITS

The justification provided in the 2022 application for revisions to Permit 95010001 to eliminate or revise limits on usage of fuel and, presumably, emissions by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and BFG currently set by Permit 95010001, it does not propose any new limits in their place.

> USS Granite City is also requesting revision/elimination of gaseous fuel usage limits for project-affected combustion units. In 2015, USS Granite City shutdown its by-product coke oven batteries. This eliminated the ability to use coke oven gas ("COG") as a fuel at the mill. In addition, ten of the twelve boilers at the time of the Project in 1996 have been retired. These actions have greatly reduced the emissions from fuel combustion in project-affected emissions units and obviate the need to preserve limits to restrict PTE of the remaining units.
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> 2022 application, Section 2.2.3, p. 2-4.

This rationale is deficient because it does not consider that the 2022 application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above,[38] this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the 2022 application does not show that new limits for fuel usage and emissions would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels and emissions should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shutdown. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

[38] It is noteworthy that the 2022 application does not address what an appropriate limit for usage of COG would have been in Permit 95010001 if the permit had originally addressed use of COG by Project-affected fuel burning units. In the absence of such information, it is unclear how the shutdown of the two by-product coke ovens at the facility and elimination of COG led to decreases in NOx emissions relative to the limits for NOx emissions of fuel-burning units set by Permit 95010001.

8. THE APPLICATION DOES NOT SHOW THAT EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS WOULD BE REPRESENTATIVE

To calculate baseline emissions of certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the 2022 application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3

This summary of relevant USEPA policy in the 2022 application is consistent with the statements made by the EAB and the Administrator of USEPA in various orders responding to petitions that request it object to Title V permits or, in Illinois, CAAPP permits), issued by a permitting authority. In its decision in *Shell Offshore, Inc.*, the EAB also considered the use of prescribed emission factors in the permit that was appealed. The EAB did not object to this practice. It found that the use of prescribed emission factors may be appropriate for a permit to prescribe use of specific emission factors published by USEPA in its *Compilation of Air Pollutant Emission Factors* (AP-42) for certain emission units for the purpose of determining emissions for purposes of compliance with annual emission limits set by the permit.[39]

> The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or factors derived from source test data Shell submitted to the Region in support of two separate, previously OCS [Outer Continental Shelf] PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discover* drillship.
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> USEPA, Environmental Appeals Board, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2013.

[39] The EAB did observe that it is preferable that compliance with emission limits set by a permit be determined using source-specific emission factors, as would be developed by emissions testing required by the permit. The EAB did not address prescribed emission factors from sources other than AP-42 since the permit that was appealed only prescribed use of emission factor from AP-42. Given the general nature and limited scope of AP-42, the EAB's decision should not be interpreted to preclude use of emissions factors from source other than AP-42. There are emission units and pollutants for which use of prescribed emissions is appropriate for which emission factors are not present in AP-42 or better emission factors are available from other sources.

For US Steel, Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Note that relative to prescribed emission factors, the USEPA's finding, as is provided below, might be considered *dicta*. This is because the permit that was the subject of the appeal did not provide for use of prescribed emission factors. In addition, as the order addresses the possibility of using of prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.[40]

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
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> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

Roof Monitor on the Basic Oxygen Furnace Shop – Particulate Emissions:

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[40] In an order concerning a Title V permit issued by the Texas Commission on Environmental Quality (TCEQ), the Administrator of USEPA stated the following when addressing the use of emission factors in the permit:

> …Moreover, the justification provided by a permittee in a permit application should not substitute for the judgment of the permitting authority (TCEQ) with responsibility for ensuring that a Title V permit contains sufficient monitoring to ensure compliance. If TCEQ wishes to adopt and incorporate an applicant's technical justification for specific monitoring into the current Title V permit record, it must, at minimum, identify specifically where such a justification is to be found (just as it would be required to do it if [sic]wished to incorporate by reference a requirement located elsewhere.)
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> USEPA, Administrator, Order Responding to Petition Requesting Objection to the Issuance of Title V Operating Permit, Petition No. VI-2017-6, *In the Matter of BP Amoco Chemical Company, Texas City Chemical Plant, Galveston County, Texas, Permit No. 01513*, dated July 20, 2021, p. 18.

The 2022 application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the basic oxygen furnace shop (i.e., the uncaptured emissions from these furnaces). The application does include support for the baseline particulate emission rates for the roof monitor on the basic oxygen furnace shop.[41, 42] However, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the basic oxygen furnaces and decrease the uncaptured emissions of particulate. For example, a fourth section was added to the ESP in 1995, increasing the volume of air that it could handle. As such, the baseline particulate emission rates of the Project are not representative of future emissions with the Project. Moreover, the emission factors actually proposed in Section 5.5.2.2 in the 2022 application are lower than emission factor limits now contained in Table 2 of Permit 95010001 for the roof monitor on the basic oxygen furnace shop. For PM, an emission factor of 0.01986 pounds/ton is proposed as a prescribed factor, compared to the current emission factor limit of 0.0987 pounds/ton; for filterable PM_{10}, an emission factor of 0.0296 pounds/ton is proposed, compared to the current emission factor limit of 0.06614 pounds/ton. The 2022 application does not show that the emission factors for the roof monitor on the basic oxygen furnace shop that are proposed as prescribed emission factors in Section 5.5.2.2 of the application are representative.[43]

Caster Mold, Slab Cutoff/Ripping Processes in Continuous Casting:

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[41] The baseline emission rates for the roof monitor are based on emissions factors from AP-42 for uncontrolled emission with application of 90 and 99 percent capture efficiencies for the refining process and the charging and tapping processes, respectively, being provided by the ESP control system on the furnaces in the baseline period before 1996 (2022 application, Section 5.5.2.2). While the application cites to Appendix C in the original application for the Project as support for these values for capture efficiency, this appendix only uses these assumed values of capture efficiency when calculating baseline emission rates for the Project. This appendix does not actually provide technical support for these values for capture efficiency being representative of the levels of capture efficiency that were achieved for particulate emissions of the basic oxygen furnaces in the baseline period for the Project. Appendix C also does not provide support for the higher levels of capture efficiency (95% and 99.9%) that it uses for operation and emissions for the basic oxygen furnaces with the Project.

[42] It should generally be noted that the sections of the 2022 application that provide the explanation or basis for the emission factors used in the application are not the sections in which prescribed emission factors are proposed for certain units. The basis for the different emission factors is typically provided earlier in the application in the sections of the application where baseline emission rates are addressed. For example, the particulate emission rates or factors for the roof monitor on the blast furnace casthouse are discussed in Section 5.2.3.3 (2022 application, p. 5-3); the proposed prescribed emission factors for this emission point, which are the same numerically, are provided later in Section 5.5.1.2 without further discussion (2022 application, p. 5-14 and 5-15).

[43] The emission factors that the 2022 application proposes to be prescribed for particulate emissions from the roof monitor on the basic oxygen furnaces may be appropriate at the present time given the installation of a baghouse control system on these furnaces. Nonetheless, for a revised permit to be issued that prescribes emission factors for emission from the roof monitor, the application must show that those factors are representative with the emission control measures that are required by the permit. It must also be recognized that those prescribed factors would not be representative of emissions before the new baghouse system was installed and operation of this system was required. As such, particulate emissions factors that are representative of particulate emissions circa 1996, before installation of the baghouse system on the furnaces, should be used in the revised netting analyses for PM and PM_{10}.

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors are proposed in Section 5.5.3 of the 2022 application that are identical to the baseline particulate emission rates for these emission units as generally discussed in Section 5.2.2.11, 5.2.2.13 and 5.2.2.14 of the application. In these sections, the application explained that these emission factors reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative. In this regard, the statement that these factors were taken from a historic report prepared by the Illinois EPA does not show that this report included information showing why these factors should be considered representative and can be prescribed by a revised permit.

Mag-Lime Silo:

For the Mag-Lime Silo, a prescribed emission rate of 0.009 pounds/hour is proposed (2022 application, Section 5.5.4.2). As explained in the application, this unit, which stores the reagent used in desulfurization of iron in the basic oxygen furnace shop, was overlooked in the original permitting of the Project (2022 application, Section 5.4.4 and Footnote 34, p. 5-16 and 5-17). US Steel elected not to address its baseline emissions in the revised netting analyses for PM and PM_{10} because emissions are low, i.e., potential annual emissions less than 0.1 tons. However, the application does not include calculations explaining how US Steel determined that potential particulate emissions of this unit are less than 0.1 tons/year, much less information showing that a prescribed emission rate of D0.009 pounds/hour should be considered representative of the emissions of this unit.[44]

[44] The application also does not explain how US Steel determined that the potential annual particulate emissions of the Mag-Lime Silo are less than 0.1 tons. In this regard, the application does not include calculations that identify any assumptions about operation of this unit or the control of its emissions made by US Steel when calculating the potential emissions of this unit. For example, for particulate matter, was the outlet emission rate of the filter that is part of this unit assumed to be less than the regulatory limit of 0.03 grains per dry standard cubic foot pursuant to 35 IAC 212.308 and 212.313?

9. FOR THE ROOF MONITOR OF THE CASTHOUSE, THE APPLICATION DOES NOT SHOW THAT THE METHODOLOGY THAT IS PROPOSED TO BE PRESCRIBED FOR THE DETERMINATION OF NOx AND VOM EMISSIONS WOULD BE REPRESENTATIVE

For the NOx and VOM emissions of the roof monitor on the casthouse on the blast furnaces (i.e., uncaptured emissions, which do not pass through a control device), the 2022 application proposes a prescribed emission calculation methodology that involves the results of emission testing for the main baghouse for the casthouse and an assumed capture efficiency of 95 percent.[45] For example, for NOx emissions from the roof monitor, the application requests that,

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the blast furnace casthouse roof monitor based on application of 95% capture emissions to the NOx stack test result for the blast furnace casthouse baghouse.
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> 2022 application, Section 6.5.1.2, Prescribed Emission Factors for Blast Furnaces Operations, p 6-9.

The application does not show that the "proposed methodology" would result in NOx and VOM emissions rates for the roof monitor that would be representative. In this regard, the proposed methodology would yield emission rates for the roof monitor that would be related directly to the measured emissions of the main baghouse on the casthouse. However, it would not address the effect of variation in capture efficiency on emissions. That is, with the proposed methodology, if emissions from the baghouse measured by a particular test were "lower," the calculated emission rate of the roof monitor would also be lower. The methodology would not address a situation in which the emissions measured by testing are lower because the capture efficiency of the baghouse system during testing was also lower. In this situation, there would actually be more emissions through the roof monitor. As such, unlike specific emission rates for NOx and VOM that would be prescribed in a revised permit, the "proposed methodology" would not address the NOx and VOM emissions from the roof monitor in a way that can reasonably be considered to be representative on an ongoing basis.[46, 47]

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[45] With the proposed methodology, the NOx or VOM emission rate for the uncaptured emissions of the casthouse would be derived from the emission rate of the main baghouse measured by periodic testing using the following formula:

[{Measured rate of the baghouse (lbs/ton) ÷ 0.95} x 0.05] = Calculated rate for the monitor (lbs/ton)

[46] This issue would not be present with an appropriate prescribed emission factor. As such, a factor would not change based on the results of periodic testing, the factor could be reviewed when processing the application to confirm that it was conservatively developed so as to be representative on an ongoing basis.

[47] Section 7.5.1.2 of the 2022 application, which addresses the proposed calculation methodology for the VOM emissions from the roof monitor on the casthouse, erroneously refers to the results of emissions testing of the main baghouse system on the casthouse for NOx rather than testing for VOM.

10. THE APPLICATION DOES NOT INCLUDE NECESSARY SUPPORT FOR THE EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS.

The 2022 application does not include relevant supporting information for certain emission factors used in the application, as follows. Absent this information the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

Blast Furnace Casthouse Roof Monitor:
The prescribed particulate emission factors proposed for the roof monitor on the casthouse (i.e., the uncaptured emissions from the casthouse) are identical to the baseline emission rates. These rates are based on emission factors from AP-42 for uncontrolled emissions with application of a 95 percent capture efficiency for the baghouse control systems on the casthouse. The application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency (2022 application, Section 5.2.3). Further support is needed for a prescribed emission factor based on achievement of 95 percent capture.

Slag Pits:
For particulate emissions from quenching of slag, the 2022 application does not include a copy of the "EPA assessment" that is the basis of the emission factors and material showing how the selected emission factors were derived from this assessment. For emissions from transfer of slag, the application does not include a copy of the calculations by which the emission factors were developed from the formulas provided in AP-42, Section 13.2.4. The application also does not address whether the emission factors rely on control by the application of water or the presence of residual moisture and, if so, the basis for the assumed levels of control efficiency. (2022 application, Section 5.2.2.5, p 5-4).

Iron Pellet Screen:
For the Iron Pellet Screen, the proposed prescribed emission factor for PM and PM_{10} emissions is identical to the baseline emission rates (2022 application, Section 5.2.2.16). While the emission factor for uncontrolled emissions for screening of crushed stone in Table 11-19.2-2 in AP-42 is identified as the basis of this emission rate, a control efficiency of 85 percent is applied, reducing the factor that is actually used to 15 percent of the cited AP-42 factor. The application does not describe the means by which the particulate emissions of this screen are controlled or reduced to show that 85 percent control of particulate emissions is achieved for the Iron Pellet Screen.[48]
In addition, AP-42 lists two emission factors for screening of crushed stone, one for PM and one for PM_{10}. The emission factor for PM is about three times the factor for PM_{10} (0.025 pounds/ton ÷ 0.0087 pounds/ton = 2.87, ~ 3). The 2022 application does not show that for screening of iron ore pellets, an emission factor that was developed for PM_{10} is directly transferable to PM emissions.

[48] The CAAPP permit, Condition 7.4.2 indicates that the Iron Pellet Screen is not served by emission control equipment.

11. THE DETERMINATIONS OF PARTICULATE EMISSIONS FROM HANDLING OF COKE, IRON PELLETS AND LIMESTONE ARE NOT SUPPORTED AND CANNOT BE CONFIRMED

With regard to baseline particulate emissions, the determination of baseline emissions from handling of coke, iron pellets and limestone provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not provide needed supporting information for the "corrected" determinations of baseline particulate emissions of these operations as it is not accompanied by detailed calculations for the emissions from handling each material. (2022 application, Table 5-5. "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM Emissions Factors for Affected Emission Units" and Table 5-6, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM_{10} Emissions Factors for Affected Emission Units.")[49]

With regard to emissions with the Project, the 2022 application does not include information for particulate emissions from handling of coke, iron pellets and limestone. Since the by-product coke oven batteries were not shut down until 2015, emission information is needed for handling of coal for the period of operation with the Project before the batteries were shut down. Likewise for coke, emission information is needed to address handling of coke before US Steel constructed the conveyor system to receive coke directly from the heat recovery coke production facility built by Gateway.[50]

[49] Tables 5-5 and 5-6 do refer to "Table F-3 of the 1995 application" for these material handling operations. A copy of this table is provided in Appendix B of the 2022 application. However, this table only appears to address PM_{10} emissions, for which it provides annual emissions in tons/year. This table does not include calculations and background information showing how the annual emissions of PM_{10} were determined. Finally, the data for annual emissions of material handling operations appears to rely on the "PM10 SIP" requiring a 90 percent reduction from uncontrolled emissions without providing any support for this assumption.

[50] As this new conveystem was constructed as part of a different project, i.e., the construction of the Gateway facility, rather than the Production Increase Project, US Steel should not address emissions that are specifically associated with this new system.

12. THE REQUESTED CHANGES TO THE GROUPING OF UNITS IN THE PERMIT FOR CONSISTENCY WITH THE GROUPINGS OF UNITS IN THE CAAPP PERMIT WOULD NOT ADDRESS ALL DIFFERENCES IN THE GROUPINGS OF UNITS

As addressed in Section 2.2.2 of the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed, as discussed below, by the specific changes to Permit 95010001 that have been requested.

Requested Changes for the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)":

As explained in Section 11.1.2 of the 2022 application, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 950100001 with operations in the Basic Oxygen Furnace Shop. The application also requests that this unit be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term. In this regard, the application is not accompanied by an itemized list of the equipment and activities that would be covered by this new term or a diagram that identifies this equipment and activities. US Steel's request also does not explain how the requested revision to Permit 95010001 would do what has generally been requested as the proposed new term would refer to a "Material Handling Tripper." As the 2022 application requests changes to terminology in Permit 95010001, the changes should act to better identify the emission units that would be addressed, improving the specificity and clarity of the revised permit.[51, 52]

Absence of A Request for Revisions for the "Deslagging Station and Material HS":

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[51] For example, the proposed new term would not make clear that the basic oxygen furnace shop actually has two ladle stirring stations and one ladle metallurgy furnace, all served by Baghouse 2.

[52] The requested change to the terminology for these emission unit(s) is also problematic as it would refer to a control device, Baghouse 2, rather than to the equipment or activities that generate emissions. Applied literally, the proposed term would only address captured emissions; it would not address the uncaptured emissions, which elude capture for control by the baghouse.

The 2022 application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System).[53] These emission units are currently addressed in Permit 95010001 with continuous casting operations (Permit 95010001, Condition 20 and Table 3). In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations (CAAPP permit, Condition 7.6.2(a)).[54] The 2022 application does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop. In this regard, for the argon stirring station, US Steel does explain in Section 11.1.2 of the 2022 application that this station should be addressed with operations in the basic oxygen furnace shop rather than with continuous casting operations. This is because this station is a "BOPF shop ancillary operation" for purpose of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF (2022 application, Section 11.1.2). US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations. Alternatively, US Steel does not request that this station be addressed with other

[53] For example, in Section 5.2, the 2022 application does not identify any updates or revisions to the pre-project actual emissions of the steel deslagging station and associated material handling system. Likewise, Appendix B – Emission Calculations does not identify any changes from the 1996 netting analyses that involve these units (Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised PM PSD Net Emissions Increase Analysis and Revised PM10 PSD Net Emissions Increase Analysis).

[54] The presence of a deslagging station that is physically located in the continuous casting building is indicated in the pending application for renewal of the CAAPP permit. This application indicates that the particulate emissions of this station are controlled.

> Deslagging Station:
> Molten steel from the BOF is transferred directly from the BOFs to the continuous casting building. The first operation carried out in this building is the skimming of slag from the surface of the molten steel. Slag removed by this operation is skimmed into slag pots for disposal. Baghouse #1 is used to control emissions from this process.
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> CAAPP Renewal Application, Appendix D: Process Descriptions, Section 7.6 Continuous Casting, Deslagging Station, p. D-56.

BOPF shop ancillary operations.[55] Slag skimming is one of the operations that 40 CFR 63.7852 defines as being "Basic oxygen process furnace shop ancillary operations."[56, 57]

For the "Deslagging Station and Material HS," the 2022 application also does not request revisions to Permit 95010001 as the CAAPP permit currently limits particulate emissions of this operation twice, once as a continuous casting operation and again as a material handling operation. In this regard, the CAAPP permit limits the particulate emissions of a "Deslagging Station and associated Material Handling System (Condition 7.6.6(a). As indicated by a reference in this condition, the CAAPP permit also limits emissions of a "Material HS and Deslagging Station" (Condition 7.1.6(b)(i)) in Section 7.1 of the CAAPP permit, where discrete material handling and processing operations are addressed. The 2022 application does not request revisions to Permit 95010001 to facilitate amendment of the CAAPP permit to appropriately address the emissions of this deslagging station and the associated material handling system. In the absence of such revisions, the current CAAPP permit would suggest that the revised netting analyses for particulate should address the emissions of these units twice, once as deslagging and once as material handling. On the other hand, if Permit 95010001 would address emissions of these units in this way, the consolidated emission limits for continuous casting and discrete material handling operations would be inappropriate as emissions of the deslagging station and the associated material handling system would be accounted for twice.[58]

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[55] The proper categorization of this steel deslagging station is important when considering US Steel's request for consolidation of the emission limits currently set by Permit 95010001. As a general matter, any new, "consolidated" limits set by a revised permit must be developed to apply to sensible groupings of units. The groupings of units should facilitate identification in the revised permit of the regulatory requirements that apply to various units. This is especially true as the consolidated limits would rely on certain applicable regulatory requirements, e.g., the work practices and operational monitoring requirements under 40 CFR 63 CFR Subpart FFFFF, to assure consistent operation of emission units so as to keep short-term emissions at or below the established emission rates for the units.

[56] For this steel deslagging station, there is a potential compliance issue relative to the NESHAP, 40 CFR 63 Subpart FFFFF. The CAAPP permit indicates that the emissions of this station are not controlled (CAAPP permit, Condition 7.6.2). On the other hand, if its emissions are controlled by Baghouse 2, the direct applicability of the NESHAP to this station becomes a minor matter. This is because Baghouse 2 is directly subject to requirements of 40 CFR 63 Subpart FFFFF as it controls emissions from "ladle metallurgy." Ladle metallurgy is defined by 40 CFR 63.7852 as "… a secondary steelmaking process that is performed typically in a ladle after initial refining in a basic oxygen furnace to adjust or amend the chemical and/or mechanical properties of steel. This definition does not include vacuum degassing."

[57] It is also noteworthy that as the steel deslagging station is identified as a continuous casting operation by Permit 95010001, the permit applies 35 IAC 212.458(b)(8), which sets a limit of 5 percent, 6-minute average, for the opacity of emissions from the various continuous casting operations (Permit 95010001, Condition 19). However, Permit 95010001 omits the introductory language for this standard that provides that it does not apply to fugitive emissions. The introductory language is present in the CAAPP permit, which addresses the standards that apply to both fugitive and non-fugitive emissions of continuous casting operations (Permit 96030056, Conditions 7.6.3((b), (b)(ii) and (c)).

[58] If there was not actually a material handling system associated with the steel deslagging station, this could be readily addressed in the application for revisions of Permit 95010001. The application could acknowledge the error in the original application, as reflected in the permit that was issued, accompanied by an accurate diagram for the deslagging station as it existed in 1995 and as it now exists. In this regard,

For "Ladle Drying/Preheating," Absence of Any Request for Changes:
For "Ladle Drying/Preheating," the 2022 application does not request any changes to Permit 95010001 to maintain consistency with the approach to these units in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units (Permit 95010001, Table 4, Certain Fuel Combustion Units). In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the Basic Oxygen Furnace Shop, as well as elsewhere in the permit with other Project-affected fuel burning units (e.g., Conditions 5.6.2((ii) and (iii)). In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop (Condition 7.5.6(b)). In the absence of appropriate changes to the CAAPP permit, since the ladle drying/preheating takes place in the basic oxygen furnace shop, the limit for the NOx emissions of the basic oxygen furnace shop would apply to the sum of the NOx emissions of the basic oxygen furnaces and the ladle dryers/preheaters.

it is perhaps noteworthy that Permit 95010001 does not identify the material(s) that are handled by the material handling operations associated with the steel deslagging station.

13. THE 2022 APPLICATION DOES NOT REQUEST REVISIONS TO PERMIT 95010001 AND, INDIRECTLY, TO THE CAAPP PERMIT THAT WOULD ALSO BE NECESSARY AS THIS APPLICATION REQUESTS THAT THE REVISED PERMIT PRESCRIBE EMISSION FACTORS FOR CERTAIN UNITS

The 2022 application does not request revisions to general provisions in Permit 95010001 that would enable revisions to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by administrative amendment to allow prescribed emission factors to be used to determine ongoing emissions of certain emission units. In this regard, the CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. Permit 95010001 does not specify how emissions are to be determined for this purpose, much less specify that, for certain emission units and pollutants, prescribed emission factors are to be used.[59] Accordingly, the procedures to determine compliance with the emission limits set by Permit 95010001 were established in the CAAPP permit for the Granite City Works. This was necessary because the emission limits set by Permit 95010001 are applicable requirements under the CAAPP. The procedures that were established in the current CAAPP permit do not provide for the use of prescribed emission factors. Rather, the CAAPP permit generally requires US Steel to use "appropriate emission factors," i.e., emission factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that are used placed on US Steel.[60] The CAAPP permit also provides for recordkeeping and reporting by US Steel so that the Illinois EPA and interested parties can know and may review for the emission factors that are being used. However, the 2022 application simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors."[61]

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[59] Condition 39(a) of Permit 95010001 did require "one-time testing" for various pollutant for certain emission units within 270 days of the date that this permit was initially issued. Additional time was subsequently provided to complete testing for the particulate emissions of a boiler when burning blast furnace gas. Unfortunately, the permit did not require testing of the NOx and VOM emissions of the BOFs. That testing was subsequently required by the CAAPP permit issued for the facility.

[60] This approach is consistent with a basic principle of the Title V permit program, as reflected in the CAAPP, that the responsibility for showing compliance with applicable air pollution control requirements for a facility lies with the source or Permittee for the facility, and not with the permitting authority.

[61] It should also be noted that in PCB 2013-53, the appeal that is pending before the Pollution Control Board for CAAPP permit 96030056, US Steel challenged Condition 5.13, General Procedures for Certain Permit Limits on Emissions. Condition 5.13 is relevant to the requested revisions of Permit 95010001 as it specifies procedures by which compliance is to be generally determined with the emission factor limits and annual emission limits set by Permit 95010001for process units. In addition to not proposing revisions to Permit 95010001 to accommodate use of prescribed emissions factors, the 2022 application does not address related revisions to Condition 5.13 of Permit 96030056 to potentially facilitate resolution of PCB 2013-53 as Condition 5.13 is challenged in this appeal.

14. THE 2022 APPLICATION DOES NOT ADDRESS THE AMENDMENT TO THE CAAPP PERMIT AUTHORIZED BY CONSTRUCTION PERMIT 11050006, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

The 2022 application does not identify the version of the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Construction Permit 11050006, issued April 1, 2013. This permit addresses the addition of a baghouse system to improve control of particulate emissions of the basic oxygen furnaces from charging and tapping of the furnaces. With the addition of this new system, the furnaces have three points of emissions, i.e., the new baghouse, the historic ESP, and the roof monitor on the furnace shop.[62] Certain work practices that were required by Permit 95010001 for control of particulate emissions of the furnaces with only an ESP system conflicted with the use of the baghouse system or would no longer be appropriate when emissions were also controlled with the new system. To address the fact that these work practices were also present in the CAAPP permit for the facility, Construction Permit 11050006 was subject to Integrated Processing and allowed certain changes to be made to the CAAPP permit by administrative amendment.[63] This was intended to enable use of the new baghouse system for improved control of particulate emissions in compliance with the CAAPP permit without the need for a subsequent permit proceeding to modify the CAAPP permit. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[64]

Section 39.5(13)(a) of the Illinois Environmental Protection Act provides that "The Agency shall take final action **on a request** for an administrative permit amendment within 60 days after **the**

[62] The new baghouse system required a construction permit because this system would affect the requirements that then existed for control of particulate emissions of the basic oxygen furnaces, including their emissions of lead. For purposes of NSR, the construction permit was issued based on the new baghouse system being a project that would reduce the emissions of particulate and lead from these furnaces rather than increase these emissions. The permit was also based on this new system not increasing the emissions of other pollutants from these furnaces. As such, the construction permit for the new baghouse system, Permit 11050006, did not set limits for emissions from the baghouse system. This permit also did not lower the existing limits for the emissions of the basic oxygen furnaces

[63] To address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, in its entirety. The new version of Section 7.5 addresses the basic oxygen furnace shop with the new baghouse system. Given the extent of the changes to Section 7.5 that were needed to accommodate addition of a baghouse to the particulate control system for the basic oxygen furnaces, this approach was taken to Permit 11050006 to provide accuracy, clarity and simplicity in the revisions to the CAAPP permit that were being authorized.

[64] The 2022 application does address the addition of the baghouse control system for the basic oxygen furnaces as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the basic oxygen furnaces.

receipt of the request." (Emphasis added.) Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the 2022 application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[65, 66]

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[65] The timing of the physical issuance of a revised CAAPP permit by the Illinois EPA is critical as a procedural matter because it starts the period within which the Permittee may appeal such action to the Pollution Control Board. Moreover, in PCB 2013-62, US Steel has already appealed certain elements of the changes to the CAAPP permit that are addressed by the administrative amendment to the CAAPP permit authorized pursuant to Permit 11050006.

Given this appeal, the Illinois EPA would not "reinstate" those provisions when issuing the amended CAAPP permit. Instead, it is expected that the amended CAAPP permit would contain notes that explain that the appealed provisions continue to be present in the that existing CAAPP permit as they were appealed. Nevertheless, it is possible that US Steel would appeal those notes in the amended permit as they would acknowledge the continued existence of the appealed provisions.

[66] Concerns are posed by certain conditions in existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The 2022 application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit. One concern is that the deadlines in Permit 11050006 for performing emission testing on the new baghouse and completing certain other actions were based on the basic oxygen furnaces being in routine use once the construction of the new baghouse system was completed. The permit did not contemplate the over two yearlong interruption in production that began in December 2015. US Steel undertook this interruption in production in response to the poor markets for domestic steel at that time. As such, although failures to meet certain deadlines in Permit 11050006 likely were reasonable, it is not clear that they would be excused as being due to *force majeur* (i.e., event(s) that could not reasonably be anticipated or controlled by the source).

The other concern with existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 is that they overlook the role of the existing ESP control system in controlling particulate emissions from charging and tapping of the basic oxygen furnaces. Instead, Permit 11050006 incorrectly indicates that the new baghouse system will control emissions from charging and tapping of the furnaces and the existing ESP system will control emissions from the refining process. In fact, the new baghouse system was constructed to improve control of emissions from charging and tapping, with capture hoods to collect particulate emissions that are not captured by the hoods that serve the ESP system. This is perhaps most clearly shown in the 2010 Memorandum of Understanding between US Steel and the Illinois EPA (MOU) as this MOU addresses improvement in the control of emissions from charging of the furnaces. Section 4(d) of the MOU acknowledges the presence of the existing control for charging with the ESP. It also indicates that control of emissions from charging could be improved by ducting either some or all of these emissions to a new baghouse system. In any case, the errors in the description of the new baghouse system for the basic oxygen furnaces in Permit 11050006 should also be corrected so that erroneous information is not perpetuated in the amendments to the CAAPP permit.

15. THE 2022 APPLICATION WOULD NOT CLARIFY THE RELATIONSHIP BETWEEN FUGITIVE DUST CONTROL MEASURES REQUIRED BY PERMIT 95010001 AND MEASURES REQUIRED BY 35 IAC PART 212 SUBPART K

For roadways, parking areas, and open access areas, Conditions 23, 24, 26, 27, 28, 29 and 30 of Permit 95010001 require implementation of control measures for emissions of fugitive dust. The 2022 application does not make clear the relationship between these requirements established by permit and state regulatory requirements for fugitive emissions in 35 IAC Part 212 Subpart K.[67] In particular, Condition 29 requires daily recordkeeping for the implementation of required measures for on-site dust control. However, it does not address the relationship between these permit-mandated records and the recordkeeping required by 35 IAC 212.316(e)(2).[68] At the same time, Permit 95010001 does address one requirement of 35 IAC Part 212 Subpart K as Condition 25 restates the requirement of 35 IAC 212.316(e)(1), which provides that the opacity of fugitive particulate matter emissions from any roadway or parking area at the Granite City Works shall not exceed 5 percent.[69] That Permit 95010001 does not currently deal with regulatory requirements for fugitive dust is an issue as Integrated Processing of a revision of this this permit requires that the compliance procedures in the revised revised be consistent with those required by the CAAPP.

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[67] Incidentally, the CAAPP permit for the Granite City Works appears to erroneously apply the requirements of 35 IAC Part 212 Subpart K, to the requirements for off-site dust control in Permit 95010001. These regulatory requirements, including that subject sources must be operated under the provisions of an operating program designed to significantly reduce fugitive particulate matter emissions, are applicable to US Steel for sources of fugitive dust at the Granite City Works. However, 35 IAC 212.302 appears to provide that the various emission standards and control requirements in 35 IAC Part 212 Subpart K, other than the general standard for the opacity of fugitive emissions in 35 IAC 212.301, apply for emission units for fugitive dust at certain types of facilities, including manufacturing facilities. Accordingly, these regulatory requirements would not apply to off-site roadways and the compliance procedures for the control measures for off-site roadways should instead be established by permit.

[68] For example, for roadways and parking areas at a steel mill in Granite City (i.e., the Granite City Works), 35 IAC 212.316(g)(2) requires the owner or operator to keep the following detailed records related to the application of control measures for these units:

> 35 IAC 212.316(g)(2) …
>
> D) For each application of water or chemical solution to roadways by truck: the name and location of the roadway controlled, application rate of each truck, frequency of each application, width of each application, identification of each truck used, total quantity of water or chemical used for each application and, for each application of chemical solution, the concentration and identity of the chemical;
> E) For application of physical or chemical control agents: the name of the agent, application rate and frequency, and total quantity of agent, and, if diluted, percent of concentration, used each day;
> F) A log recording incidents when control measures were not used and a statement of explanation.

[69] In Condition 31, Permit 95010001 also refers to 35 IAC Part 212 Subpart U, which also addresses fugitive emissions. For certain facilities, including the Granite City Works, it requires that the owner or operator prepare a contingency measure plan for reductions in particulate emissions that could be implemented in the event of an exceedance of the NAAQS for PM_{10}, 24-hour average. Incidentally, Illinois has never needed to implement the contingency plans required by 35 IAC Part 212 Subpart U.

16. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT ARE NEEDED DUE TO REVISIONS TO 40 CFR 63 SUBPART FFFFF, AS COULD BE EXPEDITED BY INTEGRATED PROCESSING OF PERMIT 95010001

The 2022 application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. (85 Federal Register, pages 42,074 – 42,130, July 13, 2020). Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources,

These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the 2022 application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the basic oxygen furnaces and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate. This reliance occurs as the emission limits that are set or would be set by a revised permit would be restated in the CAAPP permit for the Granite City Works, Permit 96030056. The provision currently in CAAPP Permit 96030056 that reflect the exceptions to the requirements of 40 CFR 63 Subpart FFFFF for SSM create a break or interruption in this reliance on the NESHAP for purposes of enforceability of permit limits for emissions, even if the actual nature and effect of this break or interruption is uncertain. Any concern over such interruptions would be eliminated if the former provisions of the NESHAP regulations, which USEPA acted to strike in July 2020, were also no longer present in the CAAPP permit.[70]

[70] From a legal and practical perspective, the continued presence of the former provisions of 40 CFR 63 Subpart FFFFF in the CAAPP permit would be problematic. Would US Steel have to maintain startup, shutdown and malfunction plans as related to particulate emissions of NESHAP-subject units relative to permit limits for particulate emissions? Would the continued presence of these provisions in the CAAPP permit throw Integrated Processing of Permit 95010001 into question as the compliance procedures that would accompany the limits for particulate emissions in revised Permit 95010001 would not be consistent with the procedures required by the CAAPP? Would US Steel and the Illinois EPA have to delineate and then implement a secondary version of the compliance procedures that would deal with emissions of particulate from NESHAP-subject units during SSM events?

17. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT HAVE RESULTED FROM SHUTDOWN OF EMISSION UNITS, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

The 2022 application does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. ...

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes.[71, 72] In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary.[73] It

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[71] The elimination of COG also affected the applicability of emission standards to certain units. For example, 35 IAC 212.458(b)(23) is no longer applicable to ladle dryers/preheaters, contrary to what is stated in Condition 7.5.3-1 of the CAAPP permit.

[72] US Steel's current application for renewal of CAAPP Permit 96030056, which was received by the Illinois EPA on December 3, 2013, also does not address shut down of the by-product coke oven batteries and other related operations at the facility. This application only acknowledges that changes to the CAAPP permit will be needed in the future to address the addition of the baghouse to the particulate control system for the basic oxygen furnaces when construction of the baghouse is complete.

> The existing equipment descriptions for the individual processes at GCW (Granite City Works) in the CAAPP permit sections 7.1 to 7.4 and 7.6 to 7.13 are generally accurate. However, the Basic Oxygen Furnace process described in the CAAPP permit condition 7.5 will eventually need to be updated with the new secondary baghouse added as part of the Emission Reduction Project (Construction Permit No. 11050006) once construction is complete.
>
> Application for Renewal of CAAPP Permit 95030056, Section 2.2.2, "Process Changes."

[73] Irrespective of whether certain provisions in the CAAPP permit related to use of COG are still necessary, Condition 5.6 of the CAAPP permit limits the SO_2 emissions of these units from use of COG. (This condition restates limits from Federally Enforceable State Operating Permit 94120017, originally issued December 12, 1994.) The absence of COG does not act to excuse US Steel from required recordkeeping and periodic reporting for emissions of SO_2 and PM_{10} from these units from use of COG (CAAPP permit, Conditions 5.9(e) and 5.10.3). It also does not excuse US Steel from required operational monitoring for the use and sulfur content of COG (CAAPP permit, Conditions 5.6(a) and

would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.[74] The responsibility to identify provisions in the CAAPP permit that should not be carried forward initially falls on US Steel as it is the CAAPP Permittee for the Granite City Works.[75] Moreover, as the 2022 application requests Integrated Processing of the requested revisions to Permit 95010001, the subsequent revisions to the CAAPP permit that would be authorized by the revisions to Permit 95010001 must fulfill the requirement that a CAAPP permit issued for a source accurately identify or address the emission units that constitute the source is being permitted.

7.3.9(f)). In this regard, the emission units addressed by CAAPP Condition 5.6, which are addressed by these requirements for operational monitoring, recordkeeping and reporting, have not been shut down.

[74] A fundamental requirement of the CAAPP is that applications for CAAPP permits must be truthful, accurate and complete. In this regard, Section 39.5(5)(e) of the Environmental Protection Act provides that "Each submitted CAAPP application shall be certified for truth, accuracy, and completeness by a responsible official in accordance with applicable regulations." Section 10(a)(i) of the Act provides that one of the standards of issuance for a CAAPP permit by the Illinois EPA is that "... the applicant has submitted a complete and certified application for a permit, permit modification, or permit renewal consistent with subsection 5 and 14 of this Section [Section 39.5 of the Act], as applicable, and applicable regulations." The requirement for an application to be truthful, accurate and complete is applicable to US Steel's current request for revisions to Permit 95010001 as it includes a request for Administrative Amendment to the CAAPP permit for the Granite City Works by means of Integrated Processing under the CAAPP. The scope of this requirement's applicability is not limited to only certain types of CAAPP applications, such as applications for initial CAAPP permits or renewals of CAAPP permits.

[75] As US Steel is the Permittee for a CAAPP source, it must periodically report compliance or noncompliance with each of the requirements set forth in the CAAPP permit. If US Steel believes that it is "in compliance" with regard to certain requirements in the CAAPP permit because those requirements have been affected by Condition 9.11 of the CAAPP Permit, it is appropriate for US Steel to request appropriate changes to the CAAPP permit by means of an appropriate application for amendment or modification of the CAAPP permit. This is especially true as certain requirements in the CAAPP permit that relate to use of COG apply to emission units that have not been shut down.

18. THE EVALUATION OF BEST AVAILABLE CONTROL TECHNOLOGY (BACT) IN THE 2022 APPLICATION FOR CARBON MONOXIDE (CO) IS NOT SUFFICIENT AND DOES NOT ADEQUATELY SUPPORT US STEEL'S PROPOSAL FOR BACT

The evaluation of Best Available Control Technology (BACT) for CO in Section 8 of the 2022 application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the 2022 application requests that the revision of Permit 95010001 allow for more emissions of CO from these units.

The Scope of the Evaluation

As explained in the 2022 application, consistent with the definition of BACT in Section 169(3) of the Clean Air Act (42 US Code Section 7479(3)) and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices.

> In the BACT analyses herein, the term "available" is used, consistent with U.S. EPA guidance to refer to any control strategy that is potentially applicable to the source type in question (i.e., a technology or control option that has a practical potential for application to the source category in general). These may include fuel cleaning, inherently lower polluting processes, and end of pipe control devices. All identified control strategies that are not inconsistent with the fundamental purpose and basic design of the proposed [sic] facility are listed in this step.
>
> 2022 application, Section 8.2.1.4, "Available Control Options," p. 8-4.

For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices (2022 application, Section 8.2.3.3). In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option. i.e., "Work Practice Standards, including good combustion practices" (2022 application, Section 8.2.2.3). The evaluation does not explain why process-related control options are not available for the casthouse.[76]

[76] Incidentally, with regard to the blast furnace stoves, the evaluation does not explain why "good combustion practices" are considered to be a type of work practice standard rather than a separate control option. In Section 8.2.2.6 "Step 5 - Establish CO BACT," the evaluation proposes operational monitoring for temperature and oxygen levels to confirm operation of the stoves for efficient combustion of fuel, thereby maintaining CO emissions within the level that is achievable given the nature of the physical and operational design of the stoves. The evaluation also separately proposes the less prescriptive practices that are more often considered to constitute good combustion practices. For example, Section 8.2.2.6 also

Support Provided for the Scope of the BACT Evaluation

For both the casthouse and the blast furnace stoves, the BACT evaluation in the 2022 application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. For example, for the casthouse, the evaluation states:

> Based on a review for BACT determinations in U.S. EPA's RBLC (RACT/BACT/LAER Clearinghouse) database and other literature, the control options that are potentially available to control CO emissions from the blast furnace casthouse are:
>
> - Capture system and thermal incineration and
> - Capture system and catalytic incineration.
>
> 2022 application, Section 8.2.3.3, p. 8-8.

When a BACT evaluation is submitted, it may be appropriate or necessary[77] for the application to also include documentary support for the review of available control options that was conducted. In this regard, BACT evaluations commonly include copies of information from the RBLC that is potentially relevant to the determination of BACT that must be made. Further explanation is also provided if some of that information is not considered applicable to the units that are the subject of the BACT determination. Likewise, as there is relevant information in the literature, especially as it is addresses available control options for the subject pollutant, copies of that information should be included in a BACT evaluation. This information enables the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for a BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

Support Provided for Work Practices As BACT for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the 2022 application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard.[78]

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proposes to, "Conduct annual adjustment and tune-up to include, **at a minimum**, inspecting, adjusting, cleaning, or replacing instrumentation and operational control system components and inspecting the air-to-fuel ratio control system and adjusting as **appropriate** for **proper** operation." [Emphasis added.]
Moreover, this statement of what would constitute "good combustion practices" for the stoves would be problematic as it would not be enforceable given the various qualifications, as highlighted, on the actions that are required actions to be taken.

[77] For the 2022 application, this information is considered necessary. BACT determinations for the CO emissions of casthouses for blast furnaces and blast furnace stoves are uncommon. The Illinois EPA does not have the ability based simply on its own experience and knowledge to confirm that the potential control options for CO BACT were reasonably identified in the BACT evaluations in the application.

[78] The definition of BACT at 35 IAC 204.280 provides that:

> USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions --*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel emissions units subject to the BACT requirements for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves there is no sampling port satisfying the location requirement in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.
>
> For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves.
>
> Footnote 45. For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.
> Footnote 46. Appendix A-1 to 40 CFR part 60.
>
> 2022 application, Section 8.2.2.6, "Step 5 – Establish CO BACT," p. 8-7.

Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. For example, the application does not include diagrams for the existing ductwork of the stoves to address whether the configuration of this ductwork would accommodate installation of test ports at a location that would satisfy USEPA Reference Method 1. The application also does not show how the refractory lining on the stacks or their age, approximately one hundred years old, would present significant technical challenges and costs so that the installation of test ports at a suitable location should be considered infeasible. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

> If the Agency [Illinois EPA] determines that technological or economic limitations on the application of measurement methodology to a particular emission units would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set further the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means that achieve equivalent results.

19. THE APPLICATION DOES NOT ADDRESS BACT FOR SO_2 AND CO FROM USE OF COKE OVEN GAS (COG) IN THE BLAST FURNACE STOVES

The 2022 application does not demonstrate that Best Available Control Technology (BACT) was utilized as an aspect of the Project for the SO_2 and CO emissions of the blast furnace stoves, as required under the PSD program (e.g., 35 IAC 204.1100(c)). In this regard, unlike the original application, the 2022 application addresses emissions from use of coke oven gas (COG) as fuel in certain Project-affected units. (Refer to the revised netting analyses for the Project for particulate, NOx and VOM and in the 2022 application.) As the 2022 application now addresses emissions of certain pollutants from burning of COG in fuel-burning units, including the blast furnace stoves, this application must also address the related consequence for emissions of SO_2 and CO under the PSD program from burning COG in the stoves. SO_2 and CO are pollutants for which the Project is a major modification subject to PSD. However, the 2022 application does not address BACT for SO_2 and CO as applied to use of COG in the stoves. As such, the 2022 application does not demonstrate that prior to February 2015, when the by-product recovery coke oven batteries at the Granite City Works were shut down and COG ceased to be available, BACT was being utilized for the SO_2 and CO emissions from use of COG in the stoves.

With respect to CO, it is relevant that the BACT demonstration in the 2022 application focuses on CO emissions from burning of fuels other than COG. For fuel burning units, the 2022 application states that "CO emissions of these units result primarily from incomplete combustion during the firing of BFG and natural gas." This ignores the historic contribution of COG to the CO emissions of the stoves prior to February 2015. The 2022 application also does not state that, as of February 2015, it was no longer necessary to address CO emissions from use of COG because COG was no longer produced and available for use.

20. AS RELATED TO SO_2 EMISSIONS FROM USE OF BFG, THE 2022 APPLICATION IS INCONSISTENT WITH A PENDING 2008 APPLICATION

In 2008, US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of BFG and the SO_2 emissions resulting from the use of BFG. That application (the 2008 application) was received on February 4, 2008. The 2022 application is inconsistent with and conflicts with the 2008 application. As such, these applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "... does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." (2022 application, p. 2-2.) The 2008 application does request changes to the provisions of the permit for SO_2 as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors." (October 2008 application, p. 1-1.)

In particular, in the 2008 application:

> ...US Steel seeks to revise the Production Increase Permit (95010001) to account for US Steel's revised method for calculating the SO_2 emissions from BFG combustion. This will increase the total allowable SO_2 emissions on an annual basis from combustion of BFG in the Production Increase Permit.
>
> 2008 application, pp. 2-2 and 2-3

The 2008 application specifically requests that the SO_2 emission factor limit for BFG be increased from 6.65 to 16.00 pounds/million cubic feet of gas burned. With the revised emission factor, the permitted SO_2 emissions from use of the 185,030 million cubic feet of BFG per year, as allowed by the permit, would increase from 615.22 to 1480.24 tons/year. However, the 2022 application provides that the limits for SO_2 for use of BFG should be unchanged. As such, the 2022 application indicates that for use of BFG the requested revised permit should continue to limit SO_2 emission to 6.65 pounds/million cubic feet burned and 615.22 tons/year.

Moreover, the existence of the 2008 application suggests that the revisions to SO_2 emission limits that it requested were needed at the time of that application. The 2022 application does not show that this was not the case, as it does not address historic SO_2 emissions from use of BFG to show that an SO_2 emission factor of 6.65 pounds/million cubic feet was appropriate when Permit 95010001 was originally issued in 1996 and that annual SO_2 emissions have never exceeded 615.22 tons/year.

21. AS RELATED TO EMISSION LIMITS FOR SO_2, LEAD AND CO, THE 2022 APPLICATION IS INCONSISTENT WITH PENDING BOARD APPEALS

As already mentioned, the 2022 application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. The application states, "This permit application also does not request any changes to the SO_2 and lead emission limits in Construction Permit No. 950100001, so SO_2 and lead emissions will not be discussed further." [2022 application, Section 2.2, "General Description of Requested Permit Revisions." p. 2-2.][79, 80, 81] For CO, the 2022 application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[82]

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[79] In Section 3 of the application, in which support for elimination of emission factor limits and use of group limits is generally provided, the application only addresses limits for particulate, NOx and VOM. For example, the application states that,

> The approach proposed by USS Granite City with respect to the PM, PM_{10}, NOx and VOM emissions caps to be used in any revised Construction Permit No. 95010001, including the proposed revisions to certain emission limitations, compliance demonstration requirements, and other permit conditions as discussed in detail in Sections 5 through 7 of the permit application ["Proposed Changes to Permit Terms for PM and PM_{10} Emissions Increases Analyses," "Proposed Changes to Permit Terms for NOx Emission Increases Analysis, and "Proposed Changes to Permit Terms for VOM Emission Increases Analyses," respectively] is consistent with policy and precedent and will improve the enforceability of the PTE limitations in Construction Permit No, 95010001. In particular, USS Granite City emphasizes that removal of certain conditions and provisions addressing emissions individual emission units or emission points, including both limits on annual emissions and provisions emission addressing emissions factors will not result in impairment of the enforceability of the PTE limitations.
>
> 2022 application, Section 3, "Discussion of Permit Conditions Used to Restrict PTE [Potential to Emit]," 3-3.]

[80] For process operations, Permit 95010001 currently limits SO_2 emissions from the casthouse and slag pits associated with the blast furnaces in pounds per ton of iron produced and tons per year. For the casthouse, the SO_2 emissions of the main baghouse for the casthouse, the baghouse for the iron spouts at the casthouse, and the uncaptured emissions from the casthouse are limited, respectively, to 0.2006, 0.0073, and 0.0104 pounds per ton of iron produced. The SO_2 emissions of the slag pits are limited to 0.0100 pounds per ton of iron produced. (Permit 95010001, Condition 5 and Table 1.)

Although the emission factor limits for the SO_2 emissions of the casthouse are not identified as Best Available Control Technology (BACT) by Permit 95010001, these limits are considered to be the determination of BACT for SO_2 and should have been identified as such in this permit. BACT is required for the casthouse for SO_2 because the Project was a major modification for SO_2 under the PSD program, as is stated in this permit. Accordingly, as Project included physical changes to the blast furnaces to increase their production capability, BACT is required for the SO_2 emissions of the casthouse.

[81] For operations in the basic oxygen furnace shop, Permit 95010001 currently limits lead emissions in pounds per hour and tons per year. For the basic oxygen furnaces, the lead emissions from the ESP stack and roof monitor are limited to 0.01934 and 0.0129 pounds per hour, respectively. The lead emissions from desulfurization and hot metal transfer are limited to 0.0133 pounds per hour. (Permit 95010001, Condition 18 and Table 2.) The permit does not address the lead emissions of the basic oxygen furnaces that are now captured and controlled by the new baghouse system nor does the 2022 application request any revisions to the permit to address the lead emissions of these furnaces that now occur from the stack of the baghouse.

[82] In the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests certain updates to the

However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the basic oxygen furnaces, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack.[83] As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. As previously discussed, in these appeals, US Steel challenged all emission factor limits set by Permit 95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the t emission factor limits that are set for SO_2, CO and lead. In addition, in the 2022 application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.[84]

With regard to the CO emissions of the basic oxygen furnaces, the 2022 application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the basic oxygen furnaces, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system. Moreover, as the 2022 application does not propose such revisions to the current limits for CO emissions of these furnaces, the application effectively requests a relaxation of the current limits. This is because the revised permit would not address the CO emissions of these furnaces that now occur through the baghouse stack. That is, the limits in the revised permit would not account for any CO emissions that are no longer being captured with the ESP system and are instead now being emitted from the baghouse system.[85]

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limits for CO emissions from use of blast furnace gas and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

[83] Permit 95010001 currently limits CO emissions of the basic oxygen furnaces through the ESP stack to 8.993 pounds per ton of liquid steel produced and 16,097.47 tons/year. (Permit 95010001, Condition 18, Table 2, Section 1, BOF ESP Stack.) The permit does not address CO emissions that are now captured by the new baghouse system and emitted from its stack or any uncaptured CO emissions, which occur through the roof monitor.

[84] If the subject emission factor limits were included in a revised permit, the Illinois EPA could explain that, if these limits in the revised permit were stayed pursuant to an appeal to the Pollution Control Board, the limits would continue to be enforceable pursuant to Permit 95010001 as issued before the revision of the permit and any appeal of the revised permit to the Board.

[85] The 2022 application also does not request revisions to Permit 95010001 to address uncaptured CO emissions of the basic oxygen furnaces or otherwise address the uncaptured CO emissions of these furnaces. This is not consistent with the approach taken for the casthouse on the blast furnaces. For the casthouse, the application requests that the revised permit limit the overall emissions of CO from the stacks on the control systems serving the casthouse. The application also includes information for the overall CO emissions of the casthouse, including other captured emissions and uncaptured emissions.

> As discussed in Section 8.2.3.7 of this permit application [BACT Evaluation for Blast Furnace Casthouse], USS Granite City is proposing a CO BACT emission limit of 70 lb/hr based on total emissions of these two baghouses [main casthouse baghouse and iron spout baghouse], assuming

22. THE 2022 APPLICATION DOES NOT INCLUDE A SIGNED CERTIFICATION FOR THE ACCURACY AND COMPLETENESS OF THE APPLICATION

The 2022 application does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022, as required by 35 IAC 201.159 and Section 39.5(5)(e) of the Illinois Environmental Protection Act. In its place, the 2022 application includes a photocopy of an earlier certification, dated February 25, 2022, which was submitted with a prior application (2022 application, "Appendix A – Application Forms (Copies of Previously Submitted Versions)"). However, the 2022 application is a revision of the earlier application and US Steel intends the 2022 application to replace the earlier application submitted in March 2020 in its entirety (2022 application, Cover Letter). Accordingly, the 2022 application must include a new certification for its truth, accuracy and completeness.

95% capture efficiency for the capture system associated with the cast baghouse, as discussed in Section 5.2.3 of this permit application {A&B Blast Furnace Casthouse Roof Monitor Emissions PM_{10} Revised], the fugitive CO emissions from the casthouse roof monitor are 3.1 lb/hr. Total CO emissions from the casthouse roof monitor, including both baghouse and fugitive emissions are 73.1 lb/hr and 320 tons per year ("TPY").

2022 application, Section 4.4, "Updated CO Emissions Information for Blast Furnace Casthouse."

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

July 2023

Project Summary for the Proposed Denial of an Application* from United States Steel Corporation – Granite City Works for Revisions to a Construction Permit/PSD Approval Issued for a Production Increase Project at its Mill in Granite City

Site Identification No.: 119813AAI
Permit/Application No.: 95010001

Illinois EPA Contacts:
Review Engineers: Minesh Patel, Christopher Romaine and Jason Schnepp
Community Relations Coordinator: Brad Frost

Schedule for Public Comment Period:
Comment Period Begins: July 21, 2023
Comment Period Scheduled to Close: August 21, 2023

* In its application, U. S. Steel asks that the requested revisions of Permit 95010001 be processed by the Illinois EPA with "Integrated Processing," as is allowed by Section 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act. Integrated Processing of the revised permit would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit. Integrated Processing would require that the revision of the permit provide for compliance requirements that are substantially equivalent to those that are required in CAAPP permits. The processing of the permit must also be subject to procedural requirements that are substantially equivalent to those that apply for issuance CAAPP permits, including an opportunity for USEPA to review and comment upon a proposed version of the revised permit following completion of a public comment period on the draft of the revised permit.

1. Introduction

United States Steel - Granite City Works (US Steel) has applied to the Illinois EPA for revisions to an air pollution control construction permit (Permit 95010001) for a project at its Granite City Works, the steel mill in Granite City. This project (the "Project") involved increases in the permitted production of iron and steel by this facility. As this facility is a source of emissions, Permit 95010001 provided approval for the Project under both Illinois' construction permit programs for sources of emissions and the Prevention of Significant Deterioration (PSD) program under the federal Clean Air Act. This permit was originally issued in January 1996 to National Steel and was transferred to US Steel after it became the owner of the facility. This proposed denial involves the US Steel's revised application submitted in October 2022 (the "2022 application").

A key reason why revisions to Permit 95010001 are needed is that emission testing conducted in 2014 on the two basic oxygen furnaces (BOFs), in which steel is produced, showed their emissions of nitrogen oxides (NOx), as well as volatile organic material (VOM), are higher than is allowed by this permit. This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit were based on information in the original application.

US Steel has worked to prepare an application for revisions to Permit 9501001 that would allow more emissions of NOx and VOM from the BOFs. The 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted and subsequent changes that have occurred at the facility. Notably, the emissions of carbon monoxide (CO) of certain units have also been found to be higher than stated in the original application. A baghouse control system has been installed for the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. The byproduct coke oven batteries formerly at the facility were shut down in 2015. A brief description of some of the revisions to Permit 95010001 that US Steel has requested is provided at the back of this document in Appendix 1. The requested revisions do not include increases in the permitted iron and steel production of the facility as allowed by this permit as issued in 1996.

The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this are set forth in the draft of the proposed denial that has been prepared. Brief descriptions of the reasons why the Illinois EPA has determined that the 2022 application should be denied are provided in Appendix 2 of this document. For some requested revisions to Permit 95010001, the application should be denied because it does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply to this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application should be denied because it would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

As required by the PSD program, the Illinois EPA is holding a public comment period on its preliminary determination that the 2022 application should be denied and the draft denial letter that

has been prepared. This will allow for the public to consider and comment on this planned action and the draft of the denial letter that the Illinois EPA has prepared.

2. Background on the Granite City Works

The Granite City Works are an integrated steel mill, making both iron and steel. It has two blast furnaces to make iron from iron ore and an associated casthouse located between them in which tapping of iron and slag from the furnaces take place . Two basic oxygen furnaces (BOFs) are used to process iron from the blast furnaces, together with scrap metal, into steel. Before molten iron from the blast furnaces is charged to a BOF vessel, the iron undergoes "desulfurization" with a reagent to remove sulfur from the iron. Ladles of molten steel produced in the BOFs are transferred to "ladle metallurgy" where with the final additions of alloying materials are made to the molten steel. The two basic oxygen furnaces, the iron desulfurization operation, and the ladle metallurgy operations are all located in the basic oxygen furnace shop (BOF shop). From ladle metallurgy, the ladles of molten steel are transferred to the continuous casters in an adjoining building. The solid steel slabs from continuous casting are processed in rolling mills at the source, which make long, thin strips of steel that are wound in coils. Steel slabs from the casters also go to other plants to be made into finished steel.

Other operations at the Granite City Works include raw material handling and storage, steam boilers, and fuel-burning process equipment. The raw material handling and storage operations handle raw materials, such as iron ore pellets, limestone and other fluxing agents, coke, and alloy materials, for the iron and steel making operations. The steam boilers can burn both natural gas and blast furnace gas (BFG). BFG is a low heat content gaseous byproduct from the blast furnaces. BFG is the principal fuel for the blast furnace stoves in which the blast air supply for these furnaces is heated. Other fuel-burning process equipment at the source burns natural gas. Vehicle traffic on roads and parking lots at the Granite City Works also is a source of emissions of fugitive dust.

The Granite City Works formerly included two by-product recovery coke oven batteries and associated by-product processing plant. These operations were permanently shut down in February 2015. The primary source for coke used in the blast furnaces is now two heat recovery coke oven batteries in Granite City that are operated by Gateway Energy. With the shutdown of the by-product recovery coke oven batteries, coke oven gas is no longer produced and available for use in the blast furnace stoves, boilers and other fuel-burning equipment at the Granite City Works that previously used coke oven gas to provide a portion of their fuel.

Granite City is located in Madison County, which is part of the S. Louis Major Metropolitan Area. Madison County is designated nonattainment under the federal Clean Air Act for the National Ambient Air Quality Standard (NAAQS) for ozone.[1] For other pollutants for which there are NAAQS, i.e., carbon monoxide (CO), lead, nitrogen dioxide (NO_2), particulate matter$_{10}$ (PM_{10}), particulate matter$_{2.5}$ ($PM_{2.5}$) and sulfur dioxide (SO_2), Madison County is designated attainment or unclassifiable. USEPA maintains information about current ambient air quality for ozone and particulate on the internet at AirNow (airnow.gov). The Illinois EPA prepares annual reports for

[1] Air quality designations are adopted by USEPA. The designations for Illinois are found at 40 Code of Federal Regulations (CFR) 81.314.

ambient air quality as measured by its network of air monitoring stations around the states. These reports are also available on the internet (epa.illinois.gov/topics/air-quality-reports).

The Granite City Works are in an area that is of concern for Environmental Justice. As such, any proposed permit actions involving this facility are subject to the Illinois EPA's "Environmental Justice Policy." As addressed in this policy, the Illinois EPA is committed to protecting the environment and the health of the residents of Illinois, and to promoting equity in the administration of its environmental programs.

3. The Production Increase Project or the "Project"

In January 1996, National Steel, the former owner of the Granite City Works was issued Construction Permit 95010001 for increases in the allowable production of iron and steel by the Granite City Works, also referred to as the "Production Increase Project" or the "Project." As explained at that time, the increases in production would in part involve continuing improvements in the operation and maintenance of equipment, which is something that normally occur over the course of time. These would involve things such as the availability and use of ore pellets with higher yield, the availability and use of better refractories linings for furnaces, and ongoing improvements in maintenance practices that would reduce the frequency and duration of furnace outages for maintenance. However, the Project also involved certain physical changes to emission units to enable increased production of iron, i.e., changes to the blast furnace stove blowers to increase their air flow capacity. As such, the Project entailed a modification to the Granite City Works for which an air pollution control construction permit was needed.

National Steel's application for a construction permit for the Project addressed its implications for emissions of the iron and steel making operations and other operations at the Granite City Works that would be affected. The application showed that the increases in emissions from the Project would be significant so that the Project was a major modification for sulfur dioxide (SO_2)and carbon monoxide (CO) under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, as governed in 1996.[2] In this regard, in 1996, Granite City was located in areas that were designated attainment for the NAAQS for SO_2 and CO. The application submitted by National Steel addressed the substantive requirements of the PSD rules, as they applied to the Project for SO_2 and CO. For example, the application addressed the use of Best Available Control Technology (BACT) for the casthouse at the blast furnaces as it was identified as emitting SO_2 and the blast furnace stoves as they were identified as emitting SO_2 and CO. The Illinois EPA found that emissions of these pollutants from these units would be appropriately controlled with measures that reflected BACT.

National Steel's application showed that Project was not a major modification for other pollutants. For lead, the application showed that the increase in lead emissions would not be significant. For

[2] In 1996, the Illinois EPA administered the USEPA's PSD rules at 40 CFR 52.21 under a delegation agreement with USEPA. The Illinois EPA now implements the PSD program through states regulation at 35 IAC Part 204, which have been approved by USEPA as part of Illinois' State Implementation Plan.

particulate matter (PM),[3] particulate matter$_{10}$,[4] nitrogen oxides (NOx) and volatile organic material (VOM), the application showed that the net increases in emissions from the Project, considering contemporaneous decreases and increases in emissions, would not be significant. For example, the shutdown of ingot casting and the associated blooming mill at the Granite City Works provided emission decreases that were contemporaneous with the emission increases from the Project. Accordingly, for lead, PM, PM_{10}, NOx and VOM, the permitting of the Project did not address the substantive requirements of PSD or Illinois's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203 (more generally referred to as Nonattainment New Source Review or "NaNSR").

In this regard, in 1996, Granite City was located in areas that were attainment for PM and NO_2.[5] National City's application showed that the net increases in emissions of these pollutant from the Project (i.e., the increases in emissions after considering contemporaneous increases and decreases in emissions) would be below the rates that would be considered to be significant under PSD (25 and 40 tons/year for PM and NOx , respectively). In 1996, Granite City was located in areas that were designated nonattainment for NAAQS for ozone and PM_{10}. Madison County was and continues to be nonattainment for ozone. The part of Madison County that was nonattainment for PM_{10} included Granite City. For VOM and NOx, as they are regulated as precursors to ozone in the atmosphere, National City's application showed that the net increases in emissions from the Project would be below the rates that would be significant under MSSCAM (40 tons/year for both VOM and NOx). For PM_{10},the application showed that the net increase in PM_{10} emissions from the project would also be below the rate that would be significant under MSSCAM (15 tons/year).

When issuing Permit 95010001 for the Project in 1996, the Illinois EPA included various limits to hold National Steel to the representations made in the application and make those representations enforceable. The future annual production of iron by the blast furnaces and steel by the BOFs were limited to the maximum production levels requested by National Steel in the application. The future annual emissions of different pollutants from the various process units affected by the Project were limited. For the BOFs, whose particulate emissions were only controlled by an electrostatic precipitator (ESP) add-on control system in 1996, separate emission limits were set for the emissions from ESP and the uncaptured emissions from open roof monitor above the BOFs. For fuel-burning units, e.g., the blast furnace stoves and boilers, emissions limits for different pollutants were set collectively for the group of such units, rather than individually. However, separate limits

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[3] Particulate matter (PM), as addressed by the application and relevant USEPA and Illinois rules, only includes filterable particulate and not condensable particulate. Relevant rules provide that measurements of PM emissions are to be made by test methods that are designed to only measure filterable particulate.

[4] For particulate matter$_{10}$, the application only addressed filterable emissions and not condensable emissions. As subsequently addressed in USEPA rules, emissions of condensable particulate were not regulated as a constituent of particulate matter$_{10}$ before January 1, 2011 [40 CFR 51 Appendix S, Emission Offset Interpretative Ruling, Part II, (A)(31)(ii)(*a*)].

In Illinois' rules, filterable particulate matter$_{10}$ is referred to as "PM-10;" condensable particulate as "condensible PM-10." This usage is confirmed in 35 IAC 212.108(a) and (b) by the methods that are specified for emissions testing.

[5] For purposes of PSD and MSSCAM, NOx was initially regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere. As addressed in the Clean Air Act as amended in 1990, NOx also became also regulated as a precursor to the formation of ozone. Finally, NOx is now also regulated as it is a precursor to $PM_{2.5}$.

were set for the emissions from burning BFG, natural gas and fuel oil.[6] The annual emission limits for different pollutant were accompanied by "emission factor limits" that addressed emissions in pounds per ton of iron or steel produced or handled, or for the fuel-burning units, emissions in pounds per volume of fuel burned. The permit required emission testing to be conducted for certain units following issuance of the permit to verify compliance with the requirements of the permit. [7, 8]

The Illinois EPA also included certain requirements in Permit 95010001 for the BOFs that were more stringent than those that had previously applied.[9] The opacity of emissions from the roof monitor was limited to 20 percent on a 3-minute average, from 30 percent on a 6-minute average. Specific practices that were required to be used to reduce particulate emissions of the BOFs. For example, use of flame suppression was required during tapping of a BOF, when molten steel and slag are poured from a BOF into a ladle. Minimum values were set for the air flow through the hoods that capture the particulate emissions of the BOFs for control by the ESP, with different values set for the charging, refining, and tapping steps in the operation of a BOF. A housekeeping program was required for the area below the ESP where collected particulate is transferred from hoppers on the bottom of the ESP into fabric containers for transport off-site. For roadways at the Granite City Works, the permit set specific requirements for the frequency of treatment of different road segment to reduce emissions of fugitive dust due to vehicle traffic on the roadway. These

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[6] For fuel burning units, the permit did not set limits for emissions from the burning of coke oven gas (COG). The operation of the by-product coke oven batteries at the Granite City Works and the associated production of COG was considered to be unaffected by the increased production of iron by the blast furnaces. As a matter of good practice, coke oven batteries are operated at a stable production rate that is consistent with the design and conditions of the batteries. To the extent that the amount of coke produced at a source is more or less than is needed by the source, surplus coke can readily be shipped to other sources, or the deficit made up with coke shipped in from other sources.

[7] For the blast furnaces, emission testing was required for the baghouse that controls particulate emissions of the casthouse, i.e., the structure that encloses the area where molten iron and slag are periodically tapped from the bottoms of the blast furnaces, with testing required PM, VOM, SO_2 and NOx, as well as for opacity. For the BOFs, testing was required for the ESP control system for emissions of PM, CO and lead, as well as for opacity. Testing for emissions of PM was also required for the baghouse that control iron molten iron desulfurization operation that precedes the BOFs and from a representative steam boiler while burning BFG.

[8] The permit stated that the BACT requirement of the PSD rules would be met for SO_2 and CO. However, the permit did not identify specific emission limits or practices that were determined to be BACT for the BACT-subject units. For CO, the specific limits or practice that would be considered to be BACT would be addressed with the proposed revisions to this permit. For CO. US Steel has identified the existence of emissions and higher levels of emissions from the blast furnace casthouse and stoves, respectively. As such, for these unit, BACT for CO must be reevaluated. For SO_2, US Steel has not requested increases in permitted annual emissions. Therefore, BACT for SO_2 does not need to be reevaluated. It would nevertheless be reasonable in the revised permit to identify requirements that are considered to be BACT for SO_2.

[9] The PM-10 emissions of the Granite City Works with the Project were of singular concern to the Illinois EPA. In 1996, an area that included Granite City was designated as nonattainment for PM_{10} air quality. The Illinois EPA performed computerized dispersion modeling for the future PM_{10} air quality of the Granite City area with the Project. The modeling analysis showed that the National Ambient Air Quality Standards (NAAQS) for PM_{10} would be met with PM-10 emissions from the Project-affected units at the Granite City Works at the maximum rates in reflected by the application. In May of 1998, the USEPA redesignated the area in which Granite City is located to attainment for PM_{10}.

Incidentally, the Granite City area is now also designated attainment for the NAAQS for $PM_{2.5}$. The NAAQS for $PM_{2.5}$ were initially adopted by USEPA in 2006, with the NAAQS on an annual average subsequently being lowered in 2012. The ambient air monitoring stations conducted in Granite City by the Illinois EPA continue to show attainment of the NAAQS for PM_{10} and $PM_{2.5}$.

requirements were accompanied by requirements for daily recordkeeping for the treatment of roadways and the implementation of the cleaning program for these roads. The permit also required periodic treatment of certain public roads that serve the source to their reduce emissions.

4. Improved Control of Particulate Emissions of the BOFs (the New Baghouse)

The version of Permit 95010001 that is the subject of US Steel's 2022 application is the revised permit issued on December 17, 2012. In this regard, in 2010, US Steel agreed to install a baghouse control system with fabric filter that would operate along with the existing ESP system to improve control of particulate emissions of the BOFs from charging and tapping. The commitment to the additional control system was made in an agreement between US Steel and the Illinois EPA[10] for several measures to reduce particulate emissions from steelmaking.[11] For the BOFs, installation of a baghouse system was required to improve control of emissions from tapping, when steel and slag are poured from a BOF vessel into a ladle. US Steel was also required to evaluate whether the new baghouse system could be designed to also improve the control of emissions from charging, when iron and scrap metal are poured and unloaded into a BOF vessel. US Steel determined that the new baghouse system could be designed to improve control of emissions from both charging and tapping. As such, once the new baghouse system began operation, the existing ESP system continued to control emissions for the BOFs from refining; the emissions from charging and tapping began to be controlled by a combination of the ESP system and the new baghouse system.

The new baghouse system for the BOFs was initially addressed by Construction Permit 11050006, as issued on August 31, 2011. For purposes of PSD and MSSCAM, this permit was based on the new system being a project that would reduce the emissions of particulate and lead from these furnaces AND NOT increase any emissions. US Steel subsequently applied for a revision of this permit, which was issued on April 1, 2013. In the application for revision of this permit, US Steel formally requested Integrated Processing so as to allow certain related changes to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by means of an administrative amendment. This would assure that the baghouse system could be used in compliance with requirements in the CAAPP permit, which did not address the possibility that a baghouse might be added for the BOFs. For example, for tapping of a BOF, flame suppression was required by the

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[10] "United States Steel Corporation Granite City Works and IEPA Memorandum of Understanding," signed by US Steel on June 30, 2010, and by the Illinois EPA on July 1, 2010 (the Agreement).

[11] In addition to the new baghouse system for the BOFs, the Agreement also provided for use of "steam rings." In a BOF, oxygen is used during the refining step to remove carbon and silica from the molten iron by oxidation. The oxygen lances are inserted into the BOF through openings in the hood over the BOF. Steam rings inject steam in the annular areas between the lances and the openings for the lances. This interferes with outward flow through the openings in the hood improving capture of particulate. by the hood.

The Agreement also provided for limits for emissions of particulate matter, in grains per dry standard cubic foot (gr/dscf), that were more stringent than the emission standards that were applicable under state rules. and 40 CFR 63 Subpart FFFFF:

Baghouses for iron desulfurization, slag skimming and ladle metallurgy: 0.005 gr/dscf (compared to 0.01 gr/dscf)

ESP for the BOFs: 0.01 gr/dscf (compared to 0.02 gr/dscf)

New baghouse for the BOFs: 0.005 gr/dscf (compared to 0.01 gr/dscf).

CAAPP permit reduce particulate emissions. However, this would not be appropriate with the new baghouse system.[12]

It was not possible to simply revise Permit 11050006 with Integrated Processing to enable the revisions to the CAAPP permit that were needed to facilitate the installation and use of this system. It was first necessary to revise Permit 95010001, the permit that is now the subject of the 2022 application.[13] This is because the requirements in the CAAPP permit that were impediments to moving forward with the baghouse system were actually established by Permit 95010001.[14] For example, Condition 11 of Permit 95010001 required the use of flame suppression for tapping; the CAAPP permit merely restated this requirement. Accordingly, Permit 95010001 was revised to provide that this requirement, as well as similar operational requirements that would be inconsistent with the use of the new baghouse system would cease to apply when the new system began to be operated.[15] In their place, US Steel was broadly required to operate and maintain the BOFs and associated emissions capture and control systems in accordance with the applicable requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Facilities, 40 CFR 63 Subpart FFFFF.[16]

In the revision to Permit 95010001, operational requirements for the BOFs and the ESP system that were considered to be obsolete or outdated with the new requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, were also removed. The operational requirements of this NESHAP were determined to better address proper operation of emission control systems for BOFs. For example, as related to capture of secondary emissions,[17] the NESHAP addresses the operation of the capture

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[12] In flame suppression, the use of natural gas burners reduces generation of particulate by depleting the amount of oxygen in the air that comes in contact with molten metal. To improve control of emissions from tapping, the new baghouse system includes local hoods specifically to capture emissions from tapping, as well as local hoods to capture emissions from charging. With local capture hoods for tapping, the continued use of flame suppression would be unsafe, posing hazards both to personnel and equipment, as well as being of uncertain effectiveness to reduce emissions. The high levels of draft provided by the local capture hoods are incompatible with flame suppression as they can act to interfere with the stability and orientation of the flame and pose risks of blowing out the flame.

[13] The revision of Permit 95010001 was completed several months before the revision of Permit 11050006, the permit for the baghouse system. As a PSD permit issued pursuant to 40 CFR 52.21, the revision to Permit 95010001 did not take effect on December 13, 2012, when it was issued. It became effective later in January 2013 after the date for filing an appeal of the revised permit with USEPA's Environmental Appeals Board had passed without any appeal. With the effectiveness of revised Permit 95010001, the revision to Permit 11050006 with Integrated Processing could then be completed.

[14] If Permit 95010001 had not been revised to remove operational requirements that precluded the use of the new baghouse system, these requirements could not have been removed from the CAAPP permit by means of Integrated Processing of a revision to Permit 11050006. These operational requirements would still have been applicable since these requirements would have continued to be present in Permit 95010001.

[15] To address the period before the new baghouse system was operational, the revision to Permit 95010001 provided that the use of flame suppression for tapping and other measures that would obstruct the use of the new baghouse system cease to apply when US Steel began operation of the new system. [Revised Permit 95010001, Condition 11(b).]

[16] US Steel became subject to the requirements of this NESHAP, which applies to the BOFs and certain other operations at the Granite City Works, beginning May 22, 2006. This is because the facility is considered an existing source under 40 CFR 63 Subpart FFFFF.

[17] In common usage, the particulate emissions of BOFs from refining are often referred to as the "primary emissions;" the emissions from charging and tapping are referred to as "secondary emissions." However, in

hoods and the air flow entering the control device(s), rather than the aggregate air flow at the stack of the control device(s).[18] Likewise, the compliance procedures of the NESHAP (e.g., requirements for emission testing and operational monitoring) were determined to be more appropriate for the BOFs and their control systems than the requirements in Permit 95010001.[19]

In summary, the previous revisions to Permit 95010001 were narrowly focused on enabling the installation of the new baghouse system. This was done by removing specific requirements that were inconsistent with the use of this system and, more generally, by removing requirements that were no longer appropriate because of applicable requirements in 40 CFR 63 Subpart FFFFF. The revisions to Permit 95010001 did not extend to other requirements, such as the emissions limits set by this permit for the BOFs. Likewise, the changes to the CAAPP permit that were authorized by means of the Integrated Processing of the revision of Permit 11050006 were focused on enabling the future operation of new baghouse system, including the related changes that had been made in the December 2012 revision to Permit 95010001.[20] The changes authorized to the CAAPP permit also included relevant requirements for the ongoing operation of the baghouse system that were actually set in Permit 11050006 and would appropriately be restated in the CAAPP permit. However, changes were not authorized to the emissions limits in the CAAPP permit for the BOFs and various other emission units as those limits were still present in Permit 95010001.[21]

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the NESHAP, 40 CFR 63.7852, the primary particulate emissions of a BOF are defined as the emissions that are captured for control by the primary emission control system; the secondary emissions are the emissions that are not captured for control by the primary emission control system. As such, the Granite City Works, the ESP control system is the primary control device for the BOFs under the NESHAP. All emissions that are captured by this system, including emissions from charging, refining and tapping, are primary emissions.

[18] The NESHAP also places the burden for establishing the specific measures that will be implemented to ensure proper operation of the capture systems and control devices for BOFs on the source rather than on the permitting authority. The measures that are required to be used are the ones that were present when performance testing for particulate matter emissions shows compliance with the applicable standard.

In light of the applicable requirements of the NESHAP, the operating procedures and requirements in Attachment A, as formerly addressed by Condition 10, were also considered overly prescriptive. For example, Attachment A set out actions that were to be to be taken by employees, e.g., the emission control foreman and operator, rather than practices that the Permittee was required to implement.

[19] A practical concern also existed because certain operational requirements of Permit 95010001 were similar to but different than those of the NESHAP. Given the requirements of the NESHAP, which were newer and developed through rulemaking, the continuing implementation and oversight of the older requirements in Permit 95010001 was not considered to be an appropriate or effective use of resources.

[20] The 2012 revision of Permit 11050056 provided that the changes to the CAAPP permit for the facility that were authorized by means of Integrated Processing could only happen or take effect after the new baghouse system for the BOFs began operation (Permit 11050056, issued April 1, 2013, page 16). US Steel has not yet applied to the Illinois EPA to initiate issuance of an administrative amendment to the CAAPP permit that would reflect the changes to this permit authorized by Permit 11050056.

[21] US Steel filed an appeal of revised Permit 11050056 with the Illinois Pollution Control Board (Board), PCB 13-62. Similar to the appeal of CAAPP permit for the facility (PCD-53), Permit 11050056 was appealed because it also provided for the emission limits for the BOFs and other units in the BOF shop set by Permit 95010001 to again be restated in the CAAPP permit. In this regard, to address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for the complete replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, with a new, revised Section that addresses the basic oxygen furnace shop with the new baghouse system. As an appeal was filed, the provision of Permit 11050056 that would have restated those limits have been stayed pending resolution of the appeal.

5. US Steel's Current Application for Revisions to Permit 95010001

US Steel's current application (the "2022 application" or "application") requests a number of revisions to Permit 95010001. A key reason why revisions to Permit 95010001 are needed is that emission testing for the two basic oxygen furnaces (BOFs) shows their emissions of nitrogen oxides (NOx), as well as their emissions of volatile organic material (VOM), are higher than is allowed by this permit.[22] This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit reflected information in the application. US Steel has also determined that emissions of carbon monoxide (CO) of the casthouse on the blast furnaces and certain Projected-affected fuel burning units are higher than are addressed by the permit. This is because original application did not address CO emissions from the casthouse and understated CO emissions from Project-affected fuel burning units

Accordingly, the 2022 application requests revisions to Permit 9501001 to allow more emissions of NOx and VOM from the BOFs, which the original application understated. In particular, the application requests that the permitted NOx emissions of the casthouse and the BOFs be increased by 19.4 and 220.2 tons/year, respectively. To support these increases in emissions, the application includes revised netting analyses that attempt to show that the Project would not be a major modification for purposes of either PSD or MSSCAM with the requested increases in emissions.

US Steel also requests that the revised permit address CO emissions from the casthouse and allow more CO emissions from fuel burning units.[23] For CO, the application attempts to show that the Project would still comply with the substantive requirements of PSD, which are applicable as the Project originally was a major modification for CO under the PSD program. The application includes an evaluation of BACT for CO for the casthouse and blast furnace stoves, i.e., the units that are or would become subject to the BACT requirement of the PSD program.[24] The application also includes a new air quality impact analysis for CO that would address the Project with the increases in CO emissions as are requested.

This 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted. For PM, PM_{10}, NOx and VOM (i.e., pollutants other than CO, sulfur dioxide (SO_2),and lead), the application requests that the revised permit not include the provisions in Permit 95010001 that would address emissions of individual "processes" in pounds/ton of production or throughput. (For convenience, these provisions in the permit that

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[22] This emissions testing of the BOFs for NOx and VOM was first conducted in 2014, with further testing conducted in 2018 and 2021.

[23] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse, for which CO emissions were not identified and addressed in the original permitting for the project. This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than ten boilers that are now retired. For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas (BFG) used in the blast furnaces stoves, understated CO emissions.

[24] The BOFs were not physically modified as part of the Project. Accordingly, they would not become subject to requirements for BACT or LAER even if the Project were a major modification for a pollutant.

address emissions in pounds/ton of production or throughput or, for lead, in pounds per hour, are generally referred to by the Illinois EPA as "emission factor limits." The Illinois EPA set the emission factor limits and limits on annual emissions in Permit 95010001to ensure that the Project would not be a major modification for purposes of PSD or MSSCAM.[25] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes or emission points, the application requests "group limits" for the annual emissions of groups of related emission units.[26] For emission units for which routine emission testing is feasible, the emissions contributed by units towards the group limits would be determined using emissions rates that reflect the results of emission testing. For certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the BOFs), for which routine emission testing is not feasible, the application requests that the revised permit set "prescribed emission factors." For these units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 for process units that currently restrict emissions in pounds/ton of input or production or in pounds/hour.[27]

Lastly, the application also recognizes subsequent changes at the facility, which occurred after the Project, that were not contemplated in 1996 and not provided for when Permit 95010001 was originally issued. The changes at the facility include the addition of a baghouse control system for the BOFs to improve control of their particulate emissions. The changes also include the shutdown of the by-product coke oven batteries that were formerly at the facility, which eliminated emissions from these operations. In this regard, the application requests revisions to Permit 95010001 to provide for increased use of natural gas by Project-affected fuel burning units. The application explains that this is necessary with the shutdown of the by-product coke oven batteries because COG is no longer available and more natural gas may need to be used.

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[25] The removal from Permit 95010001 of the "emission factor limits" would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62, as these appeals address PM, PM_{10} and NOx and VOM emissions. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, before issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing "emission factors" were considered to constitute enforceable limits on emissions.

[26] For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period.

[27] Unlike the emission factor limits in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors established in a revision to Permit 95010001 would instead be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit.

The Illinois EPA has reviewed the 2022 application to determine whether the application shows compliance with applicable regulatory requirements and would support issuance of a revision to Permit 95010001 as requested by US Steel. The Illinois EPA has also considered whether the application would support issuance of such a revised permit with Integrated Processing, as has also been requested, so that related revisions to the CAAPP permit for the Granite City Works may be made by administrative amendment. The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this determination are set forth in the draft of the proposed denial letter that has been prepared.[28] As discussed in further detail below, for some of the revisions requested to Permit 95010001, the application does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply for this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

6. Discussion of Key Reasons for the Planned Denial of the Application

6.1. The Revised Netting Analysis for the Project for NOx

A. Overview

The revised netting analysis for NOx submitted for the Project with additional NOx emissions as requested does not show that the Project would not become a major modification for NOx. Accordingly, a revised permit cannot be issued as requested because, for emissions of NOx, the 2022 application does not address or show fulfillment of the substantive requirements of the rules for Prevention of Significant Deterioration (PSD) and Major Stationary Sources Construction and Modification related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and MSSCAM (35 IAC 203.301) for NOx. This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx. The application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the application must show for NOx that the relevant substantive requirements of PSD and MSSCAM are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and MSSCAM would be met for the Project for NOx.

[28] Brief descriptions of the reasons why the Illinois EPA's preliminary determination for this application is that it should be denied are provided in Appendix 2 of this document.

The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[29] However, the application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would be such that the Project would not be a major modification for NOx.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The application proposes to rely upon the decreases in NOx emissions due to these changes, which were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as it does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed below, the application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

B. The Analysis Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application relies on decreases in emissions that occurred long after 1996. This includes decreases from the shutdown of ten of the twelve boilers at the facility that were originally addressed by Permit 95010001 in 1996. The shutdown of Boilers 1 through 10 was required by Construction Permit 06070023, which was originally issued in July 2006 for construction of a cogeneration boiler that would burn blast furnace gas (BFG) and natural gas. The application does not show that NOx emissions of these ten boilers, as existed in the period prior to

[29] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

2009, were considered in the "future" NOx emissions with the Project from the Project-affected fuel burning units. In addition, with regard to the two remaining old boilers at the facility, Boilers 11 and 12, that continue in operation, flue gas recirculation systems have been installed pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to reduce NOx emissions to facilitate compliance with 35 IAC 217.164. The application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from these boilers that are now being achieved with the new systems, rather than the NOx emissions as previously existed with the Project in the period before these systems were installed.

The application also indicates baseline NOx emissions from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12. In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[30]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application. This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the BOFs. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[31]

C. Insufficient Information to Independently Confirm the Revised Baseline NOx Emissions

The revised determination of baseline NOx emissions of Project-affected fuel burning units that is part of the revised netting analysis is not accompanied by information that would allow it to be independently verified. In this regard, the application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that

[30] The revised netting analysis does address increased use of natural gas by Project-affected fuel burning units because COG is no longer available and more natural gas may need to be used to make up for this.

[31] Indeed, with the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of affected fuel burning units indicated in the application are emissions that could have been allowed by this permit in 1996. The future NOx emissions of these units indicated in the application are less than their baseline NOx emissions. As the Project did not include any elements that would lower the NOx emissions of fuel burning units, the production of more iron and steel would have been accompanied by increased utilization of the blast furnace stoves and boilers so that in 1996 the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.).

appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, concerns exist with the determination of the overall baseline NOx emissions for the Project. In particular, this application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The application utilizes a NOx emission factor for Boilers 11 and 12 for use of COG that the application states is based on emission testing conducted on the stack for underfiring of one of the coke batteries, rather than testing on one of these boilers or other similar boiler. For burning of natural gas, the application does not show the emission factor that is utilized for boilers would also be appropriate for ladle preheaters and casting operations.

D. Supporting Date Is Not Provided For Future NOx Emissions of Fuel-Burning Units

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically. The application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

6.2. The Application Does Not Address the Potential for Uncaptured Emissions of NOx, VOM and CO Through the Roof Monitor of the BOF Shop

The application is deficient in its approach to the uncaptured emissions of NOx, VOM and CO emissions of the BOFs. For the BOFs, consistent with the original permitting of the Project, the application only quantifies stack emissions of NOx, VOM and CO. Moreover, the revised netting analyses for NOx and VOM assume that all emissions of these pollutants from the BOFs are now captured. That is, with the new baghouse system to improve control of particulate emissions, all NOx and VOM emissions of the BOFs that originally were not captured and were emitted through the roof monitor are now captured and emitted through the stack on the baghouse system.

This assumption is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were not addressed in the original permitting for the Project, likely because they were considered negligible. Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the application to the particulate and lead emissions of these furnaces, which assumes that there are uncaptured emissions that still occur through the roof monitor. By way of contrast, the 2022 application requests that the revised permit

establish prescribed emission factors for the particulate emissions of the BOFs that occur through the roof monitor.

The fact that there are emissions of NOx and VOM from the BOFs that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. In this regard, the application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions. However, the application does not propose any such revisions for the BOFs or explain why such revisions are not needed. For example, the application also does not explain why it would not be inappropriate for any revised permit to set a limit for the annual emissions of CO from the BOFs through the stacks of the control systems, with associated requirements for periodic emission testing.

6.3. The Inventory Used in the Air Quality Analysis for CO Omits Certain Emissions

The results of the analysis of the impacts of the Project on ambient air quality for CO cannot be relied upon because the inventory for the CO emissions of the facility with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The application includes an air quality analysis for CO because the Project was originally permitted as a major modification for CO under the PSD program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted. To support this request, an air quality analysis for CO must be part of the application pursuant to 35 IAC 204.1130, since this request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program. In this regard, the air quality analysis in the 2022 application does not address uncaptured CO emissions of the casthouse. As discussed earlier, the application does not address uncaptured emissions from these furnaces or does not explain why uncaptured emissions would not be present. In this regard, the application does not show 100 percent capture of the particulate emissions of these furnaces by the control systems for particulate. The application also does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the facility. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. In addition, the air quality analysis uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.

6.4. The Proposed Scope of Proposed Group Emission Limits Is Overly Broad

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate. In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two BOFs. These are principal emission units at

this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two BOFs to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the BOFs should not both continue to be limited individually.

In this regard, the application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted. The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[32] However, the application does not show that the specific circumstances of the Project are such that the current limits for annual emissions of the principal emission units should be replaced with group limits that apply to the combined emissions of the principal emission units and other lesser emission units.[33] The circumstances of the Granite City Works are not the same as those presented by the cited permits. The Granite City Works are a manufacturing facility at which iron is produced from iron ore and then converted into steel in BOFs. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station.

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[32] The application cites two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[33] For the casthouse, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the main baghouse for the casthouse, the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited for the permit to restrict the overall emissions of pollutants other than CO from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. (As the Project is subject to BACT for CO, the limit could only apply to stack emissions.)
The circumstances of the BOF are similar, as the current permit separately addresses emissions of particulate and lead from the ESP stack and the roof monitor. It would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of each pollutant from the BOFs.

6.5. Inadequate Justification for Elimination of Current Limits for Project-Affected Fuel Burning Units

The justification provided in the application for revisions to Permit 95010001 to eliminate limits on usage of fuel and, presumably, emission by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and blast furnace gas currently set by Permit 95010001, it does not propose any new limits in their place. This rationale is deficient because it does not consider that the application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the application does not show that new limits for fuel usage would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shut down. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

6.6. The Application Does Not Show That the Emission Factors Proposed As Prescribed Factors for Certain Units Would Be Representative

A. Introduction

To calculate baseline emissions for certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3.

For the Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Relative to prescribing emission factors, the USEPA's finding, as is provided below, should be considered *dicta* since the permit that was the subject of the appeal did not actually provide for use of prescribed emission factors. As the order addresses the possibility of using prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit

applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
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> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

B. Particulate Emissions of the BOFs Through the Roof Monitor

The application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the BOF shop (i.e., the uncaptured emissions from the BOFs). In this regard, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the BOFs. As capture and control for particulate improved, the factor for future uncaptured emissions would be different and lower (better) than the factor for baseline uncaptured emissions.

C. Continuous Casting Lines

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors that are proposed reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative.

D. Particulate Emissions of the Casthouse Through the Roof Monitor

For the casthouse roof monitor (uncaptured emissions particulate emissions of the casthouse), the application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency. Further support is needed for a prescribed emission factor for uncaptured emissions of the casthouse that is based on achievement of this level of capture.

E. Emissions of the Slag Pits and Iron Pellet Screen

For the slag pits and the iron pellet screen, the application does not provide support for the background information or inputs that were used to adjust the published factors for the operating conditions or circumstances of these units at the facility. Absent this information, the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

F. Current Provisions of the CAAPP Permit Requiring Use of Appropriate Emission Factors

The application is also deficient as it simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors." To facilitate the use of prescribed emission factors, the application also needs to propose or request revisions to general provisions in Permit 95010001 so as to also enable subsequent revisions to be made by administrative amendment to the CAAPP permit for the facility, Permit 96030056, to allow prescribed emission factors to actually be used to determine ongoing emissions of certain units.[34]

6.7. Requested Changes for Consistency with the Grouping of Units in the CAAPP Permit

In the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed by the specific changes to Permit 95010001 that have been requested. For example, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 95010001 with operations in the Basic Oxygen Furnace Shop and be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term.

On the other hand, the application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System). These emission units are currently addressed in Permit 95010001 with continuous casting operations. In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations. The application does

[34] The CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. These procedures do not provide for the use of prescribed emission factors. Rather, US Steel is generally required to use "appropriate emission factors," i.e., factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that being are used resting on US Steel. The CAAPP permit also provides for recordkeeping and reporting by US Steel so that information about the factors that are being used is publicly available and the Illinois EPA, the USEPA and interested parties can review the factors that are in use.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

July 2023

Project Summary for the Proposed Denial of an Application* from United States Steel Corporation – Granite City Works for Revisions to a Construction Permit/PSD Approval Issued for a Production Increase Project at its Mill in Granite City

Site Identification No.: 119813AAI
Permit/Application No.: 95010001

Illinois EPA Contacts:
Review Engineers: Minesh Patel, Christopher Romaine and Jason Schnepp
Community Relations Coordinator: Brad Frost

Schedule for Public Comment Period:
Comment Period Begins: July 21, 2023
Comment Period Scheduled to Close: August 21, 2023

* In its application, U. S. Steel asks that the requested revisions of Permit 95010001 be processed by the Illinois EPA with "Integrated Processing," as is allowed by Section 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act. Integrated Processing of the revised permit would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit. Integrated Processing would require that the revision of the permit provide for compliance requirements that are substantially equivalent to those that are required in CAAPP permits. The processing of the permit must also be subject to procedural requirements that are substantially equivalent to those that apply for issuance CAAPP permits, including an opportunity for USEPA to review and comment upon a proposed version of the revised permit following completion of a public comment period on the draft of the revised permit.

1. Introduction

United States Steel - Granite City Works (US Steel) has applied to the Illinois EPA for revisions to an air pollution control construction permit (Permit 95010001) for a project at its Granite City Works, the steel mill in Granite City. This project (the "Project") involved increases in the permitted production of iron and steel by this facility. As this facility is a source of emissions, Permit 95010001 provided approval for the Project under both Illinois' construction permit programs for sources of emissions and the Prevention of Significant Deterioration (PSD) program under the federal Clean Air Act. This permit was originally issued in January 1996 to National Steel and was transferred to US Steel after it became the owner of the facility. This proposed denial involves the US Steel's revised application submitted in October 2022 (the "2022 application").

A key reason why revisions to Permit 95010001 are needed is that emission testing conducted in 2014 on the two basic oxygen furnaces (BOFs), in which steel is produced, showed their emissions of nitrogen oxides (NOx), as well as volatile organic material (VOM), are higher than is allowed by this permit. This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit were based on information in the original application.

US Steel has worked to prepare an application for revisions to Permit 9501001 that would allow more emissions of NOx and VOM from the BOFs. The 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted and subsequent changes that have occurred at the facility. Notably, the emissions of carbon monoxide (CO) of certain units have also been found to be higher than stated in the original application. A baghouse control system has been installed for the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. The byproduct coke oven batteries formerly at the facility were shut down in 2015. A brief description of some of the revisions to Permit 95010001 that US Steel has requested is provided at the back of this document in Appendix 1. The requested revisions do not include increases in the permitted iron and steel production of the facility as allowed by this permit as issued in 1996.

The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this are set forth in the draft of the proposed denial that has been prepared. Brief descriptions of the reasons why the Illinois EPA has determined that the 2022 application should be denied are provided in Appendix 2 of this document. For some requested revisions to Permit 95010001, the application should be denied because it does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply to this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application should be denied because it would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

As required by the PSD program, the Illinois EPA is holding a public comment period on its preliminary determination that the 2022 application should be denied and the draft denial letter that

has been prepared. This will allow for the public to consider and comment on this planned action and the draft of the denial letter that the Illinois EPA has prepared.

2. Background on the Granite City Works

The Granite City Works are an integrated steel mill, making both iron and steel. It has two blast furnaces to make iron from iron ore and an associated casthouse located between them in which tapping of iron and slag from the furnaces take place . Two basic oxygen furnaces (BOFs) are used to process iron from the blast furnaces, together with scrap metal, into steel. Before molten iron from the blast furnaces is charged to a BOF vessel, the iron undergoes "desulfurization" with a reagent to remove sulfur from the iron. Ladles of molten steel produced in the BOFs are transferred to "ladle metallurgy" where with the final additions of alloying materials are made to the molten steel. The two basic oxygen furnaces, the iron desulfurization operation, and the ladle metallurgy operations are all located in the basic oxygen furnace shop (BOF shop). From ladle metallurgy, the ladles of molten steel are transferred to the continuous casters in an adjoining building. The solid steel slabs from continuous casting are processed in rolling mills at the source, which make long, thin strips of steel that are wound in coils. Steel slabs from the casters also go to other plants to be made into finished steel.

Other operations at the Granite City Works include raw material handling and storage, steam boilers, and fuel-burning process equipment. The raw material handling and storage operations handle raw materials, such as iron ore pellets, limestone and other fluxing agents, coke, and alloy materials, for the iron and steel making operations. The steam boilers can burn both natural gas and blast furnace gas (BFG). BFG is a low heat content gaseous byproduct from the blast furnaces. BFG is the principal fuel for the blast furnace stoves in which the blast air supply for these furnaces is heated. Other fuel-burning process equipment at the source burns natural gas. Vehicle traffic on roads and parking lots at the Granite City Works also is a source of emissions of fugitive dust.

The Granite City Works formerly included two by-product recovery coke oven batteries and associated by-product processing plant. These operations were permanently shut down in February 2015. The primary source for coke used in the blast furnaces is now two heat recovery coke oven batteries in Granite City that are operated by Gateway Energy. With the shutdown of the by-product recovery coke oven batteries, coke oven gas is no longer produced and available for use in the blast furnace stoves, boilers and other fuel-burning equipment at the Granite City Works that previously used coke oven gas to provide a portion of their fuel.

Granite City is located in Madison County, which is part of the S. Louis Major Metropolitan Area. Madison County is designated nonattainment under the federal Clean Air Act for the National Ambient Air Quality Standard (NAAQS) for ozone.[1] For other pollutants for which there are NAAQS, i.e., carbon monoxide (CO), lead, nitrogen dioxide (NO_2), particulate matter$_{10}$ (PM_{10}), particulate matter$_{2.5}$ ($PM_{2.5}$) and sulfur dioxide (SO_2), Madison County is designated attainment or unclassifiable. USEPA maintains information about current ambient air quality for ozone and particulate on the internet at AirNow (airnow.gov). The Illinois EPA prepares annual reports for

[1] Air quality designations are adopted by USEPA. The designations for Illinois are found at 40 Code of Federal Regulations (CFR) 81.314.

ambient air quality as measured by its network of air monitoring stations around the states. These reports are also available on the internet (epa.illinois.gov/topics/air-quality-reports).

The Granite City Works are in an area that is of concern for Environmental Justice. As such, any proposed permit actions involving this facility are subject to the Illinois EPA's "Environmental Justice Policy." As addressed in this policy, the Illinois EPA is committed to protecting the environment and the health of the residents of Illinois, and to promoting equity in the administration of its environmental programs.

3. The Production Increase Project or the "Project"

In January 1996, National Steel, the former owner of the Granite City Works was issued Construction Permit 95010001 for increases in the allowable production of iron and steel by the Granite City Works, also referred to as the "Production Increase Project" or the "Project." As explained at that time, the increases in production would in part involve continuing improvements in the operation and maintenance of equipment, which is something that normally occur over the course of time. These would involve things such as the availability and use of ore pellets with higher yield, the availability and use of better refractories linings for furnaces, and ongoing improvements in maintenance practices that would reduce the frequency and duration of furnace outages for maintenance. However, the Project also involved certain physical changes to emission units to enable increased production of iron, i.e., changes to the blast furnace stove blowers to increase their air flow capacity. As such, the Project entailed a modification to the Granite City Works for which an air pollution control construction permit was needed.

National Steel's application for a construction permit for the Project addressed its implications for emissions of the iron and steel making operations and other operations at the Granite City Works that would be affected. The application showed that the increases in emissions from the Project would be significant so that the Project was a major modification for sulfur dioxide (SO_2)and carbon monoxide (CO) under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, as governed in 1996.[2] In this regard, in 1996, Granite City was located in areas that were designated attainment for the NAAQS for SO_2 and CO. The application submitted by National Steel addressed the substantive requirements of the PSD rules, as they applied to the Project for SO_2 and CO. For example, the application addressed the use of Best Available Control Technology (BACT) for the casthouse at the blast furnaces as it was identified as emitting SO_2 and the blast furnace stoves as they were identified as emitting SO_2 and CO. The Illinois EPA found that emissions of these pollutants from these units would be appropriately controlled with measures that reflected BACT.

National Steel's application showed that Project was not a major modification for other pollutants. For lead, the application showed that the increase in lead emissions would not be significant. For

[2] In 1996, the Illinois EPA administered the USEPA's PSD rules at 40 CFR 52.21 under a delegation agreement with USEPA. The Illinois EPA now implements the PSD program through states regulation at 35 IAC Part 204, which have been approved by USEPA as part of Illinois' State Implementation Plan.

particulate matter (PM),[3] particulate matter$_{10}$,[4] nitrogen oxides (NOx) and volatile organic material (VOM), the application showed that the net increases in emissions from the Project, considering contemporaneous decreases and increases in emissions, would not be significant. For example, the shutdown of ingot casting and the associated blooming mill at the Granite City Works provided emission decreases that were contemporaneous with the emission increases from the Project. Accordingly, for lead, PM, PM_{10}, NOx and VOM, the permitting of the Project did not address the substantive requirements of PSD or Illinois's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203 (more generally referred to as Nonattainment New Source Review or "NaNSR").

In this regard, in 1996, Granite City was located in areas that were attainment for PM and NO_2.[5] National City's application showed that the net increases in emissions of these pollutant from the Project (i.e., the increases in emissions after considering contemporaneous increases and decreases in emissions) would be below the rates that would be considered to be significant under PSD (25 and 40 tons/year for PM and NOx , respectively). In 1996, Granite City was located in areas that were designated nonattainment for NAAQS for ozone and PM_{10}. Madison County was and continues to be nonattainment for ozone. The part of Madison County that was nonattainment for PM_{10} included Granite City. For VOM and NOx, as they are regulated as precursors to ozone in the atmosphere, National City's application showed that the net increases in emissions from the Project would be below the rates that would be significant under MSSCAM (40 tons/year for both VOM and NOx). For PM_{10},the application showed that the net increase in PM_{10} emissions from the project would also be below the rate that would be significant under MSSCAM (15 tons/year).

When issuing Permit 95010001 for the Project in 1996, the Illinois EPA included various limits to hold National Steel to the representations made in the application and make those representations enforceable. The future annual production of iron by the blast furnaces and steel by the BOFs were limited to the maximum production levels requested by National Steel in the application. The future annual emissions of different pollutants from the various process units affected by the Project were limited. For the BOFs, whose particulate emissions were only controlled by an electrostatic precipitator (ESP) add-on control system in 1996, separate emission limits were set for the emissions from ESP and the uncaptured emissions from open roof monitor above the BOFs. For fuel-burning units, e.g., the blast furnace stoves and boilers, emissions limits for different pollutants were set collectively for the group of such units, rather than individually. However, separate limits

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[3] Particulate matter (PM), as addressed by the application and relevant USEPA and Illinois rules, only includes filterable particulate and not condensable particulate. Relevant rules provide that measurements of PM emissions are to be made by test methods that are designed to only measure filterable particulate.

[4] For particulate matter$_{10}$, the application only addressed filterable emissions and not condensable emissions. As subsequently addressed in USEPA rules, emissions of condensable particulate were not regulated as a constituent of particulate matter$_{10}$ before January 1, 2011 [40 CFR 51 Appendix S, Emission Offset Interpretative Ruling, Part II, (A)(31)(ii)(*a*)].

In Illinois' rules, filterable particulate matter$_{10}$ is referred to as "PM-10;" condensable particulate as "condensible PM-10." This usage is confirmed in 35 IAC 212.108(a) and (b) by the methods that are specified for emissions testing.

[5] For purposes of PSD and MSSCAM, NOx was initially regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere. As addressed in the Clean Air Act as amended in 1990, NOx also became also regulated as a precursor to the formation of ozone. Finally, NOx is now also regulated as it is a precursor to $PM_{2.5}$.

were set for the emissions from burning BFG, natural gas and fuel oil.[6] The annual emission limits for different pollutant were accompanied by "emission factor limits" that addressed emissions in pounds per ton of iron or steel produced or handled, or for the fuel-burning units, emissions in pounds per volume of fuel burned. The permit required emission testing to be conducted for certain units following issuance of the permit to verify compliance with the requirements of the permit. [7, 8]

The Illinois EPA also included certain requirements in Permit 95010001 for the BOFs that were more stringent than those that had previously applied.[9] The opacity of emissions from the roof monitor was limited to 20 percent on a 3-minute average, from 30 percent on a 6-minute average. Specific practices that were required to be used to reduce particulate emissions of the BOFs. For example, use of flame suppression was required during tapping of a BOF, when molten steel and slag are poured from a BOF into a ladle. Minimum values were set for the air flow through the hoods that capture the particulate emissions of the BOFs for control by the ESP, with different values set for the charging, refining, and tapping steps in the operation of a BOF. A housekeeping program was required for the area below the ESP where collected particulate is transferred from hoppers on the bottom of the ESP into fabric containers for transport off-site. For roadways at the Granite City Works, the permit set specific requirements for the frequency of treatment of different road segment to reduce emissions of fugitive dust due to vehicle traffic on the roadway. These

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[6] For fuel burning units, the permit did not set limits for emissions from the burning of coke oven gas (COG). The operation of the by-product coke oven batteries at the Granite City Works and the associated production of COG was considered to be unaffected by the increased production of iron by the blast furnaces. As a matter of good practice, coke oven batteries are operated at a stable production rate that is consistent with the design and conditions of the batteries. To the extent that the amount of coke produced at a source is more or less than is needed by the source, surplus coke can readily be shipped to other sources, or the deficit made up with coke shipped in from other sources.

[7] For the blast furnaces, emission testing was required for the baghouse that controls particulate emissions of the casthouse, i.e., the structure that encloses the area where molten iron and slag are periodically tapped from the bottoms of the blast furnaces, with testing required PM, VOM, SO_2 and NOx, as well as for opacity. For the BOFs, testing was required for the ESP control system for emissions of PM, CO and lead, as well as for opacity. Testing for emissions of PM was also required for the baghouse that control iron molten iron desulfurization operation that precedes the BOFs and from a representative steam boiler while burning BFG.

[8] The permit stated that the BACT requirement of the PSD rules would be met for SO_2 and CO. However, the permit did not identify specific emission limits or practices that were determined to be BACT for the BACT-subject units. For CO, the specific limits or practice that would be considered to be BACT would be addressed with the proposed revisions to this permit. For CO. US Steel has identified the existence of emissions and higher levels of emissions from the blast furnace casthouse and stoves, respectively. As such, for these unit, BACT for CO must be reevaluated. For SO_2, US Steel has not requested increases in permitted annual emissions. Therefore, BACT for SO_2 does not need to be reevaluated. It would nevertheless be reasonable in the revised permit to identify requirements that are considered to be BACT for SO_2.

[9] The PM-10 emissions of the Granite City Works with the Project were of singular concern to the Illinois EPA. In 1996, an area that included Granite City was designated as nonattainment for PM_{10} air quality. The Illinois EPA performed computerized dispersion modeling for the future PM_{10} air quality of the Granite City area with the Project. The modeling analysis showed that the National Ambient Air Quality Standards (NAAQS) for PM_{10} would be met with PM-10 emissions from the Project-affected units at the Granite City Works at the maximum rates in reflected by the application. In May of 1998, the USEPA redesignated the area in which Granite City is located to attainment for PM_{10}.

Incidentally, the Granite City area is now also designated attainment for the NAAQS for $PM_{2.5}$. The NAAQS for $PM_{2.5}$ were initially adopted by USEPA in 2006, with the NAAQS on an annual average subsequently being lowered in 2012. The ambient air monitoring stations conducted in Granite City by the Illinois EPA continue to show attainment of the NAAQS for PM_{10} and $PM_{2.5}$.

requirements were accompanied by requirements for daily recordkeeping for the treatment of roadways and the implementation of the cleaning program for these roads. The permit also required periodic treatment of certain public roads that serve the source to their reduce emissions.

4. Improved Control of Particulate Emissions of the BOFs (the New Baghouse)

The version of Permit 95010001 that is the subject of US Steel's 2022 application is the revised permit issued on December 17, 2012. In this regard, in 2010, US Steel agreed to install a baghouse control system with fabric filter that would operate along with the existing ESP system to improve control of particulate emissions of the BOFs from charging and tapping. The commitment to the additional control system was made in an agreement between US Steel and the Illinois EPA[10] for several measures to reduce particulate emissions from steelmaking.[11] For the BOFs, installation of a baghouse system was required to improve control of emissions from tapping, when steel and slag are poured from a BOF vessel into a ladle. US Steel was also required to evaluate whether the new baghouse system could be designed to also improve the control of emissions from charging, when iron and scrap metal are poured and unloaded into a BOF vessel. US Steel determined that the new baghouse system could be designed to improve control of emissions from both charging and tapping. As such, once the new baghouse system began operation, the existing ESP system continued to control emissions for the BOFs from refining; the emissions from charging and tapping began to be controlled by a combination of the ESP system and the new baghouse system.

The new baghouse system for the BOFs was initially addressed by Construction Permit 11050006, as issued on August 31, 2011. For purposes of PSD and MSSCAM, this permit was based on the new system being a project that would reduce the emissions of particulate and lead from these furnaces AND NOT increase any emissions. US Steel subsequently applied for a revision of this permit, which was issued on April 1, 2013. In the application for revision of this permit, US Steel formally requested Integrated Processing so as to allow certain related changes to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by means of an administrative amendment. This would assure that the baghouse system could be used in compliance with requirements in the CAAPP permit, which did not address the possibility that a baghouse might be added for the BOFs. For example, for tapping of a BOF, flame suppression was required by the

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[10] "United States Steel Corporation Granite City Works and IEPA Memorandum of Understanding," signed by US Steel on June 30, 2010, and by the Illinois EPA on July 1, 2010 (the Agreement).

[11] In addition to the new baghouse system for the BOFs, the Agreement also provided for use of "steam rings." In a BOF, oxygen is used during the refining step to remove carbon and silica from the molten iron by oxidation. The oxygen lances are inserted into the BOF through openings in the hood over the BOF. Steam rings inject steam in the annular areas between the lances and the openings for the lances. This interferes with outward flow through the openings in the hood improving capture of particulate. by the hood.
The Agreement also provided for limits for emissions of particulate matter, in grains per dry standard cubic foot (gr/dscf), that were more stringent than the emission standards that were applicable under state rules. and 40 CFR 63 Subpart FFFFF:

Baghouses for iron desulfurization, slag skimming and ladle metallurgy: 0.005 gr/dscf (compared to 0.01 gr/dscf)

ESP for the BOFs: 0.01 gr/dscf (compared to 0.02 gr/dscf)

New baghouse for the BOFs: 0.005 gr/dscf (compared to 0.01 gr/dscf).

CAAPP permit reduce particulate emissions. However, this would not be appropriate with the new baghouse system.[12]

It was not possible to simply revise Permit 11050006 with Integrated Processing to enable the revisions to the CAAPP permit that were needed to facilitate the installation and use of this system. It was first necessary to revise Permit 95010001, the permit that is now the subject of the 2022 application.[13] This is because the requirements in the CAAPP permit that were impediments to moving forward with the baghouse system were actually established by Permit 95010001.[14] For example, Condition 11 of Permit 95010001 required the use of flame suppression for tapping; the CAAPP permit merely restated this requirement. Accordingly, Permit 95010001 was revised to provide that this requirement, as well as similar operational requirements that would be inconsistent with the use of the new baghouse system would cease to apply when the new system began to be operated.[15] In their place, US Steel was broadly required to operate and maintain the BOFs and associated emissions capture and control systems in accordance with the applicable requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Facilities, 40 CFR 63 Subpart FFFFF.[16]

In the revision to Permit 95010001, operational requirements for the BOFs and the ESP system that were considered to be obsolete or outdated with the new requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, were also removed. The operational requirements of this NESHAP were determined to better address proper operation of emission control systems for BOFs. For example, as related to capture of secondary emissions,[17] the NESHAP addresses the operation of the capture

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[12] In flame suppression, the use of natural gas burners reduces generation of particulate by depleting the amount of oxygen in the air that comes in contact with molten metal. To improve control of emissions from tapping, the new baghouse system includes local hoods specifically to capture emissions from tapping, as well as local hoods to capture emissions from charging. With local capture hoods for tapping, the continued use of flame suppression would be unsafe, posing hazards both to personnel and equipment, as well as being of uncertain effectiveness to reduce emissions. The high levels of draft provided by the local capture hoods are incompatible with flame suppression as they can act to interfere with the stability and orientation of the flame and pose risks of blowing out the flame.

[13] The revision of Permit 95010001 was completed several months before the revision of Permit 11050006, the permit for the baghouse system. As a PSD permit issued pursuant to 40 CFR 52.21, the revision to Permit 95010001 did not take effect on December 13, 2012, when it was issued. It became effective later in January 2013 after the date for filing an appeal of the revised permit with USEPA's Environmental Appeals Board had passed without any appeal. With the effectiveness of revised Permit 95010001, the revision to Permit 11050006 with Integrated Processing could then be completed.

[14] If Permit 95010001 had not been revised to remove operational requirements that precluded the use of the new baghouse system, these requirements could not have been removed from the CAAPP permit by means of Integrated Processing of a revision to Permit 11050006. These operational requirements would still have been applicable since these requirements would have continued to be present in Permit 95010001.

[15] To address the period before the new baghouse system was operational, the revision to Permit 95010001 provided that the use of flame suppression for tapping and other measures that would obstruct the use of the new baghouse system cease to apply when US Steel began operation of the new system. [Revised Permit 95010001, Condition 11(b).]

[16] US Steel became subject to the requirements of this NESHAP, which applies to the BOFs and certain other operations at the Granite City Works, beginning May 22, 2006. This is because the facility is considered an existing source under 40 CFR 63 Subpart FFFFF.

[17] In common usage, the particulate emissions of BOFs from refining are often referred to as the "primary emissions;" the emissions from charging and tapping are referred to as "secondary emissions." However, in

hoods and the air flow entering the control device(s), rather than the aggregate air flow at the stack of the control device(s).[18] Likewise, the compliance procedures of the NESHAP (e.g., requirements for emission testing and operational monitoring) were determined to be more appropriate for the BOFs and their control systems than the requirements in Permit 95010001.[19]

In summary, the previous revisions to Permit 95010001 were narrowly focused on enabling the installation of the new baghouse system. This was done by removing specific requirements that were inconsistent with the use of this system and, more generally, by removing requirements that were no longer appropriate because of applicable requirements in 40 CFR 63 Subpart FFFFF. The revisions to Permit 95010001 did not extend to other requirements, such as the emissions limits set by this permit for the BOFs. Likewise, the changes to the CAAPP permit that were authorized by means of the Integrated Processing of the revision of Permit 11050006 were focused on enabling the future operation of new baghouse system, including the related changes that had been made in the December 2012 revision to Permit 95010001.[20] The changes authorized to the CAAPP permit also included relevant requirements for the ongoing operation of the baghouse system that were actually set in Permit 11050006 and would appropriately be restated in the CAAPP permit. However, changes were not authorized to the emissions limits in the CAAPP permit for the BOFs and various other emission units as those limits were still present in Permit 95010001.[21]

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the NESHAP, 40 CFR 63.7852, the primary particulate emissions of a BOF are defined as the emissions that are captured for control by the primary emission control system; the secondary emissions are the emissions that are not captured for control by the primary emission control system. As such, the Granite City Works, the ESP control system is the primary control device for the BOFs under the NESHAP. All emissions that are captured by this system, including emissions from charging, refining and tapping, are primary emissions.

[18] The NESHAP also places the burden for establishing the specific measures that will be implemented to ensure proper operation of the capture systems and control devices for BOFs on the source rather than on the permitting authority. The measures that are required to be used are the ones that were present when performance testing for particulate matter emissions shows compliance with the applicable standard.

In light of the applicable requirements of the NESHAP, the operating procedures and requirements in Attachment A, as formerly addressed by Condition 10, were also considered overly prescriptive. For example, Attachment A set out actions that were to be to be taken by employees, e.g., the emission control foreman and operator, rather than practices that the Permittee was required to implement.

[19] A practical concern also existed because certain operational requirements of Permit 95010001 were similar to but different than those of the NESHAP. Given the requirements of the NESHAP, which were newer and developed through rulemaking, the continuing implementation and oversight of the older requirements in Permit 95010001 was not considered to be an appropriate or effective use of resources.

[20] The 2012 revision of Permit 11050056 provided that the changes to the CAAPP permit for the facility that were authorized by means of Integrated Processing could only happen or take effect after the new baghouse system for the BOFs began operation (Permit 11050056, issued April 1, 2013, page 16). US Steel has not yet applied to the Illinois EPA to initiate issuance of an administrative amendment to the CAAPP permit that would reflect the changes to this permit authorized by Permit 11050056.

[21] US Steel filed an appeal of revised Permit 11050056 with the Illinois Pollution Control Board (Board), PCB 13-62. Similar to the appeal of CAAPP permit for the facility (PCD-53), Permit 11050056 was appealed because it also provided for the emission limits for the BOFs and other units in the BOF shop set by Permit 95010001 to again be restated in the CAAPP permit. In this regard, to address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for the complete replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, with a new, revised Section that addresses the basic oxygen furnace shop with the new baghouse system. As an appeal was filed, the provision of Permit 11050056 that would have restated those limits have been stayed pending resolution of the appeal.

5. US Steel's Current Application for Revisions to Permit 95010001

US Steel's current application (the "2022 application" or "application") requests a number of revisions to Permit 95010001. A key reason why revisions to Permit 95010001 are needed is that emission testing for the two basic oxygen furnaces (BOFs) shows their emissions of nitrogen oxides (NOx), as well as their emissions of volatile organic material (VOM), are higher than is allowed by this permit.[22] This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit reflected information in the application. US Steel has also determined that emissions of carbon monoxide (CO) of the casthouse on the blast furnaces and certain Projected-affected fuel burning units are higher than are addressed by the permit. This is because original application did not address CO emissions from the casthouse and understated CO emissions from Project-affected fuel burning units

Accordingly, the 2022 application requests revisions to Permit 9501001 to allow more emissions of NOx and VOM from the BOFs, which the original application understated. In particular, the application requests that the permitted NOx emissions of the casthouse and the BOFs be increased by 19.4 and 220.2 tons/year, respectively. To support these increases in emissions, the application includes revised netting analyses that attempt to show that the Project would not be a major modification for purposes of either PSD or MSSCAM with the requested increases in emissions.

US Steel also requests that the revised permit address CO emissions from the casthouse and allow more CO emissions from fuel burning units.[23] For CO, the application attempts to show that the Project would still comply with the substantive requirements of PSD, which are applicable as the Project originally was a major modification for CO under the PSD program. The application includes an evaluation of BACT for CO for the casthouse and blast furnace stoves, i.e., the units that are or would become subject to the BACT requirement of the PSD program.[24] The application also includes a new air quality impact analysis for CO that would address the Project with the increases in CO emissions as are requested.

This 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted. For PM, PM_{10}, NOx and VOM (i.e., pollutants other than CO, sulfur dioxide (SO_2),and lead), the application requests that the revised permit not include the provisions in Permit 95010001 that would address emissions of individual "processes" in pounds/ton of production or throughput. (For convenience, these provisions in the permit that

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[22] This emissions testing of the BOFs for NOx and VOM was first conducted in 2014, with further testing conducted in 2018 and 2021.

[23] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse, for which CO emissions were not identified and addressed in the original permitting for the project. This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than ten boilers that are now retired. For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas (BFG) used in the blast furnaces stoves, understated CO emissions.

[24] The BOFs were not physically modified as part of the Project. Accordingly, they would not become subject to requirements for BACT or LAER even if the Project were a major modification for a pollutant.

address emissions in pounds/ton of production or throughput or, for lead, in pounds per hour, are generally referred to by the Illinois EPA as "emission factor limits." The Illinois EPA set the emission factor limits and limits on annual emissions in Permit 95010001to ensure that the Project would not be a major modification for purposes of PSD or MSSCAM.[25] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes or emission points, the application requests "group limits" for the annual emissions of groups of related emission units.[26] For emission units for which routine emission testing is feasible, the emissions contributed by units towards the group limits would be determined using emissions rates that reflect the results of emission testing. For certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the BOFs), for which routine emission testing is not feasible, the application requests that the revised permit set "prescribed emission factors." For these units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 for process units that currently restrict emissions in pounds/ton of input or production or in pounds/hour.[27]

Lastly, the application also recognizes subsequent changes at the facility, which occurred after the Project, that were not contemplated in 1996 and not provided for when Permit 95010001 was originally issued. The changes at the facility include the addition of a baghouse control system for the BOFs to improve control of their particulate emissions. The changes also include the shutdown of the by-product coke oven batteries that were formerly at the facility, which eliminated emissions from these operations. In this regard, the application requests revisions to Permit 95010001 to provide for increased use of natural gas by Project-affected fuel burning units. The application explains that this is necessary with the shutdown of the by-product coke oven batteries because COG is no longer available and more natural gas may need to be used.

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[25] The removal from Permit 95010001 of the "emission factor limits" would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62, as these appeals address PM, PM_{10} and NOx and VOM emissions. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, before issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing "emission factors" were considered to constitute enforceable limits on emissions.

[26] For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period.

[27] Unlike the emission factor limits in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors established in a revision to Permit 95010001 would instead be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit.

The Illinois EPA has reviewed the 2022 application to determine whether the application shows compliance with applicable regulatory requirements and would support issuance of a revision to Permit 95010001 as requested by US Steel. The Illinois EPA has also considered whether the application would support issuance of such a revised permit with Integrated Processing, as has also been requested, so that related revisions to the CAAPP permit for the Granite City Works may be made by administrative amendment. The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this determination are set forth in the draft of the proposed denial letter that has been prepared.[28] As discussed in further detail below, for some of the revisions requested to Permit 95010001, the application does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply for this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

6. Discussion of Key Reasons for the Planned Denial of the Application

6.1. The Revised Netting Analysis for the Project for NOx

A. Overview

The revised netting analysis for NOx submitted for the Project with additional NOx emissions as requested does not show that the Project would not become a major modification for NOx. Accordingly, a revised permit cannot be issued as requested because, for emissions of NOx, the 2022 application does not address or show fulfillment of the substantive requirements of the rules for Prevention of Significant Deterioration (PSD) and Major Stationary Sources Construction and Modification related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and MSSCAM (35 IAC 203.301) for NOx. This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx. The application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the application must show for NOx that the relevant substantive requirements of PSD and MSSCAM are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and MSSCAM would be met for the Project for NOx.

[28] Brief descriptions of the reasons why the Illinois EPA's preliminary determination for this application is that it should be denied are provided in Appendix 2 of this document.

The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[29] However, the application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would be such that the Project would not be a major modification for NOx.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The application proposes to rely upon the decreases in NOx emissions due to these changes, which were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as it does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed below, the application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

B. The Analysis Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application relies on decreases in emissions that occurred long after 1996. This includes decreases from the shutdown of ten of the twelve boilers at the facility that were originally addressed by Permit 95010001 in 1996. The shutdown of Boilers 1 through 10 was required by Construction Permit 06070023, which was originally issued in July 2006 for construction of a cogeneration boiler that would burn blast furnace gas (BFG) and natural gas. The application does not show that NOx emissions of these ten boilers, as existed in the period prior to

[29] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

2009, were considered in the "future" NOx emissions with the Project from the Project-affected fuel burning units. In addition, with regard to the two remaining old boilers at the facility, Boilers 11 and 12, that continue in operation, flue gas recirculation systems have been installed pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to reduce NOx emissions to facilitate compliance with 35 IAC 217.164. The application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from these boilers that are now being achieved with the new systems, rather than the NOx emissions as previously existed with the Project in the period before these systems were installed.

The application also indicates baseline NOx emissions from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12. In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[30]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application. This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the BOFs. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[31]

C. Insufficient Information to Independently Confirm the Revised Baseline NOx Emissions

The revised determination of baseline NOx emissions of Project-affected fuel burning units that is part of the revised netting analysis is not accompanied by information that would allow it to be independently verified. In this regard, the application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that

[30] The revised netting analysis does address increased use of natural gas by Project-affected fuel burning units because COG is no longer available and more natural gas may need to be used to make up for this.

[31] Indeed, with the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of affected fuel burning units indicated in the application are emissions that could have been allowed by this permit in 1996. The future NOx emissions of these units indicated in the application are less than their baseline NOx emissions. As the Project did not include any elements that would lower the NOx emissions of fuel burning units, the production of more iron and steel would have been accompanied by increased utilization of the blast furnace stoves and boilers so that in 1996 the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.).

appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, concerns exist with the determination of the overall baseline NOx emissions for the Project. In particular, this application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The application utilizes a NOx emission factor for Boilers 11 and 12 for use of COG that the application states is based on emission testing conducted on the stack for underfiring of one of the coke batteries, rather than testing on one of these boilers or other similar boiler. For burning of natural gas, the application does not show the emission factor that is utilized for boilers would also be appropriate for ladle preheaters and casting operations.

D. Supporting Date Is Not Provided For Future NOx Emissions of Fuel-Burning Units

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically. The application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

6.2. The Application Does Not Address the Potential for Uncaptured Emissions of NOx, VOM and CO Through the Roof Monitor of the BOF Shop

The application is deficient in its approach to the uncaptured emissions of NOx, VOM and CO emissions of the BOFs. For the BOFs, consistent with the original permitting of the Project, the application only quantifies stack emissions of NOx, VOM and CO. Moreover, the revised netting analyses for NOx and VOM assume that all emissions of these pollutants from the BOFs are now captured. That is, with the new baghouse system to improve control of particulate emissions, all NOx and VOM emissions of the BOFs that originally were not captured and were emitted through the roof monitor are now captured and emitted through the stack on the baghouse system.

This assumption is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were not addressed in the original permitting for the Project, likely because they were considered negligible. Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the application to the particulate and lead emissions of these furnaces, which assumes that there are uncaptured emissions that still occur through the roof monitor. By way of contrast, the 2022 application requests that the revised permit

establish prescribed emission factors for the particulate emissions of the BOFs that occur through the roof monitor.

The fact that there are emissions of NOx and VOM from the BOFs that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. In this regard, the application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions. However, the application does not propose any such revisions for the BOFs or explain why such revisions are not needed. For example, the application also does not explain why it would not be inappropriate for any revised permit to set a limit for the annual emissions of CO from the BOFs through the stacks of the control systems, with associated requirements for periodic emission testing.

6.3. The Inventory Used in the Air Quality Analysis for CO Omits Certain Emissions

The results of the analysis of the impacts of the Project on ambient air quality for CO cannot be relied upon because the inventory for the CO emissions of the facility with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The application includes an air quality analysis for CO because the Project was originally permitted as a major modification for CO under the PSD program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted. To support this request, an air quality analysis for CO must be part of the application pursuant to 35 IAC 204.1130, since this request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program. In this regard, the air quality analysis in the 2022 application does not address uncaptured CO emissions of the casthouse. As discussed earlier, the application does not address uncaptured emissions from these furnaces or does not explain why uncaptured emissions would not be present. In this regard, the application does not show 100 percent capture of the particulate emissions of these furnaces by the control systems for particulate. The application also does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the facility. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. In addition, the air quality analysis uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.

6.4. The Proposed Scope of Proposed Group Emission Limits Is Overly Broad

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate. In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two BOFs. These are principal emission units at

this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two BOFs to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the BOFs should not both continue to be limited individually.

In this regard, the application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted. The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[32] However, the application does not show that the specific circumstances of the Project are such that the current limits for annual emissions of the principal emission units should be replaced with group limits that apply to the combined emissions of the principal emission units and other lesser emission units.[33] The circumstances of the Granite City Works are not the same as those presented by the cited permits. The Granite City Works are a manufacturing facility at which iron is produced from iron ore and then converted into steel in BOFs. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station.

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[32] The application cites two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[33] For the casthouse, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the main baghouse for the casthouse, the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited for the permit to restrict the overall emissions of pollutants other than CO from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. (As the Project is subject to BACT for CO, the limit could only apply to stack emissions.)
The circumstances of the BOF are similar, as the current permit separately addresses emissions of particulate and lead from the ESP stack and the roof monitor. It would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of each pollutant from the BOFs.

6.5. Inadequate Justification for Elimination of Current Limits for Project-Affected Fuel Burning Units

The justification provided in the application for revisions to Permit 95010001 to eliminate limits on usage of fuel and, presumably, emission by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and blast furnace gas currently set by Permit 95010001, it does not propose any new limits in their place. This rationale is deficient because it does not consider that the application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the application does not show that new limits for fuel usage would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shut down. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

6.6. The Application Does Not Show That the Emission Factors Proposed As Prescribed Factors for Certain Units Would Be Representative

A. Introduction

To calculate baseline emissions for certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3.

For the Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Relative to prescribing emission factors, the USEPA's finding, as is provided below, should be considered *dicta* since the permit that was the subject of the appeal did not actually provide for use of prescribed emission factors. As the order addresses the possibility of using prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit

applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
>
> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

B. Particulate Emissions of the BOFs Through the Roof Monitor

The application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the BOF shop (i.e., the uncaptured emissions from the BOFs). In this regard, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the BOFs. As capture and control for particulate improved, the factor for future uncaptured emissions would be different and lower (better) than the factor for baseline uncaptured emissions.

C. Continuous Casting Lines

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors that are proposed reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative.

D. Particulate Emissions of the Casthouse Through the Roof Monitor

For the casthouse roof monitor (uncaptured emissions particulate emissions of the casthouse), the application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency. Further support is needed for a prescribed emission factor for uncaptured emissions of the casthouse that is based on achievement of this level of capture.

E. Emissions of the Slag Pits and Iron Pellet Screen

For the slag pits and the iron pellet screen, the application does not provide support for the background information or inputs that were used to adjust the published factors for the operating conditions or circumstances of these units at the facility. Absent this information, the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

F. Current Provisions of the CAAPP Permit Requiring Use of Appropriate Emission Factors

The application is also deficient as it simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors." To facilitate the use of prescribed emission factors, the application also needs to propose or request revisions to general provisions in Permit 95010001 so as to also enable subsequent revisions to be made by administrative amendment to the CAAPP permit for the facility, Permit 96030056, to allow prescribed emission factors to actually be used to determine ongoing emissions of certain units.[34]

6.7. Requested Changes for Consistency with the Grouping of Units in the CAAPP Permit

In the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed by the specific changes to Permit 95010001 that have been requested. For example, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 95010001 with operations in the Basic Oxygen Furnace Shop and be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term.

On the other hand, the application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System). These emission units are currently addressed in Permit 95010001 with continuous casting operations. In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations. The application does

[34] The CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. These procedures do not provide for the use of prescribed emission factors. Rather, US Steel is generally required to use "appropriate emission factors," i.e., factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that being are used resting on US Steel. The CAAPP permit also provides for recordkeeping and reporting by US Steel so that information about the factors that are being used is publicly available and the Illinois EPA, the USEPA and interested parties can review the factors that are in use.

not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop as it would constitute a "BOPF {basic oxygen process furnace] shop ancillary operation" for purpose of 40 CFR 63 Subpart FFFFF. US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations.[35]

6.8 The Application Does Not Address the Amendment to the CAAPP Permit Previously Authorized Pursuant to Construction Permit 11050006

The 2022 application does not identify the version of the CAAPP permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Permit 11050006, issued April 1, 2013, for the addition of a baghouse system to improve control of particulate emissions of the BOFs. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[36] Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[37]

6.9. The Application Does Not Address Changes to the CAAPP Permit That Are Needed Due to Revisions To 40 CFR 63 Subpart FFFFF

The application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the

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[35] For Ladle Drying/Preheating, the application also does not request any changes to Permit 95010001 to maintain consistency with the approach taken in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units. In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the BOF Shop, as well as elsewhere in the permit with other Project-affected fuel burning units. In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop.

[36] The 2022 application does address the addition of the baghouse control system for the BOFs as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the BOFs.

[37] Concerns are posed by certain conditions in existing Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit.

not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop as it would constitute a "BOPF {basic oxygen process furnace] shop ancillary operation" for purpose of 40 CFR 63 Subpart FFFFF. US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations.[35]

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[36] The 2022 application does address the addition of the baghouse control system for the BOFs as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the BOFs.

[37] Concerns are posed by certain conditions in existing Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit.

emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources. These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the BOFs and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate.

6.10. Changes to the CAAPP Permit That Have Resulted from Shutdown of Emission Units

The application is deficient as it does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. ...

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes. In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary. It would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.

6.11. The Evaluation of BACT for CO in the Application Is Not Sufficient

The evaluation of BACT for CO in the application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the application requests that the revision of Permit 95010001 allows for more emissions of CO from these units.

A. The Scope of the Evaluation of Available Control Options

As provided in the definition of BACT in Section 169(3) of the Clean Air Act and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices. For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices. In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option. i.e., "Work Practice Standards, including good combustion practices." The evaluation does not explain why process-related control options are not available for the casthouse.

B. Documentations for the Investigation into Available Control Options

For both the casthouse and the blast furnace stoves, the BACT evaluation in the application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. This is not sufficient for the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for the BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

C. Support for Not Setting Numerical BACT Limits for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard. Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

6.12. Inconsistency of the Application with a Pending 2008 Application & Pending Appeals

A. Pending 2008 Application

On February 4, 2008,[38] the Illinois EPA received an application from US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of blast furnace gas (BFG) and

[38] Several things interfered with work on the 2008 application. These include the amount of effort needed by the Illinois EPA to issue the initial CAAPP permit for the Granite City Works. The first two CAAPP permits issued for this facility had to be enhanced and reissued to address certain deficiencies identified by USEPA in Orders responding to petitions requesting the USEPA object to the permits that had been issued. Then, additional revisions to Permit 95010001, as US Steel has tried to address with the 2022 application, were found to be necessary because the NOx and VOM emissions of the basic oxygen furnaces exceed or may exceed the limits established in this permit. Work on the current application for revisions to this permit was also disrupted by an interruption in the iron and steel production of the facility that began in December 2015. This interruption, which ultimately lasted for over two years, meant that it was uncertain that the facility would resume production of iron and steel.

the SO_2 emissions resulting from the combustion of BFG. The 2022 application is inconsistent with and conflicts with that prior application (the "2008 application"). As such, these two applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "... does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." The 2008 application does request changes to the provisions of the permit for SO_2, as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors."

B. Pending Board Appeals

The application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. For CO, the application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[39] However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the BOFs, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack. As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. In these appeals, US Steel challenged all emission factor limits set by Permit 95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the emission factor limits that are set for SO_2, CO and lead. In addition, in the application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.

With regard to the CO emissions of the BOFs, the application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the BOFs, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system.

6.13. Other Deficiencies in the Application

There are also a number of other lesser reasons why the Illinois EPA determined that the application should be denied, as are set forth in the draft of the denial letter. For example, this application does not include a signed certification for its truth, accuracy and completeness. While this deficiency could be remedied with a supplement to the application that provides both this certification and corrections to the errors in the application that have been noted, this would not be sufficient for a

[39] As already discussed, in the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests updates to the limits for CO emissions from use of BFG and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

revised permit to be issued given more substantial deficiencies in the application that have been identified..

7. Request for Comments

It is the Illinois EPA's preliminary determination that US Steel's 2022 application for revisions to Permit 95010001 should be denied. The Illinois EPA has prepared a draft of the denial letter that it proposes to issue for the 2022 application. The draft denial letter details the reasons why the Illinois EPA has determined that this application should be denied.

The Illinois EPA is providing the public with an opportunity to review and comment on this proposed denial of this application and the reasons for such action identified by the Illinois EPA as set forth in the draft of the denial letter.

Appendix 1

Brief Descriptions of the Revisions to Permit 95010001 Requested By US Steel

- Raise permitted NOx and VOM emissions of the basic oxygen furnaces (steel production) to correct for data in the original application that understated emissions. This revision would facilitate resolution of two appeals to Illinois' Pollution Control Board (PCB), PCB 2013-053 and PCB 2013-062 as they address NOx and VOM emissions of the BOFs. The first appeal addresses the Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) as issued in 2013 as it repeats emission limits set by Permit 95010001. The second appeal addresses Construction Permit 11050006, a construction permit issued in 2013 for improvements to the particulate control for the BOFs, as this permit also refers to emission limits set by Permit 95010001.

- Eliminate limits set by the permit for individual process operations for emissions of particulate matter and particulate $matter_{10}$ (collectively particulate), NOx and VOM. These limits, which are in pounds/ton of throughput and tons/year, were set for purposes of New Source Review (NSR). In place of these limits, set "group limits" for the annual emissions of groups of related operations, e.g., limits for the overall emissions of the casthouse for the blast furnaces and other units involved in production of iron. This would also facilitate resolution of the two appeals to the PCB as they both challenge the limits in pounds/ton of throughput. These requested revisions would make the permit less stringent. Any "overage" of emissions by certain unit(s) in a group could potentially be balanced by lower levels of emissions by other units in the group. Group limits have been allowed by USEPA for purposes of PSD in certain construction permits issued outside of Illinois.

- Address the CO emissions of the casthouse for the blast furnaces, which were not identified in the original application and are not currently addressed by the permit.

- Provide for an increase in usage of natural gas by Project-affected fuel burning units because coke oven gas is no longer available with the shutdown in 2015 of the byproduct coke oven batteries at the facility.

- Update the construction permit to be consistent with the grouping of units in the CAAPP permit for the facility, including addressing discrete material handling operations as a group of units.

- Process the revised construction permit with "Integrated Processing" so that appropriate revisions can be made to the CAAPP permit for the facility by Administrative Amendment rather than by a separate proceeding for a major modification of the CAAPP permit.

- Update Permit 95010001 with a number of minor revisions as requested to US Steel.

Appendix 2:

Brief Descriptions of Deficiencies in the Application Identified in the Draft Denial Letter

- The revised netting analysis for the Production Increase Project (the "Project") for NOx in the 2022 application attempts to show that the Project would still not be a major modification for purposes of Prevention of Significant Deterioration (PSD) or Major Stationary Source Construction and Modification (MSSCAM) with higher permitted emissions of nitrogen oxides (NOx) from the basic oxygen furnaces, as are being requested. However, the revised netting analysis for NOx does not fulfill relevant requirements of the rules governing netting analyses. As a result, the revised analysis does not show that the Project would still not be a major modification for purposes of PSD and MSSCAM with the requested increases in NOx emissions to correct erroneous data in the original application. In addition, for NOx, the application does not address applicable requirements of the PSD and MSSCAM programs that would become applicable as the Project would now be a major modification. As related to the effect of the Project on air quality, these include an air quality impact analysis for nitrogen dioxide (NO_2) under the PSD program and emission offsets for NOx under MSSCAM. As related to control of NOx emissions, this entails use of appropriate control measures for the NOx emissions of the casthouse on the blast furnaces and the stoves associated with the blast furnaces. This is because the Project included physical modifications to the blast furnaces so that the control measures for NOx must reflect Best Available Control Technology (BACT) under PSD and the Lowest Achievable Emission Rate (LAER) under MSSCAM.

  In particular, the application relies on decreases in NOx emissions due to actions at the facility that occurred after 1996, i.e., the shutdown of ten older boilers in 2010 and the shutdown of the by-product coke oven batteries in 2015. These actions are not contemporaneous with the Project, which occurred in 1996. As such, the accompanying decreases in NOx emissions cannot be relied upon to show that the Project should still be considered non-major.

- Certain emissions data underlying the revised netting analysis cannot be independently confirmed by the Illinois EPA.

- The application lacks detailed supporting information for the contribution of various Project-affected fuel burning units to the actual annual NOx emissions under the requested revised permit.

- The application does not show that the proposed groups of operations for the requested "group limits" for annual emissions are appropriate. In this regard, the 2022 application requests that emission limits currently set by Permit 95010001 that apply to emissions of various pollutants from individual emission units or points of emissions from the casthouse on the blast furnaces and the BOFs, which have both captured/controlled emissions and uncaptured emissions, be replaced with limits that apply to the emissions of groups of related emission units. This would not provide for emission limits that only apply to the blast furnaces casthouse and the two BOFs. These are principal emission units at this facility and their emissions should be directly limited separate from the emissions of other units. The construction permits issued by other jurisdictions cited in the application as support for setting group limits do not eliminate the need

for the Illinois EPA to exercise its technical judgment when deciding whether and to what extent to set group limits.

- The 2022 application does not show that certain emission factors that the application requests be prescribed by the revised permit should be considered representative and acceptable. In this regard, the application requests that for certain emission units, the revised permit specify or prescribe the emission factors that are to be used on an ongoing basis for purposes of assessing compliance with limits on emissions set by the permit.

- As related to sulfur dioxide (SO_2) emissions from burning blast furnace gas, a fuel byproduct from the blast furnaces, the 2022 application is inconsistent with an earlier application for revisions to Permit 95010001. This earlier application was submitted in 2008 pursuant to a state consent decree (*People of the State of Illinois v. US Steel Corporation, Inc.*, Madison County Circuit Court No. 05-CH-750 (December 18, 2007)). This earlier application is still pending. It requests revisions to Permit 95010001 to allow more emissions of SO_2 from burning blast furnace gas, both in pounds of SO_2 per million cubic feet of gas burned and in tons per year. However, the current application does not request any such changes and instead states that the limits for SO_2 emissions from blast furnace gas should not be changed.

- The application does not include information to facilitate Integrated Processing of a revised permit, as requested by US Steel. Most significantly, the application does not provide information to support removal of provisions in the CAAPP permit for the now shutdown coke oven batteries and for use of coke oven gas that should not be included in any amended CAAPP permit.

- US Steel has not taken necessary action to enable Integrated Processing of the requested revised permit. This is because it has not initiated the amendment of the CAAPP permit authorized by Permit 11050006, as issued in 2013, which is an earlier construction permit that was subject to Integrated Processing. That permit addresses the addition of the baghouse control system to the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. Prior to installation of the baghouse system, the particulate emissions from charging and tapping were only controlled with the electrostatic precipitator (ESP) control system.

- There are also a number of other lesser deficiencies in the 2022 application that also warrant the denial of this application.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/785-1705

NOTICE OF ADDITIONAL CONSTRUCTION PERMIT APPLICATION FEES

Daubert Chemical Company, Inc.
Attn: Mr. Mark Pawelski
4700 S. Central Avenue
Chicago, Illinois 60638

Application No.:	23070001
I.D. No.:	031821AAS
Applicant's Designation:	
Received:	March 21, 2023
Construction of:	New Batch Chemical Reactor
Location:	4700 S. Central Avenue, Chicago, Illinois 60638
Additional Fee Now Due:	$3,500.00

This letter provides written notice that the Illinois EPA has determined that the application for construction permit referenced above is subject to additional application fees under Section 9.12 of Illinois' Environmental Protection Act (Act).

Based on its initial review of the application for purposes of fees, the Illinois EPA has determined that an additional fee of $3,500.00 is due.

You have 60 days to remit the assessed fee and revised Form 197-FEE to the Illinois EPA. Please submit payment to the Illinois EPA at the following address. Make either a check or money order payable to: "Illinois Environmental Protection Agency" and reference both the application and I.D. numbers assigned above. The Illinois EPA will not accept cash payments.

Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section (MC 11)
P.O. Box 19506
Springfield, Illinois 62794-9506

If the additional fee is not submitted within 60 days, the Illinois EPA is not required to further review or process this application and the statutory deadlines in Section 39(a) of the Act cease to apply to the application until such time as the proper fee is submitted. The Illinois EPA may also deny the application for failure to pay the appropriate fees. Also, please be aware that the Illinois EPA's continuing review of the application during this 60-day period may identify additional fees that are due or deficiencies in the technical information that has been submitted in the application.

The following explains the Illinois EPA's determination with respect to the fees that are due for this application.

1. The Illinois EPA has determined that the appropriate fee for the construction of one emission unit at a synthetic minor source is $4,000 pursuant to Illinois Environmental Protection Act, Sections 9.12(c)(1)(A), rather than $500.00.

If you do not agree with the Illinois EPA's fee determination for this application, you may ask for reconsideration. A request for fee reconsideration must include a new certified estimate (e.g., Form 197-FEE) of the fees that are due and payment for any additional fees that are due based on your new estimate. Two copies of this fee reconsideration request must be submitted and must include any supporting material used in the new estimate. On all submittals, please reference both the application and I.D. numbers assigned above.

If you have any questions on this fee determination, please contact Benjamin Tapscott at 217/785-1705.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:BMT:tan

EcoCAT
Ecological Compliance Assessment Tool

Applicant:	RTP Environmental Associates Inc.	*IDNR Project Number:*	2101461
Contact:	Gurinder Saini	*Date:*	07/27/2020
Address:	304A West Millbrook Road Raleigh, NC 27609		
Project:	1996 Construction Permit Revision Project		
Address:	1951 State Street, Granite City		

Description: PSD permit revision application for USS Granite City site.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Madison

Township, Range, Section:
3N, 9W, 19
3N, 9W, 20

IL Department of Natural Resources Contact
Impact Assessment Section
217-785-5500
Division of Ecosystems & Environment

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

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Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

EcoCAT
Ecological Compliance Assessment Tool

EcoCAT Receipt

Project Code 2101461

APPLICANT	DATE
RTP Environmental Associates Inc. Gurinder Saini 304A West Millbrook Road Raleigh, NC 27609	7/27/2020

DESCRIPTION	FEE	CONVENIENCE FEE	TOTAL PAID
EcoCAT Consultation	$ 25.00	$ 1.00	$ 26.00

TOTAL PAID $ 26.00

Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
217-785-5500
dnr.ecocat@illinois.gov

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

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OCT 07 2022
Environmental Protection Agency
BUREAU OF AIR

October 3, 2022

Bill Marr
Manager, Permit Section
Bureau of Air
Illinois Environmental Protection Agency
1021 North Grand Avenue
PO Box 19276
Springfield, IL 62794

RE: United States Steel Corporation - Granite City Works
Facility I.D. No. 119813AAI
Construction Permit No. 95010001

Dear Mr. Marr:

In March of 2020, United States Steel Corporation - Granite City Works ("U. S. Steel") submitted an application to revise Construction Permit No. 95010001. U. S. Steel and Illinois EPA have been in discussions regarding this application. U. S. Steel has updated the permit application to reflect those discussions. Due to the nature of revisions throughout the application, the Illinois EPA should refer to this application revision for permit processing.

U. S. Steel appreciates Illinois EPA's attention to this matter. If you should have any questions about this, please contact Chris Hardin at cwhardin@uss.com, or (412) 433-5904.

Sincerely,

Michael Patton
General Manager
Granite City Works

Application for Revisions to the Construction Permit / Prevention of Significant Deterioration (PSD) Approval for The 1996 Expansion of the Granite City Works Permit Number 95010001

U. S. Steel

Submitted to:

Division of Air Pollution Control
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794

Prepared by:

RTP Environmental Associates, Inc.
304-A West Millbrook Rd.
Raleigh, NC 27609

Submitted by:

U. S. Steel Corporation
Granite City Works
20th and State Streets
Granite City, Illinois 62040

February 2020
Revised October 2022

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APPENDICES

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1. Introduction

United States Steel Corporation Granite City ("USS Granite City") owns and operates an integrated iron and steel manufacturing facility in Granite City, Madison County, Illinois ("Granite City Works," ID # 119813AAI). The prior owner of this facility was National Steel Corporation. U.S. Steel acquired the assets of the National Steel Granite City facility on May 20, 2003. On January 25, 1996, prior to U.S. Steel acquiring these assets of National Steel Corporation, the Illinois Environmental Protection Agency ("Illinois EPA") issued Construction Permit No. 95010001, which also serves as a Prevention of Significant Deterioration ("PSD") approval, to National Steel Corporation. Construction Permit No. 95010001 authorized increases in the allowable production rate of iron and steel at the Granite City facility (the "1996 Project" or "Project"). This permit has been revised several times. The most recent revision was made on December 17, 2012, when the permit was revised to accommodate a proposed improvement to the air pollution control systems serving the Basic Oxygen Furnace ("BOF") Shop Operations at the facility, *i.e.*, the addition of a fabric filter baghouse and associated capture system to improve control of particulate matter emissions from charging and tapping the BOFs.[1]

Requirements of Construction Permit No. 95010001 are also incorporated in the Clean Air Act Permit Program ("CAAPP") (Permit Number 96030056 or "CAAPP Permit") for the facility that was issued on March 4, 2013. USS Granite City timely appealed some of the terms of the CAAPP Permit.[2]

This application requests several revisions to Construction Permit No. 95010001 to address correction of emission data for several emissions units involved in the 1996 Project. Most significantly, this application requests that the Illinois EPA revise certain permit conditions relating to emissions of carbon monoxide ("CO") and arising under the PSD permitting regulations at 35 Illinois Administrative Code ("IAC") Part 204.[3] The application includes updated control technology analyses and impact analyses in support of those requested revisions.

In 1996, at the time of Construction Permit No. 95010001 was initially issued, the Granite City area was designated nonattainment for ozone and particulate matter with aerodynamic diameter of 10 micrometer or less ("PM_{10}") national ambient air quality standards ("NAAQS"). The area was designated attainment or unclassifiable for all other regulated New Source Review ("NSR") pollutants. The permit included limitations on emissions sufficient to ensure that the Project did not trigger applicability of the Illinois Nonattainment New Source Review ("NNSR") program codified at 35 IAC Part 203 for oxides of nitrogen ("NO_X") and volatile organic matter ("VOM") (both as precursors for ozone) and PM_{10} and did not trigger PSD permitting requirements for

---

[1] The improvements to the BOF Shop were authorized under Construction Permit No. 11050006, issued by Illinois EPA on August 31, 2011.

[2] CAAPP Permit Appeal IPCB No. 2013-053, pending before the Illinois Pollution Control Board ("Board").

[3] The 1996 Construction Permit is a PSD permit with respect to increases in emissions of two pollutants – CO and sulfur dioxide ("SO_2"). The PSD permit was issued pursuant to the federal PSD regulation at 40 CFR § 52.21, which Illinois EPA was then implementing under a delegation of authority from U.S. EPA. The federal PSD rule is no longer applicable, as the Illinois PSD regulation was approved by U.S. EPA in 2021 as a part of the Illinois State Implementation Plan ("SIP"), and the authority to administer and enforce federal PSD permits was fully transferred to Illinois EPA. See, 86 Fed. Reg. 50459 at 50464 (Sept. 9, 2021). This permit application does not request any changes relating to the PSD approval for SO_2 emissions from the Project.

particulate matter ("PM"), nitrogen dioxide ("NO_2"), or lead. Certain emission limits in Construction Permit No. 95010001 that were considered by Illinois EPA in making NNSR and PSD non-applicability determinations for the 1996 Project are the subject of revisions requested by USS Granite City in this application. The revisions requested by USS Granite City in this application are designed to ensure the continued non-applicability of the NNSR program for ozone precursors and PM_{10}, and the continued non-applicability of the PSD program for emissions of PM and NO_2, to the Project.[4] The application includes revised Project emission increase calculations, updated net emissions increase analyses, and discussion of compliance requirements in support of those non-applicability determinations.

The requested changes will resolve the issues raised in the CAAPP permit appeal filed by USS Granite City.

USS Granite City also requests that Illinois EPA process the revisions to Construction Permit No. 95010001 in accordance with the integrated processing procedures and issue the revised permit utilizing procedures and compliance requirements that are substantially equivalent to those utilized for issuance of a CAAPP permit, including a public notice period for the revised permit. See 35 IAC 270.302(e). USS Granite City understands that the CAAPP permit would be modified by means of the administrative amendment process to address the revisions that have been made to the applicable requirements in Construction Permit No. 95010001.[5]

No physical changes are proposed in conjunction with the requested revisions to Construction Permit No. 95010001.

1.1 Description of Facility

The Granite City Works is an integrated steel mill employing raw material handling, processing, and preparation; iron production; steel production; steel finishing; and boilers and other ancillary operations. In 1996, at the time of the Project, National Steel Corporation, owner of the Granite City Works produced metallurgical coke in a by-product coke plant. The by-product coke plant was among the assets acquired by USS Granite City in 2003 and continued to operate until 2015 at which time it was permanently idled. Coke is now obtained from the heat recovery coke batteries located adjacent to the steel mill, which are owned and operated by Gateway Energy and Coke Company, and from other sources.

1.2 Application Organization

This application contains the following analyses and supporting information for requested updates and revisions of Construction Permit No. 95010001.

---

[4] Madison County is currently designated attainment for all criteria pollutants except ozone. For the 2015 ozone standard, the County is designated marginal nonattainment. Alton Township in Madison County is designated nonattainment for SO_2. However, USS Granite City is outside the Alton Township.

[5] A similar process was followed for the issuance of Construction Permit No. 11050006, for the emission reduction project serving the BOF Shop Operations, in 2011.

- Section 2 presents an overview of the requested permit revisions.
- Section 31 presents a discussion of permit conditions used to restrict potential to emit ("PTE") and the consideration of such conditions in determining applicability of the PSD and NNSR programs.
- Section 4 presents a discussion of proposed changes pertaining to carbon monoxide (CO) emissions. The demonstrations and analyses required under the PSD regulations in conjunction with these proposed changes are addressed in Sections 8, 9, and 10.
- Section 5 provides details of requested changes to permit terms for PM and PM_{10} emissions and updated emissions increase analyses.
- Section 6 addresses requested changes to permit terms for NO_X emissions and updated emissions increase analysis.
- Section 7 addresses requested changes to permit terms relating to the VOM emissions and updated emissions increase analysis.
- Section 8 contains a best available control technology (BACT) demonstration for CO for the emissions units for which BACT is required.
- Section 9 summarizes the source impacts analyses, including air dispersion modeling, for CO.
- Section 10 provides analyses of additional impacts, including impacts of the Project's CO emissions on soils, vegetation, and visibility.
- Section 11 summarizes pertinent regulatory applicability and changes thereto.

2. Overview of Requested Permit Revisions

2.1 Background on Construction Permit No. 95010001

National Steel Corporation submitted an application on January 3, 1995 for a construction permit for a proposed increase in production at the Granite City Works ("1995 Application"). Illinois EPA issued Construction Permit and PSD Approval No. 95010001 on January 25, 1996. The permit authorized National Steel Corporation to increase throughput and fuel use at the Granite City Works as follows:

(a) The limits on production of hot metal (*i.e.*, iron) from the two blast furnaces were increased to 9,849 net tons per day, calendar month average, and 3,165,000 net tons per calendar year. [Permit Conditions 2(a) and (b).]

(b) The limits on production of liquid steel from the two BOFs were increased to 11,000 net tons per day, calendar month average, and 3,580,000 net tons per calendar year. [Permit Conditions 6(a) and (b).]

(c) The limits on use of blast furnace gas ("BFG") at the units in which BFG was burned (*i.e.*, boilers #1 through #12, blast furnace stoves, BFG flare #1, and ladle drying preheaters) were increased to 30,800 million cubic feet (MMcf) per calendar month and 185,030 MMcf per calendar year. [Permit Condition 21(b).]

(d) Construction Permit No. 95010001 also includes limits on use of natural gas at the project-affected units in which natural gas could be burned (*i.e.*, boilers #1 through #12, blast furnace stoves, BFG flare #1, and ladle drying preheaters.[6,7] The limits in the original Construction Permit No. 95010001 issued in 1996 were 190 MMcf per calendar month and 1,145 MMcf per calendar year. [Permit Condition 21(a).] These limits did not represent increases, as the same limits had previously been in effect in Construction Permit No. 95090167. As most recently revised in 2012, the natural gas consumption limits in Construction Permit No. 95010001 are 225 MMcf per calendar month and 1,346 MMcf per calendar year. [Permit Condition 21(a).]

These increases in permitted production and fuel usage resulted in increases in emissions from the various project-affected emissions units. The net emissions increase analysis for the Project as summarized in Construction Permit No. 95010001 are presented in Table 2-1 below.

For PM, PM_{10}, NO_X, and VOM, the net emissions increases, including contemporaneous changes, were below the applicable significant emission rates for these pollutants. For lead, the

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[6] Construction Permit No. 95010001 also includes limits on use of fuel oil in the units in which fuel oil could be burned. Fuel oil is no longer burned at Granite City Works. .With this application, USS Granite City is requesting that Construction Permit No. 95010001 be revised to remove all permit conditions relating to the use of fuel oil in the project-affected combustion units.

[7] Construction Permit No. 95010001 did not address the use of coke oven gas or the emissions resulting from burning that gas as fuel in boilers #1 through #12 and in the blast furnace stoves. (Coke oven gas is a by-product fuel produced in by-product coke oven batteries.)

project emissions increase was below the significant emission rate. Finally, for SO_2 and CO, the project resulted in net emissions increases that were greater than the significant emission rates. As the 1996 Project was a major modification for SO_2 and CO, the PSD review requirements for these pollutants were addressed by National Steel Corporation in the 1995 Application and by Illinois EPA in Construction Permit No. 95010001.

Table 2-1. Summary of Net Emissions Increase Analysis for the Project

	Emissions (tons/year)						
	PM	PM_{10}	NO_x	SO_2	CO	VOM	Lead
Project Emissions Increases	-52.0	51.6	238.8	476.0	5,685.0	59.3	0.54
Contemporaneous Decreases	-58.0	-58.0	-226.5	-0.38	-23.31	-32.8	n/a
Contemporaneous Increases	20.3	20.7	26.0	0.25	11.8	1.6	n/a
Net Emissions Increases	**-89.2**	**14.3**	**38.3**	**475.9**	**5,673**	**28.1**	**0.54**
Significant Emission Rate	25.0	15.0	40.0	40.0	100.0	40.0	0.6

2.2 General Description of Requested Permit Revisions

This application proposes five categories of changes as described in Sections 2.2.1 through 2.2.5 below. USS Granite City is requesting neither authorization for changes to emissions units nor increases in the limits on hot metal production rate and liquid steel production rate. This permit application also does not request any changes to the SO_2 and lead emission limits established in Construction Permit No. 95010001, so SO_2 and lead emissions will not be discussed further.

2.2.1 Requested Changes Relating to CO Emissions

The Project was a major modification for CO and was subject to PSD review for this regulated NSR pollutant. USS Granite City is requesting revisions to Construction Permit No. 95010001 associated with the PSD review and approval. These changes are briefly summarized below and are discussed in detail in Section 4 of this permit application.

The primary changes requested by USS Granite City relating to CO emissions are (1) requested increases in the permitted emissions from burning of BFG and natural gas and (2) provisions to address CO emissions from the blast furnace casthouse. The emission limits established in Construction Permit No. 95010001 were based upon information in the 1995 Application submitted by National Steel Corporation, which in turn was based on published emission factors and other literature information. However, actual emissions testing data generated since the original PSD application was submitted and updated literature information indicate that corrections to the emission factors and corresponding limits are necessary and appropriate. Because these revisions are not necessitated by or associated with any changes to emissions units subsequent to the Project, these changes would be revisions to the original PSD permit based upon better emissions information; accordingly, updates to the substantive PSD reviews presented in the 1995 Application are provided in Sections 8, 9 and 10 herein. In addition, revisions are requested with respect to certain other permit terms to clarify compliance demonstration requirements and to improve operational flexibility .

2.2.2 Cleanup of Labeling & Organization of Individual Units (Independent of Emissions)

USS Granite City is requesting changes to the names of certain emissions units and control devices in Construction Permit No. 95010001 to reflect more accurately their functions within the process. In addition, USS Granite City is requesting changes to the groupings of emissions units. The requested organizational changes with respect to material handling operations are generally consistent with the approach that Illinois EPA used when issuing the CAAPP permit for the facility, to address material handling operations separately from the iron- and steelmaking operations and continuous casting operations as discussed in Section 5.3 of this permit application. Other organizational changes are requested in order to ensure the BOF Shop Operations grouping is consistent with federal emission standards for those operations as discussed in Section 11.1.2 herein.

2.2.3 Requested Changes Relating to PM, PM_{10}, NO_X, and VOM Emissions from Project-Affected Emissions Units

Construction Permit No. 95010001 includes a number of emission limitations and other permit conditions that are not explicitly required by any regulation. These emission limitations and permit conditions were included in the permit in order to restrict the PTE of certain operations at the Granite City Works and thereby memorialize non-applicability determinations under the PSD and NNSR permitting programs with respect to net emissions increases of PM, PM_{10}, NO_X, and VOM resulting from the Project. USS Granite City is requesting that certain permit conditions addressing individual emissions units or points, including both limits on annual emissions and provisions addressing emission factors, be removed or revised.

In this regard, the annual emission limitations for the various processes and activities at the Granite City facility listed in Table 5 of Construction Permit No. 95010001, referred to herein as "emissions caps," can address the PTE and serve to limit the net emissions increases of PM, PM_{10}, NO_X, and VOM to less than the corresponding significant emission rates under the PSD and NNSR permitting programs. The support for these revisions is provided in Section 1 of this permit application. USS Granite City anticipates that these revisions will enable settlement of the permit appeals currently before the Board because they involve provisions of the permit addressing emission factors.

For PM and PM_{10}, USS Granite City is requesting minor revisions to the emissions caps both to accommodate the revised grouping of material handling operations as discussed in Section 2.2.2 above and to reflect updated emissions information. The specific requested changes to permit terms relating to PM and PM_{10} emissions, accompanied by demonstrations that the net emissions increase for these pollutants remain below the corresponding significant emission rates, are discussed in Section 5 herein.

For NO_X and VOM, USS Granite City is requesting increases in permitted emissions from the BOF Shop Operations based upon updated emissions information and not related to any post-1996 changes at the source. The specific requested changes to permit terms relating to NO_X and VOM emissions, respectively, accompanied by demonstrations that the net emissions increase for these pollutants remain below the corresponding significant emission rates, are discussed in Sections 6 and 7 herein.

USS Granite City is also requesting revision/elimination of gaseous fuel usage limits for project-affected combustion units. In 2015, USS Granite City shut down its by-product coke oven batteries. This eliminated the ability to use coke oven gas ("COG") as a fuel at the mill. In addition, ten of the twelve boilers that existed at the mill at the time of the Project in 1996 have been retired. These actions have greatly reduced the emissions from fuel combustion in project-affected emissions units and obviate the need to preserve limits to restrict PTE of the remaining units.

2.2.4 New Net Emissions Increase Calculations Pursuant to "Source Obligation" Provisions of PSD and NNSR Rules

The emissions caps for PM, PM_{10}, NO_X, and VOM in Construction Permit No. 95010001 and certain other permit terms, and the resultant restrictions on PTE, appear to have been deemed by Illinois EPA to be necessary to prevent the Project from being a major modification.[8] Because the requested revisions to Construction Permit No. 95010001 include increases in certain emissions caps and other changes to permit terms that could allow increases in emissions of these four pollutants, the following "source obligation" provisions of the PSD and NNSR regulations are pertinent to this permit application:

> At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in, or expiration of, any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of this Part shall apply as though construction had not yet commenced on the source or modification. 35 IAC 203.210(b).

> At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation, established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of Sections 204.810, 204.820, 204.830, 204.840, 204.850, 204.1100, 204.1110, 204.1120, 204.1130, 204.1140, 204.1200, and 204.1400 shall apply to the source or modification as though construction had not yet commenced on the source or modification. 35 IAC 204.850.

In Sections 5 through 7 of this permit application and in Appendix B of this permit application, USS Granite City presents updated net emissions increase calculations for PM, PM_{10}, NO_X, and VOM. Unlike the calculations in the 1995 Application submitted by National Steel Corporation, these calculations address all emissions from fuel burning units affected by the Project, including emissions from the burning of COG. (See Sections 5.2.2.15, 6.2.2.1, and 7.2.2.1.) These updated calculations demonstrate that the changes to permit terms requested by USS Granite City will not

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[8] USS Granite City does not agree with this interpretation. The definitions of "major modification" and related provisions in the PSD and NNSR rules in effect in 1996 were based on increases in actual emissions, except in the narrow circumstances where the emissions unit at issue had not begun normal operations at the time of the project. *See, e.g.*, 56 *Fed. Reg.* 27630 (June 14, 1991). Nonetheless, for purposes of this permit application, USS Granite City has demonstrated that the Project, as it would be addressed by the revised construction permit that is requested herein, is not a major modification even under use of what Illinois EPA and U.S. EPA refer to as the "actual-to-potential" test.

trigger after-the-fact PSD or NNSR permitting for emissions of PM, PM_{10}, NO_X, or VOM under the "source obligation" provisions because the Project will not become a major modification for these pollutants by virtue of those changes to permit terms.

2.2.5 Requested Removal of Requirements for Roads at the Former South Plant at the Granite City Works

Construction Permit No. 95010001 includes requirements for control of fugitive dust emissions from roads at Granite City Works. These requirements extend to certain road segments at the site of what was formerly the South Plant of Granite City Works during the period when the mill was owned and operated by National Steel Corporation. Specifically, Permit Condition 26a requires periodic application of chemical dust suppressant to road segments B and C and Permit Condition 27a requires periodic sweeping and flushing of road segment A.[9] Because the South Plant property, including these road segments, is not under the control of USS Granite City, or any person under common control with USS Granite City, pollutant-emitting activities at these properties are not a part of the Granite City Works stationary source.[10] Accordingly, requirements relating to these road segments should not be included in the revised construction permit issued to USS Granite City. USS Granite City requests that Attachment B of the construction permit be revised to omit the diagram for the South Plant and that Permit Conditions 26a and 27b be revised so that they no longer address road segments A, B, and C.

[9] Attachment B of the permit shows that these road segments are at the site of what was formerly the South Plant.
[10] The South Plant property, which comprises three parcels, was not among the assets acquired by U.S. Steel in 2003 or at any time thereafter. Based on information from the Madison County Chief Assessment Office (https://gis.co.madison.il.us/madco/viewer/index.html, last accessed June 24, 2022), the parcels at issue are currently owned by Cara Metals Illinois LLC and R W T Holdings LLC.

3. Discussion of Permit Conditions Used to Restrict PTE

As noted in Section 2.2 above, USS Granite City is proposing to retain, with no changes, the currently effective limits on hot metal production rate and liquid steel production rate in Construction Permit No. 95010001. As discussed in greater detail in Sections 5 through 7 of this permit application, USS Granite City also is proposing that the revised construction permit continue to include annual emissions caps, with certain revisions to reflect updated emissions information, and that the Illinois EPA include appropriate testing, operational monitoring, and recordkeeping requirements in the revised permit to ensure that the emission caps would be legally and practicable enforceable. Collectively, under the following provisions in the pertinent definitions in the PSD and NNSR rules, these proposed limitations and permit terms will restrict the PTE of the affected emissions units:

> Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable. 35 IAC 203.128.

> Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable or legally and practicably enforceable by a state or local air pollution control agency. 35 IAC 204.560.

Under the provisions above, what is required for restricting PTE is that the limits be enforceable as a practical matter.[11] Practical enforceability is a matter of technical judgment of the permitting authority – Illinois EPA – but there is a substantial body of policy and precedent regarding preferred forms for emissions caps that are enforceable as a practical matter. These policies can be summarized as follows:

- If not used to restrict emissions over a period shorter than one year, emissions caps should be expressed in terms of tons per year on a 12-month rolling sum basis or on a more frequent basis.
- If the emissions cap will cover multiple activities or emissions units, the permit should require at least monthly emissions calculation and recordkeeping.

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[11] *See, e.g.*, Administrative Order, *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Petition No.: II-2000-07, C.T. Whitman, U.S. EPA Administrator, May 2, 2001, upholding use of annual emission caps with a rolling cumulative total methodology and rejecting petitioners' "concern that the permit appears to rely on after-the-fact monitoring, rather than engineering practices, test data, or vendor guarantees" to establish restrictions on PTE. U.S. EPA based its findings on the fact that "[i]f the source has no room to operate under the PTE limiting emissions cap, it must cease operation or face a violation" and that "all PTE limits rely on after the fact monitoring of some kind."

- The permit should prescribe methods of calculating actual emissions for each unit and each pollutant and should prescribe how monitoring and recordkeeping of relevant parameters will be used in those calculations.
- Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance, the permitting authority should describe the basis for its determination that the emission factor is representative.
- Where the permit requires development and use of a site-specific emission factor to be used in conjunction with operational data in demonstrating compliance, the permit should prescribe the method by which the emission factor will be developed, such as through performance testing with a specified frequency.

Two recent and significant examples of these policies are U.S. EPA's final agency actions in issuing the permits for construction of a drilling operation in the Beaufort Sea off the North Coast of Alaska in March 2012 and installation of new stationary reciprocating internal combustion engines at an existing power plant in Arizona in December 2018.[12,13] The Alaska permit, issued by U.S. EPA Region 10, includes annual emissions caps for NO_X and CO, with compliance determined on a 365-day rolling sum basis, and annual emissions caps for SO_2 and greenhouse gases, with compliance determined on a 12-month rolling sum basis. The Arizona permit, issued by the Pima County Department of Environmental Quality pursuant to a delegation of authority from U.S. EPA, includes an annual NO_X emissions cap with compliance determined on a 12-month rolling sum basis. Copies of the Alaska and Arizona documents referred here are provided in Appendix E.

Each of these permits includes some emissions units for which the emission factor used to quantify that unit's contribution to the emissions cap over a particular time period is directly prescribed in the permit and also some emissions units for which the permit prescribes the method by which the emission factor will be developed. In each instance where the emission factor is directly prescribed in the permit, this approach was used because the permitting authority determined the emission factor to be sufficiently representative of actual emissions, provided that required monitoring of operating parameters shows the process and control device to be operating within ranges or conditions established during the permitting process. (For example, in the Alaska permit, the NO_X and CO emission factors for periods when the control devices are operating assume control efficiencies of 90 percent and 80 percent, respectively; in the Arizona permit, the NO_X emission factor for engine startup events, during which the air pollution control equipment does not operate, is based on the estimate provided by the engine manufacturer.) In each instance where emission factors are developed through site-specific testing subsequent to permit issuance, the permit carefully prescribes the testing conditions that will be followed, the frequency of that testing, and the calculations to be used to derive the emission factor.

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[12] *In re: Shell Offshore, Inc., OCS Permit No. R10 OCS030000*, OCS Appeal Nos. 11-05, 11-06 & 11-07. Mar. 30, 2012. Docket available on the U.S. EPA internet web site at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/77355bee1a56a5aa8525711400542d23/f24b9734e6894b9385257958006dad34!OpenDocument (last accessed May 9, 2022).

[13] *In re: Tucson Electric Power, PSD Permit No. 1052*, PSD Appeal No. 18-02. Dec. 3, 2018. Docket available on the U.S. EPA internet web site at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/77355bee1a56a5aa8525711400542d23/64a784010e968b9b852583050073ebe5!OpenDocument (last accessed May 9, 2022).

The approach proposed by USS Granite City with respect to the PM, PM_{10}, NO_X, and VOM emissions caps to be used in any revised Construction Permit No. 95010001, including the proposed revisions to certain emissions limitations, compliance demonstration requirements, and other permit conditions as discussed in detail in Sections 5 through 7 of this permit application, is consistent with this policy and precedent and will improve the enforceability of the PTE limitations in Construction Permit No. 95010001. In particular, USS Granite City emphasizes that removal or revision of certain permit conditions addressing individual emissions units or points, including both limits on annual emissions and provisions addressing emission factors, will not result in impairment of the enforceability of the PTE limitations.

4. Changes to Provisions for CO Emissions

This section of the permit application describes the changes to Construction Permit No. 95010001 requested by USS Granite City pertaining to CO emissions from fuel burning emissions units and from the blast furnace casthouse. These requested changes are not based upon any post-1996 Project changes but are based on updated information regarding CO emissions.

Construction Permit No. 95010001 also set a CO emissions limitation for the BOF electrostatic precipitator ("ESP") Stack. No changes are being proposed to this CO emission limitation in Table 2 of the permit.

The Project was permitted in 1996 as a major modification for CO and was subjected to PSD review by Illinois EPA; with the proposed changes, the project continues to be subject to PSD review with respect to CO emissions.

4.1 Process Background and Project

4.1.1 Blast Furnace Casthouse

The blast furnaces produce molten iron from iron ore pellets through a reduction reaction with metallurgical coke. In this reaction, carbon monoxide (CO) is formed along with hydrogen and other gases as a byproduct. The tapping of the blast furnaces, which takes place within a structure known as the casthouse, results in emissions of CO. These emissions are a consequence of the relatively small amount of BFG that leaves the furnaces with the molten metal and slag during the tapping process.

The Project involved increases in the production rate for the blast furnaces as outlined in subsection 2.1. The Project is also presumed by USS Granite City to have resulted in increases in CO emissions from the casthouse.

4.1.2 Fuel Combustion

Most of the gas that is formed in the blast furnace rises to the top of the furnace. At the top of the blast furnace, the BFG generated in the furnace is collected and routed to a BFG pretreatment system. BFG has a relatively low heating value (80-110 Btu/scf) and is preferentially used as fuel in the stoves that heat the blast air for the blast furnace. Each blast furnace at the Granite City Works has a set of three stoves. BFG is also used as a fuel in the boilers used to produce steam for use at the Granite City Works, including steam to power the turboblowers that supply blast air to the blast furnaces. Any excess BFG is flared.

The configuration of the Granite City Works in 1996, at the time of the Project, as it relates to fuel combustion in the Project-affected units differed considerably from the current configuration. In 1996, the mill had twelve boilers, all of which used BFG as fuel. Only two of these boilers – Boiler 11 and Boiler 12 – remain in existence. One flare, now known as BFG

flare #1, was used for flaring of excess BFG.[14] In 1996, the boilers used BFG, COG, natural gas, and fuel oil; currently, Boiler 11 and Boiler 12 use only BFG and natural gas. In 1996, the stoves used COG as supplemental fuel; currently, they use natural gas as supplemental fuel.

The 1996 Project involved increases in BFG generation and usage as outlined in subsection 2.1. The CO net emissions increase from the 1996 Project was significant and the project was subject to PSD review for CO emissions. The BACT-affected fuel burning emissions units identified and addressed in the 1995 Application were the blast furnace stoves, the ladle drying preheaters, and miscellaneous ancillary natural gas burning units in the BOF shop and at the continuous casters. In the 1995 Application, on page 1-3, National Steel Corporation stated that the boilers were not undergoing any changes as part of the project. Pursuant to 40 CFR § 52.21(j)(3) and 35 IAC 204.1100(c), because these emissions units were not changed as part of the project, they are not subject to BACT requirements.

4.2 Provisions of the Construction Permit Relating to CO Emissions from Fuel Combustion

Table 4 of Construction Permit No. 95010001 contains CO emission factors and emission limitations for the fuel burning emissions units affected by the Project. Table 4-1 below presents information from Table 4 of the permit pertaining to the CO emissions limitations from 'certain fuel burning emissions units,' *i.e.*, Boilers #1 through #12, Blast Furnace Flare 1, Blast Furnace Stoves, ladle drying preheaters, and continuous casters.[15] Copies of the original and current versions of the construction permit are provided in Appendices D1 and D2 of this permit application.

Table 4-1. Table 4 of Construction Permit – CO Emissions

Fuel Used for Boilers, Stoves, Flare, Ladle Drying Preheaters, and Ancillary Natural Gas Burning Units[16]	CO Emission Factor	Maximum CO Emissions (tons/year)	
		Original (1996) Permit	Current (2012) Permit
Natural Gas	40 lb/MMcf	22.90	26.92
Blast Furnace Gas	13.7 lb/MMcf	1,267.46	1,267.46
Fuel Oil[17]	5.0 lb/10^3 gal	0.91	0.91

[14] Granite City Works currently includes a second BFG flare, known as BFG flare #2, and a cogeneration boiler used to produce electricity and process steam. Construction of the boiler and flare was authorized under Construction Permit No. 06070023 issued in January 2008.

[15] The Construction Permit omits the ancillary fuel burning units at the continuous caster under Table 4. However, emissions from fuel combustion at these units are appropriately accounted for in the natural gas combustion rates.

[16] As discussed in Section 2.2.3 of this permit application, although the boilers and stoves burned COG, Construction Permit No. 95010001 did not include any terms relating to combustion of this byproduct fuel. As it pertains to CO emissions, this omission is now moot because the shutdown of the by-product coke oven batteries in 2015 eliminated the ability to use COG as a fuel. The current and future CO emissions from burning of COG in Project-affected combustion units are zero and are not addressed further in this permit application.

[17] As indicated in footnote 6, fuel oil is no longer used as fuel at Granite City Works.

4.3 Updated CO Emissions Information for Fuel Combustion

For natural gas combustion, the CO emission factor included in Construction Permit No. 95010001 was from Chapter 1.4 AP-42 as updated in August 1982. The U.S. EPA revised Chapter 1.4 of AP-42 in July 1998 and updated the CO emission factor for natural gas combustion to 84 lb per million cubic feet. For natural gas combustion in Boiler 11, Boiler 12, blast furnace stoves, ladle drying preheaters, and ancillary fuel burning units at the continuous casters, the updated CO emission factor has been used to calculate the CO emission rates in this permit application, including in the dispersion modeling analysis provided in Appendix C of this permit application.[18]

As previously explained, BFG is combusted as fuel in the boilers and blast furnace stoves at the site and excess BFG is flared. The CO emission factor for BFG burning in the 1995 Application and in Construction Permit No. 95010001 was from the U.S. EPA's AIRS 1990 database (WebFIRE). However, based on recent performance tests for boilers burning BFG, engineering evaluations of BFG burning in blast furnace stoves, and updates to AP-42 Section 13.5, this factor is not representative. Updated CO emission factors for BFG burning in the blast furnace stoves, Boiler 11, Boiler 12, and BFG flares are being proposed for purposes of this revision to the CO emission rates. The proposed CO emission rates are as follows:

- Based on the information regarding CO emission rates from another blast furnace stove, and engineering evaluations of BFG burning in the blast furnace stoves at Granite City Works, the CO emission factor for burning of BFG in the blast furnace stoves is 322 pounds per million cubic feet.[19]
- Based on CO stack testing performed at Boiler 11 and Boiler 12, the emission factor for burning of blast furnace gas in these boilers is 32.2 pounds per million cubic feet.[20]
- The CO emission factor for BFG flaring is calculated using a CO concentration of 24 percent in BFG and a destruction efficiency of 96 percent.[21] [22] This results in a CO emission factor of 698 pounds per million cubic feet.

Table 4-2 presents the updated maximum annual CO emissions from burning of fuel in the blast furnace stoves, Boiler 11, Boiler 12, Blast Furnace Flare 1, ladle drying preheaters, and ancillary

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[18] Boilers #1 through #10, which were Project-affected emissions units, have been permanently shut down. The current and future CO emissions from these boilers are zero and are not addressed further in this permit application.
[19] CO emission factor for AK Steel Dearborn / Severstal Dearborn Michigan permit for C Blast Furnace Stoves in the PTI 182-05C was specified as 328.9 lb/MMcf of BFG. See https://www.deq.state.mi.us/aps/downloads/permits/finpticon/2005/182-05C.pdf (accessed on August 17, 2022). In addition, USS Granite City evaluated CO emissions from the blast furnace stove stacks using non-reference method to compare against data from other furnaces. The Granite City Works blast furnace stoves stack configuration did not allow for application of a reference method for measuring CO emissions. Therefore, as part of an engineering evaluation, USS used a non-reference method to collect CO concentration in the stove stack exhaust.
[20] Boiler 11 tests were conducted in July 2011. Boiler 12 tests were conducted in May 2011.
[21] Data from the quarterly BFG component analyses for 2019 for USS Granite City shows CO concentration in BFG ranging from 20% to 22%.
[22] U.S. EPA's *Compilation of Air Pollutant Emission Factors, AP-42, Volume 1: Stationary Point and Area Sources*, Section 13.5, April 2015 ("Properly operated flares achieve at least 98 percent destruction efficiency in the flare plume").

fuel burning units at the continuous casters. Emissions calculations for CO from fuel combustion are provided in Appendix B of this permit application.

Table 4-2. Updated CO Emissions from Burning of Gaseous Fuels

Unit/Fuel	Future Throughput		Emission Factor		Emissions (TPY)
BFG in stoves	68,755	MMcf/year	321.83	lb/MMcf	11,064
BFG in boilers	76,327	MMcf/year	32.19	lb/MMcf	1,228
Natural gas in boilers	1,640	MMcf/year	84.0	lb/MMcf	69
BFG in BFG flare	39,947	MMcf/year	697.6	lb/MMcf	13,934
Natural gas in ladle preheaters	340	MMcf/year	84.0	lb/MMcf	14

4.4 Updated CO Emissions Information for Blast Furnace Casthouse

National Steel Corporation did not identify the blast furnace casthouse as a source of CO emissions in the 1995 Application, and Illinois EPA did not address those emissions in Construction Permit No. 95010001. Subsequent testing at Granite City Works and other integrated iron and steel mills indicates there are CO emissions from blast furnace casthouse operations. CO emissions measured during testing performed at the casthouse baghouse and the iron spout baghouse at Granite City Works in 2012 were 0.10 lb per ton of hot metal and 0.01 lb per ton of hot metal, respectively. As discussed in Section 8.2.3.7 of this permit application, USS Granite City is proposing a CO BACT emission limit of 70 lb/hr based on total emissions from these two baghouses. Assuming 95% capture efficiency for the capture system associated with the casthouse baghouse, as discussed in Section 5.2.2.3 of this permit application, the fugitive CO emissions from the casthouse roof monitor are 3.1 lb/hr. Total CO emissions from the blast furnace casthouse, including both baghouses and fugitive emissions, are 73.1 lb/hr and 320 tons per year ("TPY").

4.5 CO PSD Review Requirements

As previously explained, the 1996 Project was subject to PSD review for CO because the CO net emissions increase was greater than the significant emission rate of 100 tons per year. Sections 8 through 10 of this permit application address the requested changes to Construction Permit No. 95010001 relating to CO emissions under the PSD review requirements of 35 IAC 204.1100 through 204.1140, as applicable for the blast furnace casthouse and certain fuel burning emissions units.

5. Proposed Changes to Permit Terms for PM and PM_{10} Emissions Increases Analyses

This section describes the proposed changes to Construction Permit No. 95010001 requested by USS Granite City related to PM and PM_{10} emissions. It also provides a demonstration that, even with the requested revisions, the Project would still not be a major modification under the PSD program at 35 IAC Part 204 with respect to emissions of PM and under the NNSR program at 35 IAC Part 203 with respect to emissions of PM_{10}. The net emissions increase calculations for PM and PM_{10} from the 1995 Application submitted by National Steel Corporation are reproduced in Appendix B of this permit application.

5.1 Construction Permit No. 95010001 Applicability and Requirements

Table 5-1 summarizes the provisions from Construction Permit No. 95010001 pertaining to PM and PM_{10} emissions limitations from the project-affected emissions units. Copies of the relevant permits are provided in Appendices D1 and D2 of this application.

Table 5-1. Construction Permit Conditions Addressing PM and PM_{10}

Permit Condition	Requirements
5	Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.
18	Emissions from the BOF Shop operations shall not exceed the limits in attached Tables 2 and 5.
20	Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5
22	Emissions from the listed fuel combustion units shall not exceed the limits in Tables 4 and 5.

The annual PM and PM_{10} emissions caps listed in Table 5 of Construction Permit No. 95010001 are presented in Table 5-2 below. These annual PM and PM_{10} emissions caps cover all emissions units affected by the Project. These emissions units are grouped into four main processes or activities (as listed in Table 5-1). Each emissions cap is calculated as the sum of the unit-specific emissions limitations in Tables 1 through 3 and fuel specific limitations in Table 4 of the permit. Table 5 also includes limitations for PM and PM10 emissions from roadways and material handling activities at the facility.

Table 5-2. PM and PM_{10} Emissions Information from Table 5 of Construction Permit No. 95010001

Processes and Activities	Emissions Caps (tons/year)	
	PM	PM_{10}
Blast Furnace Operations	218	194
BOF Shop Operations	510	451
Continuous Casting Operations	71	71
Certain Fuel Combustion Units	273	273
Roadways	27	27
Material Handling	2	2
Total	1,101	1,018

The PM and PM_{10} emissions caps restricted the PTE of the project affected-emissions units. The project emissions increases for PM and PM_{10} were calculated by subtracting pre-project actual emissions (August 1992 to July 1994, 24-month period) from the PTE as restricted by the limitations in the permit. Table 6 of Construction Permit No. 95010001 summarized the net emissions increases from the project and summarized Illinois EPA's determination that the project was not a major modification with respect to PM or PM_{10} emissions. Because the net emissions increases for PM and PM_{10} were below the applicable significant emission rates, these pollutants were not subject to PSD or NNSR review.

5.2 Pre-Project Actual Emissions for 1996 Project

This section presents the pre-project actual emissions and USS Granite City's updates/revisions to some of the PM and PM_{10} emission factors and emission estimates. Corrections to the emissions factors are the result of updated information available regarding some of the operations affected by the project as discussed in Section 5.2.2 below.

5.2.1 Historical Throughput Rates

The PM and PM_{10} net emissions increase calculations presented in Table 6 of Construction Permit No. 95010001 were based on the calculations provided by National Steel Corporation in Tables 3-4, 3-5, and 3-7 of the 1995 Application. Those tables from the prior permit application are reproduced in Appendix B to this permit application.

The pre-project annual emissions were recalculated in this permit application using the same production and operating rates as the 1995 Application as shown in Table 5-3 below.

Table 5-3. Pre-Project Production and Operating Rates for PM and PM_{10}

Parameters	Units	1995 Application
Blast Furnace Production	Net tons of hot metal/year	2,059,557
Blast Furnace Charging	Charge Material tons/year	2,803,241
BOF Shop	Molten steel tons/year	2,413,406
Combined BFG Combustion	MMcf/year	121,039
Combined NG Combustion	MMcf/year	1,145
Combined Fuel Oil Combustion	Mgal/year	16

5.2.2 PM and PM_{10} Emission Factors Basis and Revisions

USS Granite City has reviewed the PM and PM_{10} emission factors used to calculate pre-project actual emissions from the project-affected emissions units based on stack testing and updated literature-based information. As a result of this review, emission factors for two operations were revised as described below. The updated pre-project actual emissions for PM and PM_{10} for the project are presented in Table 5-5 and Table 5-6 of this permit application, respectively; explanations are provided in the following paragraphs.

5.2.2.1 A&B Blast Furnace Charging Fugitive Emissions (PM_{10} Revised)

The Blast Furnace charging fugitive PM emissions were calculated using the emission factor of 0.0024 lb/ton from the U.S. EPA's AIRS 1990 database (WebFIRE). For PM_{10}, the 1995 Application assumed PM_{10} was the same as PM. However, based on particle size distribution data in AP-42 Table 12.5-2, which indicates 51% of PM is PM_{10}, the PM_{10} emission factor for this operation was lowered. The new PM_{10} emission factor is 0.0012 lb/ton.

5.2.2.2 A&B Blast Furnace Casthouse Stack (Baghouse) Emissions (No Change)

The pre-project actual emissions for the A and B Blast Furnaces Casthouse (baghouse) stack as presented by National Steel Corporation in the 1995 Application were calculated using the design outlet concentration of 0.010 grains per dry standard cubic foot in the baghouse exhaust gas and an exhaust gas flow factor of 49,000 dry standard cubic feet per ton of hot metal. PM_{10} was assumed to be same as PM. No changes are necessary for this emission factor.

5.2.2.3 A&B Blast Furnace Casthouse Roof Monitor Emissions (PM_{10} Revised)

The Blast Furnace Casthouse roof monitor actual emissions were calculated using the AP-42 Section 12.5 Table 12.5-1 PM emission factor of 0.6 lb per ton for the uncontrolled casthouse. A 95% capture efficiency, which has been recognized by U.S. EPA as representative for this source type,[23] was applied for the A&B Blast Furnace Casthouse capture systems. The PM emission factor for this operation was revised from 0.031 lb/ton to 0.030 lb/ton. Based on the particle size distribution in AP-42 Table 12.5-2, 51% of PM was assumed to be PM_{10}. The new PM_{10} emission factor is 0.0153 lb/ton vs 0.0155 lb/ton in the 1995 Application.

5.2.2.4 A&B Blast Furnace Iron Spout Baghouse Emissions (No Change)

The pre-project actual emissions for the A and B Blast Furnaces Iron Spout baghouse stack as presented by National Steel Corporation in the 1995 Application were based on an emission factor of 0.02548 lb per ton of hot metal. All PM was assumed to be PM_{10}. This emission factor appears to have been developed based on the results of stack testing conducted in 1992. No changes are necessary for this emission factor.

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[23] See, for example, "Technology Review for the Integrated Iron and Steel NESHAP," memorandum from D.L. Jones, U.S. EPA, *et al*, to the Integrated Iron and Steel (II&S) Residual Risk and Technology Review (RTR) Project File, May 1, 2019. Available in the electronic docket at www.regulations.gov/document?D=EPA-HQ-OAR-2002-0083-0964.

5.2.2.5 Blast Furnace Slag Pits Emissions (No Change)

The pre-project actual emissions for the A and B Blast Furnaces slag pits as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.00417 lb per ton of hot metal. This emission factor is the sum of PM and PM_{10} emissions rate of 0.0026 lb per ton for slag quenching (derived from EPA assessment) for slag quenching and 0.00157 for slag transfers (using AP-42 Section 13.2.4 equation for aggregate handling). For purposes of emissions calculations, PM was assumed to be same as PM_{10}. No changes are necessary for this emission factor.

5.2.2.6 BOF ESP Stack (BOF 2 Vessels) Emissions (No Change)

The pre-project actual emissions for the BOF ESP stack as presented by National Steel Corporation in the 1995 Application were calculated using data from the stack tests conducted during 1989 to 1993 timeframe on the BOF ESP exhaust. PM and PM_{10} was assumed to be identical for this operation. No changes are necessary for this emission factor.

5.2.2.7 BOF Roof Monitor Emissions (No Change)

The BOF roof monitor actual emissions were calculated using the information from AP-42 Chapter 12.5 and AIRS database. For pre-change actual PM and PM_{10} emissions, National Steel used 90% capture efficiency during the charging and tapping steps and 99% capture efficiency during the refining step for the BOF operations. A detailed description of the baseline roof monitor PM and PM_{10} emission factors is provided in Appendix C of the 1995 Application. For the BOF operations, per particle size distribution in AP-42 Table 12.5-2, 67% of PM is PM_{10}. No changes are necessary for this emission factor.

5.2.2.8 Desulfurization Station & Transfer Pit Baghouse Stack Emissions (No Change)

The pre-project actual emissions for the Desulfurization Station and Transfer Pit Baghouse stack as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.03721 lb per ton of hot metal. No new information is available that would require any revisions to this emission factor.

5.2.2.9 Hot Metal Charging and Ladle Skimming Stack Emissions (No Change)

The pre-project actual emissions for the Hot Metal Charging and Ladle Skimming Baghouse stack as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.005 lb per ton of hot metal. No new information is available that would require any revisions to this emission factor.

5.2.2.10 Baghouse 2 for Argon Stirring and Ladle Metallurgy Emissions (No Change)

The pre-project actual emissions for Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility (previously known as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)") as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.00715 lb per ton of steel. No new information is available that would require any revisions to this emission factor. It is now included with the BOF shop .

5.2.2.11 Caster Mold Process Emissions (No Change)

The pre-project actual emissions for the Caster Mold as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from the Illinois EPA 1991 EIS PM/PM_{10} report. No changes are necessary for this emission factor.

5.2.2.12 Continuous Caster Spray Chamber Emissions (No Change)

The pre-project actual emissions for the Continuous Caster Spray Chamber as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from a stack test in the 1980s. PM and PM_{10} emissions are assumed to be identical. No changes are necessary for this emission factor.

5.2.2.13 Slab Cut Off Casters Emissions (No Change)

The pre-project actual emissions for the Slab Cut Off Casters as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from the Illinois EPA 1991 EIS PM/PM_{10} report. No changes are necessary for this emission factor.

5.2.2.14 Slab Ripping Casters Emissions (No Change)

The pre-project actual emissions for the Slab Ripping Casters as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from the Illinois EPA 1991 EIS PM/PM_{10} report. No changes are necessary for this emission factor.

5.2.2.15 Fuel Burning Emissions Units Emissions (Revised)

The pre-project actual emission for various fuels used in certain fuel burning emissions units affected by the project were calculated using the emission factors presented in Table 5-4.

Table 5-4. PM and PM_{10} Emission Factors for Fuel Burning

Fuel	Emission Factor and Units	Basis
Blast Furnace Gas	2.9 lb/MMcf	AIRS 1990
Natural Gas	1.9 lb/MMcf *(revised)*	AP-42 Table 1.4-2 (Based on updated AP-42 information)
Coke Oven Gas (added)	16.56 lb/MMcf in stoves and 43.13 lb/MMcf in boilers *(both added)*	Stoves – Stack test (date unknown) Boilers – "A" battery stack test 1989
Fuel Oil (*Shown for historical purposes. USS Granite City no longer uses fuel oil.*)	9.72 lb/1000 gallon	AP-42 Page 1.3-2

In addition to the emission factors changes noted here, the emission calculations for each pollutant have been updated to reflect all emissions from boilers #1 through #12and from the blast furnace stoves, both pre-project and post-project. (The emission calculations performed by National Steel Corporation and included in the 1995 Application had improperly excluded the emissions from the boilers and stoves resulting from COG use; as a result, as noted in Section 2.1 of this permit application, Construction Permit No. 95010001 did not address the use of coke oven gas or the emissions resulting from burning that gas in the project-affected units.) For the pre-project emissions, the updated calculations include emissions from combustion of 2,584 MMcf of COG in these units during the baseline period; for the post-project emissions, the updated calculations reflect zero COG use.

5.2.2.16 Iron Pellet Screen Emissions (Revised)

The pre-project actual emissions for the Iron Pellet Screen were revised to be based on AP-42 Chapter 11.19.2 for crushed stone screening under Table 11.19.2-2. A control efficiency of 85% was applied for this operation.[24]

5.2.2.17 BOF Hopper Baghouse Emissions (No Change)

The pre-project actual emissions for the BOF Hopper baghouse stack were based on transfer point calculations using AP-42 Chapter 13.2.4 for aggregate handling. A control efficiency of 99.9% was applied for the baghouse used in this operation. No changes are necessary for this emission factor.[25]

5.2.2.18 Flux Conv and Transfer Points Baghouse Emissions (No Change)

The pre-project actual emissions for the Flux Conv and Transfer Points baghouse stack were based on transfer point calculations using AP-42 Chapter 13.2.4 for aggregate handling. A control efficiency of 99.3% was applied for the baghouse used in this operation. No changes are necessary for this emission factor.[26]

5.2.2.19 Baghouse 1 for Material Handling Emissions (No Change)

The pre-project actual emissions for the Baghouse 1 for Material Handling (previously known as "Deslagging Station and Material HS") as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.00355 lb/ton of hot metal. No new information is available that would require any revisions to this emission factor.[27]

5.2.2.20 Material Handling Emissions Changes (Revised)

The 1995 Application included emissions changes associated with the material handling and transfers for coke, pellets (other than screen), and limestone from the project under Table F-3. These emissions changes were accounted for in the contemporaneous emissions changes table for PM and PM_{10} along with the haul roads emissions changes. Construction Permit No. 95010001 accounted for the material handling emissions changes as "creditable contemporaneous actual emission decreases" in Table 6. With this application, the material handling and transfer operations for coke, pellets, and limestone are included in the project emissions calculations.

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[24] CAAPP Permit moved this operation to Material Handling and Processing.
[25] Same as above.
[26] Same as above.
[27] This unit is addressed twice in the CAAPP Permit. However, it is a single operation now included in Material Handling and Processing.

Table 5-5. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM Emission Factors for Affected Emissions Units

Emission Point[a]	Emission Factors[b]		Units	Basis	Baseline Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Fugitives	0.031	0.030	lb/ton of hot metal	No change	31.92	30.9
A & B Blast Furnace Charging	0.0024	0.0024	lb/ton of material	No change	3.36	3.4
A & B Blast Furnace Casthouse Baghouse	0.07026	0.07026	lb/ton of hot metal	No change	72.35	72.4
Blast Furnace Slag Pits	0.00417	0.00417	lb/ton of hot metal	No change	4.29	4.3
Iron Spout Baghouse	0.02548	0.02548	lb/ton of hot metal	No change	26.24	26.2
Blast Furnace Operations					***138.17***	***137.1***
BOF 2 Vessels	0.16	0.16	lb/ton of steel	No change	193.07	193.1
BOF Roof Monitor	0.428	0.428	lb/ton of steel	No change	516.72	516.7
Desulfurization Station [inside BOF shop] & Transfer Pit	0.03721	0.03721	lb/ton of hot metal	No change	38.32	38.3
Hot Metal Charging Ladle Slag Skimmer	0.00502	0.00502	lb/ton of hot metal	No change	5.17	5.2
Baghouse 2 for Argon Stirring and Ladle Metallurgy	0.00715	0.00715	lb/ton of steel	No change	8.63	8.6
BOF Shop Operations					***761.9***	***761.9***
Caster Mold – Casters #1 & #2	0.006	0.006	lb/ton of steel	No change	7.24	7.2
Continuous Casters #1 & #2 – Spray Chamber	0.00852	0.00852	lb/ton of steel	No change	10.28	10.3
Slab Cutoff Casters #1 & #2	0.0071	0.0071	lb/ton of steel	No change	8.57	8.6
Slab Ripping Casters #1 & #2	0.00722	0.00722	lb/ton of steel	No change	8.71	8.7
Continuous Casting Operations					***34.8***	***34.8***
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	2.90	2.90	lb/MMcf	No change	175.51	175.5
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	5.10	1.90	lb/MMcf	Note [c]	2.92	1.1
Combined COG in stoves, B11 & B12		16.56 & 43.13	lb/MMcf	Added		50.8
Combined FO in stoves, boilers, ladle drying preheaters, and BFG flares	9.72	9.72	lb/Mgal	No change	0.08	0.1
Certain Fuel Burning Units					***178.51***	***227.4***
Material handling for Coke, Pellets, Limestone	Table F-3 of 1995 Application					17.2
Iron Pellet Screen[a]	0.00279	0.00375	lb/ton of material	Note [d]	3.91	5.3
BOF Hopper Baghouse[a]	0.00032	0.00032	lb/ton of steel	No change	0.39	0.4
Flux Conv. & Transfer Points Bin Flo–r - BOF[a]	0.0016	0.0016	lb/ton of steel	No change	1.93	1.9
Baghouse 1 for Material Handling	0.00355	0.00355	lb/ton of steel	No change	4.28	4.3
Material Handling Operations					***10.51***	***29.0***
Total					***1,123.90***	***1,190.3***

(a) Emission unit groupings have been revised slightly: The identified line items associated with material handling operations were grouped with the blast furnace operations or BOF shop in Construction Permit No. 95010001. Material handling for coke, pellets, limestone are now included in the project emissions. Baghouse 1 for Material Handling is also now grouped with material handling operations. In addition, the Baghouse 2 for Argon Stirring and Ladle Metallurgy is now grouped with BOF Shop operations.

(b) Except as noted in subsequent sections of this permit application, the same emission factors used to calculate pre-project actual emissions are also used to calculate post-project actual emissions. The BOF Roof Monitor is a notable exception, as the 1996 Project included measures to improve PM control efficiency.

(c) Updated AP-42 emission factor for natural gas combustion.

(d) Calculated using AP-42 emission factor for crushed stone, assuming 85% control efficiency.

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Table 5-6. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM_{10} Emission Factors for Affected Emissions Units

Emission Point[a]	Emission Factors[b]		Units	Basis	Baseline Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Fugitives	0.0155	0.0153	lb/ton of hot metal	Correction to calculation	15.96	15.8
A & B Blast Furnace Charging	0.0024	0.0012	lb/ton of materiallte [c]	3.36	1.7	
A & B Blast Furnace Casthouse Baghouse	0.07026	0.07026	lb/ton of hot metal	No change	72.35	72.4
Blast Furnace Slag Pits	0.00417	0.00417	lb/ton of hot metal	No change	4.29	4.3
Iron Spout Baghouse	0.02548	0.02548	lb/ton of hot metal	No change	26.24	26.2
Blast Furnace Operations					*122.21*	*120.3*
BOF 2 Vessels	0.16	0.16	lb/ton of steel	No change	193.07	193.1
BOF Roof Monitor	0.287	0.287	lb/ton of steel	No change	346.20	346.2
Desulfurization Station [inside BOF shop] & Transfer Pit	0.03721	0.03721	lb/ton of hot metal	No change	38.32	38.3
Hot Metal Charging Ladle Slag Skimmer	0.00502	0.00502	lb/ton of hot metal	No change	5.17	5.2
Baghouse 2 for Argon Stirring and Ladle Metallurgy	0.00715	0.00715	lb/ton of steel	No change	8.63	8.6
BOF Shop Operations					*591.39*	*591.4*
Cas–er Mold - Casters #1 & #2	0.006	0.006	lb/ton of steel	No change	7.24	7.2
Continuous Casters–#1 & #2 - Spray Chamber	0.00852	0.00852	lb/ton of steel	No change	10.28	10.3
Slab Cutoff Casters #1 & #2	0.0071	0.0071	lb/ton of steel	No change	8.57	8.6
Slab Ripping Casters #1 & #2	0.00722	0.00722	lb/ton of steel	No change	8.71	8.7
Continuous Casting Operations					*34.80*	*34.8*
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	2.90	2.90	lb/MMcf	No change	175.51	175.5
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	5.10	1.90	lb/MMcf	Note [d]	2.92	1.1
Combined COG in stoves, B11 & B12		14.21 & 41.48	lb/MMcf	Added		48.5
Combined FO in stoves, boilers, ladle drying preheaters, and BFG flares	9.72	9.72	lb/Mgal	No change	0.08	0.1
Certain Fuel Burning Units					*178.51*	*225.2*
Material handling for Coke, Pellets, Limestone	Table F-3 of 1995 Application					17.2
Iron Pellet Screen [a]	0.00279	0.00131	lb/ton of materl	Note [c]	3.91	1.8
BOF Hopper Baghouse [a]	0.00032	0.00032	lb/ton of steel	No change	0.39	0.4
Flux Conv. & Transfer Point– Bin Floor - BOF [a]	0.0016	0.0016	lb/ton of steel	No change	1.93	1.9
Baghouse 1 for Material Handling	0.00355	0.00355	lb/ton of steel	No change	4.28	4.3
Material Handling Operations					*10.51*	*25.6*
Total					*937.42*	*997.3*

(a) Emission unit groupings have been revised slightly: The identified line items associated with material handling operations were grouped with the blast furnace operations or BOF shop in Construction Permit No. 95010001. Material handling for coke, pellets, limestone are now included in the project emissions. Baghouse 1 for Material Handling is also now grouped with material handling operations. In addition, the Baghouse 2 for Argon Stirring and Ladle Metallurgy is now grouped with BOF Shop operations.

(b) Except as noted in subsequent sections of this permit application, the same emission factors used to calculate pre-project actual emissions are also used to calculate post-project actual emissions. The BOF Roof Monitor is a notable exception, as the 1996 Project included measures to improve PM_{10} control efficiency.

(c) Applied PM to PM_{10} ratio from AP-42, Chapter 13.2.4.

(d) Updated AP-42 emission factor for natural gas combustion.

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(e) Calculated using AP-42 emission factor for crushed stone, assuming 85% control efficiency.

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5.3 Post-Project PM and PM_{10} Emissions Limitations

As noted in Sections 2.2.3 through 2.2.5 herein, and as discussed further below, for each pollutant, the project emissions increase and/or net emissions increase from the 1996 Project was calculated using the difference between the pre-project actual emissions (August 1992 to July 1994, 24-month period) and the post-project emissions cap for each major operational group of affected emissions units. The post-project emissions caps and emissions increases from the 1996 Project, respectively, were listed in Tables 5 and 6 of Construction Permit No. 95010001.

This Section 5.3 presents a discussion of the post-project PM and PM_{10} emissions caps and a summary of the updated emissions increase calculations for the 1996 Project, reflecting the proposed changes to the emissions caps. Section 5.4 of this permit application presents a summary of the updated net emissions increase calculations and Section 5.5 of this permit application presents certain permit terms proposed by USS Granite City for purposes of ensuring the emissions limitations are enforceable as a practical matter. As already discussed, USS Granite City is proposing that the revised permit no longer include limitations for the PM and PM_{10} emissions of individual emission points or emissions units.

The proposed emissions caps for the project-affected emissions units were developed by USS Granite City using the operating rates shown in Table 5-7. Other than the natural gas usage, which is proposed to increase, and the oil usage, which is proposed to be deleted entirely, these rates are unchanged from the operating rates in Construction Permit No. 95010001. USS Granite City shut down the by-product coke oven batteries in 2015. The shutdown of the Coke Plant eliminated coke oven gas as process fuel at the facility for use in the various fuel burning units. This resulted in increased use of natural gas for certain Project-affected fuel burning units. The emissions effects of the natural gas usage increase is also being addressed in this permit application.

Table 5-7. Projected Post-Project Operating Rates for PM and PM_{10}

Parameters	Units	Post Project Rates
Blast Furnace Production	Net tons of hot metal/year	3,165,000
BOF Shop	Molten steel tons/year	3,580,000
Combined BFG Combustion	MMcf/year	185,030
Combined NG Combustion	MMcf/year	1,980
Combined COG Combustion	n/a	0
Combined Oil Combustion	n/a	0

A comparison of the PM and PM_{10} emissions caps from Table 5 of Construction Permit No. 95010001 and the proposed revisions to these emissions caps is provided in Table 5-8. USS Granite City is proposing only minor changes to the emissions limitations as part of this permit application. (The changes are primarily attributable to the redistribution of the emission caps, including establishment of a separate emissions cap for certain material handling operations.)

The proposed revisions to the post-project PM and PM_{10} emissions caps reflect three categories of changes: corrections of certain emission factors used to calculate both pre-project and post-

project emissions, as shown in Table 5-5 and Table 5-6 herein; [28] changes to post-project operating rates as shown in Table 5-7; and changes to emissions unit groups for certain material handling and other operations, as discussed in footnote (a) of both Table 5-5 and Table 5-6 herein. A separate group for material handling builds upon the approach taken by Illinois EPA in the CAAPP permit for the USS Granite City facility.

Table 5-8. PM and PM_{10} Emissions Caps

Processes and Activities	Emissions Caps (TPY) from Table 5 of Construction Permit No. 95010001		Proposed Revised Emissions Caps (TPY)	
	PM	PM_{10}	PM	PM_{10}
Blast Furnace Operations	218	194	215	190
BOF Shop	510	451	525	462
Continuous Casting Operations	71	71	52	52
Certain Fuel Burning Units*	273	273	273	273
Roadways	27	27	27	27
Material Handling (coke, pellets (other than screen), limestone)	2	2	n/a	n/a
Material Handling Operations (New group accounts for emissions from material handling operations previously grouped under the BF and BOF Shop operations and material handling line shown above)	n/a	n/a	30	19
Total	1,101	1,018	30	19
* Emission rates for "certain fuel burning units" represent the potential to emit for these operations. No emissions caps are proposed for this category of affected units.				

Updated project emissions increase analyses for PM and PM_{10}, reflecting proposed revisions to the emissions increase calculations in Table 6 of Construction Permit No. 9501001, are provided in Table 5-9. This table incorporates the effects of the corrected pre-project emission factors and annual emissions as shown in Table 5-5 and Table 5-6 and the requested updates to the emissions caps as shown in Table 5-8. In addition, adjustments to the emissions caps reflect reorganization of material handling operations affected by the project under a separate operational group for Material Handling Operations (similar to the approach in the CAAPP Permit) and regrouping of some of the operations under the BOF Shop.

[28] In the 1995 Application, for post-project PM and PM_{10} emissions from the BOF roof monitor, National Steel proposed lower emission factors reflecting the implementation of measures to improve capture and control efficiency in the BOF. Illinois EPA agreed with this proposal, incorporated the lower emission factors into the 1996 Construction Permit, and recognized the PM and PM_{10} emission reductions in the netting analyses for these pollutants. No changes are proposed by USS Granite City to the post-project PM and PM_{10} emission factors for the BOF Shop roof monitor.

Table 5-9. PM and PM_{10} Project Emissions Increase Analyses

Processes and Activities	Pre-Project Actual Emissions (TPY)		Proposed Revised Emissions Caps (TPY)		Change (TPY)	
	PM	PM10	PM	PM10	PM	PM10
Blast Furnace Operations	137	120	215	190	78	70
BOF Shop	762	591	525	462	-237	-129
Continuous Casting Operations	35	35	52	52	17	17
Certain Fuel Burning Units	227	225	273	273	46	48
Material Handling Operations	29	26	30	19	1	-7
Total*					-95	-1

*Roadways were addressed as contemporaneous decreases in the 1995 Application. Table 5 of Construction Permit No. 95010001 includes the requisite emission limit for PM and PM10 emissions for the roadways. No changes are proposed to those emission limitations.

5.4 Changes to Net Emissions Increases for PM and PM_{10}

As part of the requested revisions to Construction Permit No. 95010001, USS Granite City is also proposing updates to the analyses for net emissions increases in emissions of PM and PM_{10} for the 1996 Project. Table 5-10 shows the updated net emissions increases calculations for PM and PM_{10} based on the updated project emissions increase calculations shown in Table 5-9.

In the 1995 Application, the calculations relating to contemporaneous decreases in actual emissions associated with fugitive dust controls for roadways and material handling were presented together. For increased clarity, those calculations are presented separately in this permit application and emissions changes for the material handling operations are now shown in the project emissions increase calculations in Table 5-9 herein. Further, in the 1995 Application and in Construction Permit No. 95010001, the calculations supporting those creditable and contemporaneous decreases in emissions of were performed using PM_{10} emissions data (see Attachment C of the permit). The estimated decreases in emissions of PM from fugitive dust controls for roadways were based on the highly conservative assumption that pre-project PM emissions from roadways were equal to pre-project PM_{10} emissions. (See Appendices E and F of the 1995 Application and see Tables 5 and 6 of the permit.) Information available now is not sufficient to develop revised calculations of fugitive pre-project PM emissions from roadways or to calculate what the PM emissions decrease would have been due to the implementation of fugitive dust controls, but it is known that both the pre-project actual PM emissions and the decrease in PM emissions would have been greater than the corresponding PM_{10} values shown in the 1995 Application and in the permit.[29] Because the Project clearly does not result in a significant net increase in PM emissions even with this conservative assumption, USS Granite City is conservatively retaining the estimated PM emissions decrease of 17.1 TPY (same as PM_{10}).

[29] Based on the most recent emission inventory for the Granite City Works, actual PM emissions from paved and unpaved roadways are approximately 3.6 times the PM_{10} emissions. This is generally consistent with U.S. EPA's AP-42 emission factor compilation: PM emissions from paved roads are 5.2 times PM_{10} emissions (see AP-42 Table 13.2.1-1) and PM emissions from unpaved industrial roads are 3.3 times PM_{10} emissions (see AP-42 Table 13.2.2-2).

Table 5-10. Updated Net Emissions Increases for PM and PM_{10} for the Project

		PM	PM10
Start of Contemporaneous Period		Jan 1991	Jan 1990
End of Contemporaneous Period		Jan 1996	Jan 1996
		Emissions (TPY)	
Project Emissions Increases (not including project decreases)		141.6	134.7
Significant Emission Rates		25	15
Whether Significant?		Yes	Yes
Project Emissions Changes (includes decreases at BOF shop operations)		-95	-1
Contemporaneous Emissions Increases	Date		
Remove Blast Furnace Slag Spout Hood	Jan-1990	n/a	4.9
#2 Caster Production	Dec-1990	n/a	11.7
Installation of #8 Galvanizing Line	Mar-1996	n/a	n/a
Contemporaneous Emissions Decreases			
Ingot Teeming Shutdown	Apr-1991	-22.4	-22.4
Blooming Mill Shutdown	Apr-1991	-3.4	-3.4
NESHAP Controls Coke By-product	Jul-1991	-	-
Batch Annealing Shutdown	Dec-1991	-0.2	-0.2
Roadways Fugitive Dust Controls	Nov-1991	-17.1	-17.1
Net Emissions Increases		**-138.4**	**-27.8**
Whether Significant?		No	No

The net emissions increases calculations also incorporate changes due to corrections to the contemporaneous period:

- The contemporaneous period for PM emissions from the project was established using the definition in 40 CFR § 52.21(b)(3)(ii). The start of the contemporaneous period was January 25, 1991, five years prior to the date on which construction of the project commenced. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered changes involving the removal of the blast furnace slag spout hood, startup of #2 caster, and the #8 Galvanizing Line to be contemporaneous. However, the removal of the blast furnace slag spout hood and the startup of the #2 caster occurred prior to the beginning of the contemporaneous period and the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period. Therefore, these changes were not contemporaneous for PM for the 1996 Project. USS Granite City has updated the netting analysis to reflect the fact that the PM emissions increase from installation of the #8 Galvanizing Line did not occur within the contemporaneous period.
- The contemporaneous period for PM_{10} emissions from the project was established using the definition in 35 IAC 203.208.[30] The start of the contemporaneous period was January 4, 1990, five years prior to the date of submittal of a timely and complete application on

[30] The USS Granite City facility was located in area that was designated as nonattainment for PM_{10} at the time of 1996 Construction Permit issuance.

January 3, 1995. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered the #8 Galvanizing Line to be contemporaneous. However, the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period and this project was not contemporaneous for PM_{10} for the 1996 Project. USS Granite City has updated the netting analysis to reflect the fact that the PM_{10} emissions increase from installation of the #8 Galvanizing Line did not occur within the contemporaneous period.

Net emissions increases for PM and PM_{10} remain below the applicable significant emission rates. Therefore, the 1996 Project remains a non-major modification under PSD and NNSR.

5.5 Requested Changes to Permit Terms Relating to PM and PM_{10} Emissions

As part of this application for revision to Construction Permit No. 95010001, USS Granite City is proposing the following revisions to the emission limitations and other permit terms relating to PM and PM_{10} emissions from the processes or activities affected by the 1996 Project.

5.5.1 Blast Furnace Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the blast furnace operations. The permit grouped the Iron Pellet Screen as part of the Blast Furnace Operations under Table 1. With this revision, USS Granite City is proposing to move the Iron Pellet Screen, previously listed under the Blast Furnace Operations, under a new Material Handling Operations Group discussed later in this Section.

5.5.1.1 Proposed PM and PM_{10} Emission Limitations for Blast Furnace Operations

USS Granite City proposes the following to replace Condition 5 in Construction Permit No. 95010001.

> *5.a Particulate matter emissions from the Blast Furnace Operations (A & B Blast Furnaces Casthouse Roof Monitor and Casthouse Baghouse stack, A & B Blast Furnace Charging, Iron Spout Baghouse, and Blast Furnace Slag Pits) shall not exceed 215 tons per year for PM and 190 tons per year for filterable PM10, each on a monthly rolling 12-month total.*

As the emission limitations would be in Condition 5.a itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations for specific emissions points and emissions units from Table 1 of Construction Permit No. 95010001 as they would be redundant.

5.5.1.2 Prescribed Emission Factors for Certain Blast Furnaces Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing the following prescribed emission factors for the

emissions points for which emissions testing is not feasible.[31] Each of these emission factors is the same as the corresponding emission factor used to calculate pre-project actual emissions as shown in Table 5-5 and Table 5-6.

(a) For Blast Furnace Casthouse Roof Monitor, use PM emission factor of 0.030 lb/ton and PM_{10} emission factor of 0.0153 lb/ton.
(b) For Blast Furnace charging, use PM emission factor of 0.0024 lb/ton and PM_{10} emission factor of 0.0012 lb/ton.
(c) For slag pits, use PM and PM_{10} emission factor of 0.00417 lb/ton.

USS Granite City recognizes that the annual emission limitations in the revised permit must now address a running total of 12-consecutive months of emissions, so that compliance with the annual limitations can be assessed 12 times per calendar year. Monthly emissions would be determined as the product of monthly throughout rate and applicable emission factor except if there are process upsets or malfunctions, that are accompanied by higher emissions. For such events, the additional emissions would be determined in accordance with the principles of credible evidence.

5.5.2 Basic Oxygen Furnace Shop Operations

This section of the permit application addresses the proposed changes to the requirements under Construction Permit No. 95010001 for the BOF Shop operations. The permit grouped the BOF Additive with BOF Hopper Baghouse and Flux Conveyor & Transfer Pits Bin Floor as part of the BOF Shop Operations under Table 2. With this revision, USS Granite City is proposing to address these units in a new group for Material Handling Operations. That group is discussed in Section 5.5.4 of this permit application. In addition, with this revision, USS Granite City is proposing to move the permit terms relating to the Baghouse 2 for Argon Stirring and Ladle Metallurgy (previously Argon Stirring and Material Handling Tripper (Ladle Metallurgy)) which was previously listed under the Continuous Casting Operations, in the BOF Shop Operations Group.

5.5.2.1 Proposed PM and PM_{10} Emission Limitations for BOF Shop Operations

USS Granite City proposes the following to replace Condition 18 in Construction Permit No. 95010001.

18.a Particulate matter emissions from the BOF Shop Operations (BOF ESP, BOF Baghouse, BOF Shop Roof Monitor, Desulf/ Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy shall not exceed 525 tons per year for PM and 462 tons per year for filterable PM_{10}, each on a monthly rolling 12-month total.[32]

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[31] PM and PM_{10} emissions factors are appropriately determined from the results of emissions testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the Blast Furnace Casthouse baghouse and the Iron Spout baghouse.

[32] USS installed a capture system for the BOF vessels in the BOF Shop operations. This system captures emissions from charging and tapping of the BOF vessels and routes it to a baghouse. For compliance with the BOF Shop emission caps, emissions from the BOF ESP and baghouse exhausts are included here.

As the emission limitations would be in Condition 18.a itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations for specific emissions points and emissions units from Table 2 and Table 3 of Construction Permit No. 95010001 as it would be redundant.

5.5.2.2 *Prescribed Emission Factors for Certain BOF Shop Operations*

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing prescribed emission factors for the BOF Shop Roof Monitor for which emissions testing is not feasible.[33] For BOF Shop Roof Monitor, use PM emission factor of 0.0296 lb/ton and filterable PM_{10} emission factor of 0.0198 lb/ton.

5.5.3 Continuous Casting Operations

This section addresses the proposed changes to the requirements of Construction Permit No. 95010001 for the Continuous Casting operations.

5.5.3.1 *Proposed PM and PM_{10} Emission Limitations for Continuous Casting Operations*

USS Granite City proposes the following to replace Condition 20 in Construction Permit No. 95010001.

> *20.a Particulate matter emissions from the Continuous Casting Operations Caster Mold, Continuous Caster Spray Chamber, Slab Cutoff, and Slab Ripping shall not exceed 52 tons per year for PM and 52 tons per year for filterable PM_{10}, each on a monthly rolling 12-month total.*

As the emission limitations would be in Condition 20.a itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations for specific emissions points and emissions units from Table 3 of Construction Permit No. 95010001 as they would be redundant.

5.5.3.2 *Prescribed Emission Factors for Continuous Casting Operations*

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing the following prescribed emission factors for the emissions points for which emissions testing is not feasible.

(a) For Caster Mold, use PM/PM_{10} emission factor of 0.006 lb/ton.
(b) For Slab Cutoff, use PM/PM_{10} emission factor of 0.0071 lb/ton.
(c) For Slab Ripping, use PM/PM_{10} emission factor of 0.00722 lb/ton.

5.5.4 Material Handling Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the material handling operations associated with the Blast Furnace and BOF Shop operations. As previously noted, material handling equipment in the Blast Furnace Operations and the BOF

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[33] PM and PM_{10} emissions factors are appropriately determined from the results of emissions testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the BOF ESP and baghouse, Desulf/ Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy.

Shop Operations are now proposed to be included in this new section. This also includes emissions associated with material handling and transport of coke, pellets, and limestone. In addition, emissions from Baghouse 1 for Material Handling operation are also included in this section. In addition, USS identified a small silo used to store Mag-Lime at the BOF that used an integrated filter that exhausts inside the building. This emissions from this silo are also included in this group.[34]

5.5.4.1 *Proposed PM and PM_{10} Emission Limitations for Material Handling Operations*

USS Granite City proposes the following new Condition 42 in Construction Permit No. 95010001.

> 42. *Particulate matter emissions from the Material Handling Operations shall not exceed 30 tons per year of PM and 19 tons per year of filterable PM_{10}, each on a monthly rolling 12-month total.*

As the emission limitations would be in Condition 42 itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations from Table 1, Table 2, and Table 3 of Construction Permit No. 95010001 as they would be redundant.

5.5.4.2 *Prescribed Emission Factors for Material Handling Operations*

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing the following prescribed emission factors for the emissions points for which emissions testing is not feasible.

(a) For Iron Pellet Screen fugitives, use PM/PM_{10} emission factor of 0.00131 lb/ton.
(b) For material handling and transfer operations for coke, pellets, and limestone, use AP-42 Chapter 13.2.4 to calculate applicable emission factors.
(c) For Mag-Lime silo with filter, use PM/PM10 emission rate of 0.009 lb/hour.

[34] PTE of the Mag-Lime silo is less than 0.1 TPY. Therefore, USS did not quantify any baseline for this operation and conservatively included this operation in the emission cap for the Maerial Handling Operations.

6. Proposed Changes to Permit Terms for NO_X Emission Increase Analysis

This section describes the proposed changes to Construction Permit No. 95010001 being requested by USS Granite City related to NO_X emissions. It also provides a demonstration that, even with the requested revisions, the Project would still not be a major modification under the PSD program at 35 IAC 204 with respect to emissions of NO_2 and under the NNSR program at 35 IAC Part 203 with respect to emissions of NO_X. The emissions calculations for NO_X from the 1995 Application submitted by National Steel Corporation are reproduced in Appendix B.

6.1 Construction Permit No. 95010001 Applicability and Requirements

Table 6-1 below summarizes the provisions from Construction Permit No. 95010001 pertaining to NO_X emissions limitations from the project affected emissions units. Copies of the relevant permits are provided in Appendix D1 and D2 of this application.

Table 6-1. Construction Permit Conditions Addressing NO_X

Permit Condition	Requirements
5	Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.
18	Emissions from the BOF Shop operations shall not exceed the limits in attached Tables 2 and 5.
20	Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5
22	Emissions from the listed fuel combustion units shall not exceed the limits in Tables 4 and 5.

The annual NO_X emissions caps listed in Table 5 of Construction Permit No. 95010001 are presented in Table 6-2 below. These annual NO_X emissions caps cover all emissions units affected by the Project. The emissions units are grouped in the four main processes or activities at the USS Granite City facility, each calculated as the sum of the unit-specific NO_X emissions limitations in Tables 1 through 3 and fuel specific in Table 4 of the permit.

Table 6-2. NO_X Emissions Information from Table 5 of Construction Permit No. 95010001

Processes and Activities	NO_X Emissions Caps (tons/year)
Blast Furnace Operations	24
BOF Shop Operations	70
Continuous Casting Operations	90
Certain Fuel Combustion Units	674
Total	858

The NO_X emissions caps restricted the PTE of the project-affected emissions units. The project emissions increase for NO_X was calculated by subtracting pre-project actual emissions (August 1992 to July 1994, 24-month period) from the PTE as restricted by the limitations in the permit. Table 6 of Construction Permit No. 95010001 included the emissions increase from the project

and major modification applicability determinations for NOx. The NOx net emissions increase was below the applicable significant emission rates and as a result, NOx emissions were not subject to PSD or NNSR review.

6.2 Pre-Project Actual Emissions for 1996 Project

This section presents the updated pre-project actual emissions with proposed corrections to some of the NOx emission factors. Corrections to the NOx emissions factors are the result of more recent performance tests and updated information as discussed in 6.2.2.

6.2.1 Historical Throughput Rates

The NOx net emissions increase calculations presented in Table 6 of Construction Permit No. 95010001 were based on the calculations provided by National Steel Corporation in Table 3-2 of the 1995 Application. That table from the prior construction permit application is reproduced in Appendix B of this permit application.

The pre-project actual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 6-3.

Table 6-3. Pre-Project Production and Operating Rates for NOx

Parameters	Units	Pre-Project Rates
Blast Furnace Production	Net tons of hot metal/year	2,059,557
BOF Shop	Molten steel tons/year	2,413,406
Combined BFG Combustion	MMcf/year	121,039
Combined NG Combustion	MMcf/year	1,145
Combined Fuel Oil Combustion	Mgal/year	16

6.2.2 NOx Emission Factors Basis and Revisions

USS Granite City has corrected some of the NOx emission factors used to calculate pre-project actual emissions from the project-affected emissions units based on stack testing and updated literature-based information. USS Granite City has also validated the remaining emissions factors. The results are presented in Table 6-5; explanations are provided in the following paragraphs.

6.2.2.1 Fuel Burning Emissions Units Emissions (Revised)

The pre-project actual emissions for various fuels used in fuel burning emissions units affected by the project are calculated using the emission factors presented in Table 6-4.

Table 6-4. NOx Emission Factors for Fuel Burning

Fuel	Emission Factor and Units	Basis
Blast Furnace Gas[35]	5.28 lb/MMcf	February 1993 stack test
Natural Gas	306 lb/MMcf	November 1992 stack test
Coke Oven Gas (added)	80 lb/MMcf in stoves and 403.69 lb/MMcf in boilers *(both added)*	Stoves – Stack test (date unknown) Boilers – "A" battery stack test 1989
Fuel Oil (*Shown for historical purposes. USS Granite City no longer plans to use fuel oil.*)	55 lb/1000 gallon	AP-42 Page 1.3-2

Section 5.2.2.15 includes discussion of inclusion of emissions from the COG combustion for applicability calculations here including the fuel usage information for the affected units.

6.2.2.2 A&B Blast Furnace Casthouse Stack (Baghouse) Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnace Casthouse stack (baghouse), as presented by National Steel Corporation in the 1995 Application, were calculated using data from a stack test conducted in July 1993. Other than the test results, USS Granite City has no information regarding this stack test, which was conducted by National Steel. In March 2012, USS Granite City performed NOx stack tests at the Blast Furnace Casthouse stack. This test indicated a lower NOx emission factor for this operation than previously used (0.0144 lb/ton in the original analysis vs 0.0027 lb/ton based on the March 2012 stack test). In Table 6-5, both the original and updated NOx emission factors are shown for the Blast Furnace Casthouse stack.

6.2.2.3 A&B Blast Furnace Casthouse Roof Monitor Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnace Casthouse roof monitor, as presented by National Steel Corporation in the 1995 Application, were calculated using the emission factor as 0.00072 lb/ton. This value was developed using the July 1993 stack test result of 0.0144 lb/ton for the casthouse baghouse stack and an assumption of 95% capture efficiency as described in Section 5.2.2.3 herein. As discussed in Section 6.2.2.2 above, subsequent testing indicated a lower NOx emission factor for the stack emissions of 0.0027 lb/ton. Assuming a 95% capture efficiency for the casthouse baghouse collection system, the uncaptured portion (5% of NOx generated) is emitted through the roof monitors at the rate of 0.00014 lb/ton. In Table 6-5, both the original and updated NOx emission factors are shown for the Blast Furnace Casthouse roof monitor emissions.

6.2.2.4 A&B Blast Furnace Iron Spout Baghouse Emissions (Revised)

The 1995 Application and Construction Permit No. 95010001 did not identify any NOx emissions from the Blast Furnace Iron Spout Baghouse. However, a stack test conducted in March 2012 indicated a NOx emission factor of 0.0016 pound per ton of hot metal for this emission point. In Table 6-5, the revised analysis includes pre-project actual NOx emissions from the Blast Furnace Iron Spout Baghouse stack.

[35] BFG is a low Btu fuel that results in a cool flame during combustion. This results in relatively low NOx emission rate for this fuel for all types of applications.

6.2.2.5 BOF ESP Stack (BOF 2 Vessels) Emissions (Revised)

The pre-project actual emissions for the BOF ESP stack, as presented by National Steel Corporation in the 1995 Application, were calculated using data from the average of three runs from one stack test conducted in August 1993. As discussed below, the results of this 1993 stack test have been shown by subsequent data not to be representative of emissions from the BOF ESP stack. The 1996 Project involved increases in the production limits for the Granite City blast furnaces and BOF Shop operations. The project did not involve any physical changes or changes in the method of operation for the BOF Shop. The BOF Shop operations do not use any add-on NOx control devices. Thus, variability in NOx emissions for the BOF process are inherent to the process operation. Beginning in 2012, USS Granite City performed several NOx stack tests at the BOF ESP stack. This testing provided an updated NOx emission factor for the BOF ESP stack (0.0389 lb/ton in the original analysis vs 0.14 lb/ton based on the average of April 2012, July 2012, and November 2014 stack test results). In Table 6-5, both the original and updated NOx emission factors are shown for the BOF ESP stack.

6.2.2.6 BOF Baghouse - Secondary Emissions (New)

At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF Shop roof monitor. No information was available at the time about the NOx emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. NOx emission testing for the BOF Shop baghouse, completed in 2019-2020 timeframe, shows an average NOx rate of 0.0075 lb/ton for the BOF Shop Baghouse stack. USS Granite City added the BOF Shop secondary NOx emissions baseline based on the result of the stack test for the BOF Shop Baghouse stack.

6.2.2.7 Continuous Caster Mold Process Emissions (Revised)

The pre-project actual emissions for the Continuous Caster Mold – Caster #1 and Caster #2 process, as presented by National Steel Corporation in the 1995 Application listed NOx emissions from this operation. USS Granite City evaluated this analysis and determined that there is no NOx formation in this operation. Any NOx emissions from this operation are due to combustion of natural gas and are already accounted for under the gaseous fuel burning activities listed above. Therefore, in the revised analysis, NOx emissions are not included from this operation.

Table 6-5. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project NOx Emission Factors for Affected Emissions Units

Emission Point	Emission Factors[a]		Units	Reason for Change	Pre-project Actual Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Stack (Baghouse)	0.0144	0.0027	lb/ton of hot metal	Revised based on 3/2012 stack test	14.83	2.78
A & B Blast Furnace Casthouse Roof Monitor	0.0007	0.0001	lb/ton of hot metal	3/2012 test assuming no NOx control and 5% roof monitor fraction	0.74	0.15
Iron Spout Baghouse		0.0016	lb/ton of hot metal	Based on 3/2012 stack test		1.6
Blast Furnace Operations					*15.6*	*4.6*
BOF ESP Stack (2 Vessels)	0.0389	0.14	lb/ton of steel	Revised based on average of 2012-2014 stack tests	46.94	170.8
BOF Secondary Emissions (2 Vessels)		0.0075	lb/ton of steel	Based on 2019-20 stack test		9.1
BOF Shop Operations					*46.94*	*179.8*
Continuous Caster Mold - Casters #1 & #2	0.05	0.00	lb/ton of steel	All NOx formed from natural gas combustion. No additional NOx	60.34	0.00
Continuous Casting Operations					*60.34*	*0.00*
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	5.28	5.28	lb/MMcf	No change	319.54	319.54
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	306.00	306.00	lb/MMcf	No change	175.19	175.19
Combined COG in stoves, B11 & B12		80 and 404	lb/MMcf	Added		461.18
Combined FO in stoves, B11 & B12, ladle drying preheaters, and BFG flares (*shown here for historical purposes*)	9.72	9.72	lb/Mgal	No change	0.44	0.44
Certain Fuel Burning Units					*495.17*	*956.4*
Total					*618.01*	*1,140.8*

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6.3 Post-Project NO_X Emissions Limitations

As described in subsection 5.3, the post-project emissions caps and emissions increases from the 1996 Project were, respectively, listed in Tables 5 and 6 of Construction Permit No. 95010001. Similar to PM and PM_{10}, this subsection 6.3 presents a discussion of the post-project NOx emissions caps and summary of the updated emissions increase calculations for the 1995 Project, reflecting the proposed changes in the emissions caps.

The post-project emissions caps for the project affected emissions units are developed by USS Granite City using the operating rates shown in Table 6-6. Other than the natural gas usage, which is proposed to increase, and the oil usage, which is proposed to be eliminated, these rates are unchanged from the operating rates in the permit. As previously noted in Section 5.3, due to 2015 shutdown of the Coke Plant this application addresses increase in natural gas usage for the fuel burning units affected by the project and also addresses elimination of COG at the affected units.

Table 6-6. Projected Post-Project Operating Rates for NO_X

Parameters	Units	Post Project Rates
Blast Furnace Production	Net tons of hot metal/year	3,165,000
BOF Shop	Molten steel tons/year	3,580,000
Combined BFG Combustion	MMcf/year	185,030
Combined NG Combustion	MMcf/year	1,980
Combined COG Combustion	n/a	0
Combined Oil Combustion	n/a	0

A comparison of the NOx emissions caps from Table 5 of Construction Permit No. 95010001 and the proposed revisions to these emissions caps is provided in Table 6-7. Detailed emissions calculations are provided in Appendix B. The proposed revisions to the post-project NOx emissions caps reflect changes to some of the emission factors presented in Table 6-5 and changes in post-project operating rates as shown in Table 6-6. USS Granite City also revised NOx emission factors for boilers to reflect the currently applicable emission limitations for boilers under 35 IAC 217.164(b).

Table 6-7. NO_X Emissions Caps

	NOx Emission Caps (TPY) from Table 5 of Construction Permit No. 95010001	Proposed Revised NOx Emissions Caps (TPY)
Blast Furnace Operations	24	24.0
BOF Shop	70	400
Continuous Casting Operations	90	0.0
Certain Fuel Burning Units*	674	706
Total	858	1130
* Emission rates for "certain fuel burning units" represent the potential to emit for these operations. No emissions caps are proposed for this category of units.		

Updated project emissions increase analysis for NOx reflecting proposed revisions to the emissions increase calculations in Table 6 of Construction Permit No. 95010001, is provided in Table 6-8. This table incorporates the effects of the corrected pre-project emission factors as shown in Table 6-5 and the requested updates to the emission caps as shown in Table 6-7.

Table 6-8. NO_X Project Emissions Increase Analysis

	NO_X Pre-Project Actual Emissions (TPY)	Proposed Revised NO_X Emissions Caps (TPY)	NO_X Change (TPY)
Blast Furnace Operations	4.6	24.0	19.4
BOF Shop	179.8	400.0	220.2
Continuous Casting Operations	0.0	0.0	0.0
Certain Fuel Burning Units	956.3	706.0	-250.3
Total	1140.7	1130	-10.7

6.4 Changes to Net Emissions Increase Calculation for NO_X

In conjunction with the requested revisions to Construction Permit No. 95010001, USS Granite City is also updating the analysis for net increases in emissions of NOx for the 1996 Project.

Table 6-9 shows the updated net emissions increases calculations for NOx based on the updated project emissions increase calculations shown in Table 6-8. This table includes a correction to the contemporaneous period for NOx emissions from the project as established using the definition in 35 IAC 203.208.[36] The start of the contemporaneous period was January 4, 1990, five years prior to the date of submittal of a timely and complete application on January 3, 1995. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered the #8 Galvanizing Line to be contemporaneous. However, the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period and this project was not contemporaneous for the 1996 Project.

Net emissions increase for NOx remains below the applicable significant emission rate. Therefore, the 1996 Project remains a non-major modification under PSD and NNSR.

[36] Granite City Works is located in area that was designated as nonattainment for ozone at the time Construction Permit No. 95010001 was originally issued. Accordingly, the applicability provisions of the Illinois NNSR rule under 35 IAC 203 were addressed for the Project at that time.

Table 6-9. Updated Net Emissions Increases for NOx for the 1996 Project

		NO_X
Start of Contemporaneous Period		Jan 1990
End of Contemporaneous Period		Jan 1996
Project Emissions Increases		239.6
Significant Emission Rates		40
Whether Significant?		Yes
Project Emissions Changes (includes decreases at the fuel combustion units)		-10.7
Contemporaneous Emissions Increases	Date	
Installation of #8 Galvanizing Line	Mar-1996	n/a
Contemporaneous Emissions Decreases		
Blooming Mill Shutdown	Apr-1991	-217.8
Batch Annealing Shutdown	Dec-1991	-8.7
Net Emissions Increase		**-237.3**
Whether Significant?		No

6.5 Requested Changes to Permit Terms Relating to NO_X Emissions

As part of this application for revision to Construction Permit No. 95010001, USS Granite City is proposing the following revisions to the emission limitations and other permit terms relating to NOx emissions from the processes or activities affected by the 1996 Project.

6.5.1 Blast Furnace Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the blast furnace operations under Table 1.

6.5.1.1 Proposed NO_X Emission Limitations for Blast Furnace Operations

USS Granite City proposes the following as Condition 5.b in Construction Permit No. 95010001.

> *5.b NOx emissions from the Blast Furnace Operations (A & B Blast Furnaces Casthouse Roof Monitor, Casthouse Baghouse stack, Iron Spout Baghouse stack) shall not exceed 24.0 tons per year on a monthly rolling 12-month total.*

As the NOx emission limitations are to be incorporated in Condition 5.b itself, USS Granite City also proposes the deletion of the NOx emission limitations for specific emissions points and emissions units from Table 1 of Construction Permit No. 95010001 as they would be redundant.

6.5.1.2 Prescribed Emission Factors for Blast Furnaces Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the blast furnace casthouse roof monitor based on application of 95% capture efficiency to the NOx stack test result for the blast furnace casthouse baghouse.

6.5.2 Basic Oxygen Furnace Shop Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the BOF Shop operations under Table 2.

6.5.2.1 Proposed NO_X Emission Limitations for BOF Shop Operations

USS Granite City proposes the following as Condition 18.b in Construction Permit No. 95010001.

> *18.b NO_X emissions from the BOF ESP and BOF Baghouse stacks shall not exceed 400 tons per year on a monthly rolling 12-month total.*

As the NOx emission limitations are to be incorporated in Condition 18.b itself, USS Granite City also proposes the deletion of the NOx emission limitations for specific emissions points and emissions units in Table 2 of Construction Permit No. 95010001 as they would be redundant.

7. Proposed Changes to Permit Terms for VOM Emission Increase Analysis

This section describes the proposed changes to Construction Permit No. 95010001 requested by USS Granite City related to VOM emissions. It also provides a demonstration that, even with the requested revisions, the Project would still not be a major modification under the NNSR program at 35 IAC Part 203 with respect to emissions of VOM. The emissions calculations for VOM from the 1995 Application submitted by National Steel Corporation are reproduced in Appendix B.

7.1 Construction Permit No. 95010001 Applicability and Requirements

Table 7-1 below summarizes the provisions from Construction Permit No. 95010001 pertaining to VOM emissions limitations from the project-affected emissions units. Copies of the relevant permits are provided in Appendix D1 and D2 of this application.

Table 7-1. Construction Permit Conditions Addressing VOM

Permit Condition	Requirements
5	Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.
18	Emissions from the BOF Shop operations shall not exceed the limits in attached Tables 2 and 5.
22	Emissions from the listed fuel combustion units shall not exceed the limits in Tables 4 and 5.

The annual VOM emissions caps listed in Table 5 of Construction Permit No. 95010001 are presented in Table 7-2 below. These annual VOM emissions caps cover all emissions units affected by the Project. The emission units are grouped in the three main processes or activities at the USS Granite City facility, each calculated as the sum of the unit specific VOM emissions limitations in Tables 1 through 3 and the fuel specific limitations in Table 4 of the permit.

Table 7-2. VOM Emissions Information from Table 5 of Construction Permit No. 95010001

Processes and Activities	VOM Emissions Caps (tons/year)
Blast Furnace Operations	157
BOF Shop Operations	12
Certain Fuel Combustion Units	2
Total	171

The VOM emissions caps restricted the PTE of the project affected emissions units. The VOM project emissions increase was calculated by subtracting pre-project actual emissions (August 1992 to July 1994 24-month period) from the PTE as restricted by the 1996 Construction Permit limitations. Table 6 of Construction Permit No. 95010001 included the emissions increase from the project and major modification applicability determinations for VOM. VOM net emissions increases were below the applicable significant emission rates and as a result, VOM emissions were not subject to NNSR review.

7.2 Pre-Project Actual Emissions for 1996 Project

This section presents the updated pre-project actual emissions with proposed corrections to some of the VOM emission factors. Revisions to the emissions factors are the result of more recent performance tests and updated information as discussed in 7.2.2.

7.2.1 Historical Throughput Rates

The VOM net emissions increase calculations presented in Table 6 of Construction Permit No. 95010001 were based on the calculations provided by National Steel Corporation in Table 3-6 of the 1995 Application. That table from the prior construction permit application is reproduced in Appendix B to this permit application.

The pre-project annual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 7-3.

Table 7-3. Pre-Project Production and Operating Rates for VOM

Parameters	Units	Pre-Project Rates
Blast Furnace Production	Net tons of hot metal/year	2,059,557
BOF Shop	Molten steel tons/year	2,413,406
Combined BFG Combustion	MMcf/year	121,039
Combined NG Combustion	MMcf/year	1,145
Combined Fuel Oil Combustion	Mgal/year	16

7.2.2 VOM Emission Factors Basis and Revisions

USS Granite City has corrected some of the VOM emission factors used to calculate pre-project actual emissions from the project affected emissions units based on stack testing and updated literature-based information and has validated the remaining emissions factors. The results are presented in Table 7-5; explanations are provided in the following paragraphs.

7.2.2.1 Fuel Burning Emissions Units Emissions (Revised)

The pre-project actual emissions for various fuels used in fuel burning emissions units affected by the project are calculated using the emission factors presented in Table 7-4.

Table 7-4. VOM Emission Factors for Fuel Burning

Fuel	Emission Factors and Units	Basis
Blast Furnace Gas	0.24 lb/MMcf *(revised)*	Updated based on the CoGen Boiler Permit No. 06070023
Natural Gas	5.5 lb/MMcf *(revised)*	Based on AP-42 Chapter 1.4
Coke Oven Gas (added)	0.18 lb/MMcf in stoves 1.22 lb/MMcf in boilers (both added)	Stoves – literature based factor Boilers – AIRS 1990
Fuel Oil	0.28 lb/1000 gallon	AP-42 Page 1.3-2

Section 5.2.2.15 includes discussion of inclusion of emissions from the COG combustion for applicability calculations here including the fuel usage information for the affected units.

7.2.2.2 A&B Blast Furnace Casthouse Baghouse Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnaces Casthouse stack (baghouse) as presented by National Steel Corporation in the 1995 Application were calculated using data from a stack test conducted in July 1993. Other than the test results, USS Granite City has no information regarding this stack test, which was conducted by National Steel. In March 2012, USS Granite City performed VOM stack tests at the Blast Furnace Casthouse stack. This test indicated a lower VOM emission factor for this operation than previously used (0.09458 lb/ton in the original analysis vs 0.014 lb/ton based on the March 2012 stack test). In Table 7-5, both the original and updated VOM emission factors are shown for the Blast Furnace Casthouse stack.

7.2.2.3 A&B Blast Furnace Casthouse Roof Monitor Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnace Casthouse roof monitor, as presented by National Steel Corporation in the 1995 Application, were calculated using an emission factor of 0.0047 lb/ton. This value was developed using the July 1993 stack test result of 0.09548 lb/ton for the casthouse baghouse stack and an assumption of 95% capture efficiency described in Section 5.2.2.3 herein. As discussed in 7.2.2.2 above, subsequent testing indicated a lower VOM emission factor for the stack emissions of 0.014 lb/ton. Assuming a 95% capture efficiency for the casthouse baghouse collection system, the uncaptured portion (5% of VOM generated) is emitted through the roof monitors at the rate of 0.00073 lb/ton. In Table 7-5, both the original and updated VOM emission factors are shown for the Blast Furnace Casthouse roof monitor emissions.

7.2.2.4 A&B Blast Furnace Iron Spout Baghouse Emissions (Revised)

The 1995 Application Construction Permit No. 95010001 did not identify any VOM emissions from the Blast Furnace Iron Spout Baghouse. However, a stack test conducted in March 2012 indicated a VOM emission factor of 0.0037 pounds per ton of hot metal for this emission point. In Table 7-5, the revised analysis includes pre-project actual VOM emissions from the Blast Furnace Iron Spout Baghouse stack.

7.2.2.5 BOF ESP Stack (BOF 2 Vessels) Emission (Revised)

The pre-project actual emissions for the BOF ESP stack, as presented by National Steel Corporation in the 1995 Application, were calculated using data from the average of three runs from one stack test conducted in August 1993. As discussed below, the results of this 1993 stack test have been shown by subsequent data to be non-representative of the emissions from the BOF ESP stack. The 1996 Project involved increases in the production limits for the Granite City blast furnaces and BOF Shop operations. The project did not involve any physical changes or changes in the method of operation for the BOF Shop. The BOF Shop operation does not use any add-on VOM control devices. Thus, variability in VOM emissions for the BOF process is inherent to the process operation. Beginning in 2012, USS Granite City performed several VOM stack tests at the BOF ESP stack. This testing provided an updated VOM emission factor for the BOF ESP stack (0.006 lb/ton in the original analysis vs 0.019 lb/ton based on the average of April 2012, July 2012, and November 2014 stack test results). In Table 7-5, both the original and updated VOM emission factors are shown for the BOF ESP stack.

7.2.2.1 BOF Baghouse - Secondary Emissions (New)

At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF

Shop roof monitor. No information was available at the time about the VOM emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. VOM emission testing for the BOF Shop baghouse, completed in 2019-2020 timeframe, shows an average NOx rate of 0.0035 lb/ton for the BOF Shop Baghouse stack. USS Granite City added the BOF Shop secondary VOM emissions baseline based on the result of the stack test for the BOF Shop Baghouse stack.

7.2.2.2 Desulfurization Station & Transfer Pit Baghouse Emission Factor (Revised)

The pre-project VOM baseline emissions for the Desulfurization Station & Transfer Pit Baghouse stack as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor from the U.S. EPA's AIRS 1990 database (WebFIRE). In May 2012, USS Granite City performed VOM stack tests at the Desulfurization Station & Transfer Pit Baghouse stack. This testing has provided an updated VOM emission factor for this emission point (0.0010 lb/ton in the original analysis vs 0.00019 lb/ton based on a May 2012 stack test). In Table 7-5, both the original and updated VOM emission factors are shown for the Desulfurization Station & Transfer Pit Baghouse stack.

7.2.2.3 Hot Metal Charging and Ladle Skimming Stack Emissions (New)

The 1995 Application and Construction Permit No. 95010001 did not quantify any VOM emissions from the Hot Metal Charging and Ladle Skimming baghouse exhaust. USS Granite City conducted a stack test in May 2012 and based on this stack test, included a VOM emission rate of 0.00015 lb/ton for this stack.

Table 7-5. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project VOM Emission Factors for Affected Emissions Units

Emission Point	Emission Factors		Units	Basis	Baseline Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Stack (Baghouse)	0.09458	0.014	lb/ton of hot metal	Revised based on 3/2012 stack test	97.40	14.3
A & B Blast Furnace Casthouse Roof Monitor	0.00469	0.00073	lb/ton of hot metal	3/2012 test assuming no VOM control and 5% roof monitor fraction	4.83	0.8
Iron Spout Baghouse	0.0000	0.0037	lb/ton of hot metal	Revised based on 3/2012 stack test	0.00	3.8
Blast Furnace Operations					*102.23*	*18.8*
BOF Stack (2 Vessels)	0.0060	0.0190	lb/ton of steel	Revised based on average of 2012-2014 stack tests	7.24	22.40
BOF Secondary Emissions (2 Vessels)		0.0035	lb/ton of steel	Based on 2019-20 stack test		4.2
Desulfurization Station [inside BOF shop] & Transfer Pit	0.00100	0.00019	lb/ton of hot metal	Revised based on 5/2012 stack test	1.03	0.2
Hot Metal Charging and Ladle Skimming		0.00015	lb/ton of hot metal	Based on 5/2012 stack test		0.2
BOF Shop Operations					*8.27*	*27.0*
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	0.0	0.24	lb/MMcf	Updated from Cogen Boiler permit	0	14.52
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	2.8	5.5	lb/MMcf	1998 update to AP-42 Section 1.4	1.60	3.15
Combined COG in stoves, B11 & B12		0.18 and 1.22	lb/MMcf	Added		1.38
Combined FO in stoves, B11 & B12, ladle drying preheaters, and BFG flares	0.28	0.28	lb/Mgal	No change	0.00	0.00
Certain Fuel Burning Units					*1.61*	*19.1*
Total					*112.10*	*64.9*

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7.3 Post-Project VOM Emissions Limitations

As described in subsection 5.3, the post-project emissions caps and emissions increases from the 1996 Project were, respectively, listed in Tables 5 and 6 of Construction Permit No. 95010001. Similar to PM and PM_{10}, this subsection 6.3 presents a discussion of the post-project VOM emissions caps and summary of the updated emissions increase calculations for the 1995 Project, reflecting the proposed changes in the emissions caps.

The post-project emissions caps for the project affected emissions units are developed by USS Granite City using the operating rates parameters shown in Table 7-6. Other than the natural gas usage, which is proposed to increase, and the oil usage, which is proposed to be deleted entirely, these rates are unchanged from the operating rates in Construction Permit No. 95010001. As previously noted in Section 5.3, due to 2015 shutdown of the Coke Plant this application addresses increase in natural gas usage for the fuel burning units affected by the project and also addresses elimination of COG at the affected units.

Table 7-6. Projected Post-Project Operating Rates for VOM

Parameters	Units	Post Project Rates
Blast Furnace Production	Net tons of hot metal/year	3,165,000
BOF Shop	Molten steel tons/year	3,580,000
Combined BFG Combustion	MMcf/year	183,030
Combined NG Combustion	MMcf/year	1,980
Combined COG Combustion	n/a	0
Combined Oil Combustion	n/a	0

A comparison of the VOM emissions caps from Table 5 of Construction Permit No. 95010001 and the proposed revisions to these emissions caps is provided in Table 7-7. Detailed emissions calculations are provided in Appendix B. The proposed revisions to the post-project VOM emissions caps reflect changes to some of the emission factors presented in Table 7-5 and changes in post-project operating rates as shown in Table 7-6.

Table 7-7. VOM Emissions Caps

	VOM Emission Caps (TPY) from Table 5 of Construction Permit No. 95010001	Proposed Revised VOM Emissions Caps (TPY)
Blast Furnace Operations	157	45.0
BOF Shop	12	45.20
Certain Fuel Burning Units*	2	40
Total	171	130
* Emission rates for "certain fuel combustion units" represent the potential to emit for these operations. No emissions caps are proposed for this category of units.		

Updated project emissions increase analysis for VOM reflecting proposed revisions to the emissions increase calculations in Table of Construction Permit No. 95010001, is provided in

Table 7-8. This table incorporates the effects of the corrected pre-project emission factors as shown in Table 7-5 and the requested updates to the emission limitations as shown in Table 7-7.

Table 7-8. Revised VOM Project Emissions Increase Analyses

	VOM Pre-Project Emissions (TPY)	VOM Revised Emission Limitations (TPY)	VOM Change (TPY)
Blast Furnace Operations	18.8	45.0	26.2
BOF Shop	27.0	45.0	18.0
Certain Fuel Burning Units	19.1	40.0	20.9
Total	64.9	130	65.1

7.4 Changes to Net Emissions Increase Calculation for VOM

In conjunction with the requested revisions to Construction Permit No. 95010001, USS Granite City is also updating the analysis for net increases in emissions of VOM for the 1996 Project. Table 7-9 shows the updated net emissions increases calculations for VOM based on the updated project emissions increase calculations shown in Table 7-8. This table includes a correction to the contemporaneous period for VOM emissions from the project as established using the definition in 35 IAC 203.208.[37] The start of the contemporaneous period was January 4, 1990, five years prior to the date of submittal of a timely and complete application on January 3, 1995. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered the #8 Galvanizing Line to be contemporaneous. However, the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period and this project was not contemporaneous for the 1996 Project.

Table 7-9. Updated Net Emissions Increases for VOM for the 1996 Project

		VOM
Start of Contemporaneous Period		Jan 1990
End of Contemporaneous Period		Jan 1996
Project Emissions Increases		65.1
Significant Emission Rates		40
Whether Significant?		Yes
Contemporaneous Emissions Increases	Date	
Installation of #8 Galvanizing Line	Mar-1996	n/a
Contemporaneous Emissions Decreases		
Blooming Mill Shutdown	Apr-1991	-0.9
NESHAP Controls for Coke By-Product Operations	Jul-1991	-31.6
Batch Annealing Shutdown	Dec-1991	-0.3
Net Emissions Increase		**32.3**
Whether Significant?		No

[37] The USS Granite City facility was located in area that was designated as nonattainment for ozone at the time of 1996 Construction Permit issuance. Therefore, NNSR provisions under 35 IAC 203 applied for the project at the time.

Net emissions increase for VOM remains below the applicable significant emission rate. Therefore, the 1996 Project remains a non-major modification under NNSR.

7.5 Requested Changes to Permit Terms Relating to VOM Emissions

As part of this application for revision to Construction Permit No. 95010001, USS Granite City is proposing the following revisions to the emission limitations and other permit terms relating to VOM emissions from the processes or activities affected by the 1996 Project.

7.5.1 Blast Furnace Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the blast furnace operations under Table 1.

7.5.1.1 Proposed VOM Emission Limitations for Blast Furnace Operations

USS Granite City proposes to add the following as Condition 5.c in Construction Permit No. 95010001.

> *5.c VOM emissions from the Blast Furnace Operations (A & B Blast Furnaces Casthouse Roof Monitor, Casthouse Baghouse stack, Iron Spout Baghouse stack) shall not exceed 45.0 tons per year on a monthly rolling 12-month total.*

As the VOM emission limitations are to be incorporated in Condition 5.c itself, USS Granite City also proposes the deletion of the VOM emission limitations from for specific emissions points and emissions units Table 1 of Construction Permit No. 95010001 as they would be redundant.

7.5.1.2 Prescribed Emission Factors for Blast Furnaces Operations

Prescribed emission factors consistent with the approach described in Section 3 herein. USS Granite City is proposing a prescribed emissions calculation methodology for NO_x emissions from the casthouse roof monitor based on application of 95% capture efficiency to the NO_x stack test result for the blast furnace casthouse baghouse.

7.5.2 Basic Oxygen Furnace Shop Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the BOF Shop operations under Table 2.

7.5.2.1 Proposed VOM Emission Limitations for BOF Shop Operations

USS Granite City proposes to add the following as Condition 18.c in Construction Permit No. 95010001.

> *18.c VOM emissions from the BOF Shop Operation (BOF ESP and BOF Baghouse, Desulf/Soda Ash and Hot Metal Charging Baghouse, and Hot Metal Charging and Ladle Skimming baghouse) shall not exceed 45.0 tons per year based on a monthly rolling 12-month total.*

As the VOM emission limitations are to be incorporated in Condition 18.c itself, USS Granite City also proposes the deletion of the VOM emission limitations for specific emission points and emissions units in Table 2 of Construction Permit No. 95010001 as they would be redundant.

8. Best Available Control Technology for CO

In accordance with 35 IAC 204.1100(c), the BACT requirement under the PSD program generally applies for each regulated NSR pollutant for which the major modification resulted in a significant net emission increase at the source. This requirement specifically applies to each emission unit that, as part of the Project, will have a net emissions increase as a result of a physical change or change in the method of operation in the unit. As previously noted, the boilers at Granite City Works, including the existing Boiler 11 and Boiler 12, were not subject to BACT as the Project does not involve physical changes or changes in the method of operation of these units.

8.1 Historical BACT Evaluation

In the 1995 Application, National Steel Corporation provided a CO BACT analysis for the blast furnace stoves, the ladle drying preheaters, and the continuous casters. Use of CO add-on control technology (*i.e.*, direct combustion in a flare, thermal oxidation, and catalytic oxidation) were proposed to be rejected on the basis of a lack of technical feasibility. National Steel proposed that good combustion practices be determined to be BACT for CO emissions from these emissions units. The ladle drying preheaters and continuous casters use NG fuel, which is inherently lower emitting practice. No add-on controls were demonstrated for these operations. Therefore, the use of NG was determined to be BACT.

Illinois EPA released a "Project Summary for Proposed Issuance of a Construction Permit" in November 1995 along with a draft construction permit. This document included a section "Additional Requirements for Major Projects" that addressed BACT requirements for the 1996 Project. BACT for CO was determined to be use of 'work practice' standards. Specifically, Illinois EPA stated the following with respect to CO BACT.

> *The requirements of PSD include a demonstration that best available control technology (BACT) will be used for SO_2 and CO emissions at affected units, an analysis of air quality impacts, and an analysis of the impacts of the project on visibility, vegetations [sic], and soils. The Agency has determined that these requirements have been met.*
>
> *GCD [Granite City Division of National Steel] has shown that* ***work practices*** *used for SO_2 and CO constitute BACT as used by other steel mills for these pollutants. [emphasis added]*

During the original PSD permitting process for the Project in 1996, neither National Steel Corporation nor Illinois EPA evaluated BACT for CO emissions from the blast furnace casthouse. As discussed in Section 4.4 of this permit application, available information at the time did not recognize that such emissions occurred, but subsequent emissions testing indicates that the blast furnace casthouse is a source of CO emissions.

8.2 Updated BACT Evaluations

USS Granite City is providing updated CO BACT evaluations for the subject fuel burning emissions units (*i.e.*, blast furnace stoves, ladle drying preheaters, blast furnace flare No. 1, and miscellaneous ancillary natural gas burning units in the BOF shop and at the continuous casters) and for the blast furnace casthouse operations.

8.2.1 BACT General Approach

This section presents a proposed BACT analysis for the subject units for CO.

8.2.1.1 Best Available Control Technology Definition

The definition of BACT in the Clean Air Act [at 42 U.S.C. § 7479(3)] is as follows:

> *The term "best available control technology" means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of "best available control technology" result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 7411 or 7412 of this title. Emissions from any source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under this paragraph as it existed prior to November 15, 1990.*

The meaning of the term "emission limitation" used in the BACT definition is broad, as Congress expressed no preference for numeric limits rather than non-numeric requirements in the definition of this term in the Clean Air Act [at 42 U.S.C. § 7602(k)]:

> *The terms "emission limitation" and "emission standard" mean a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operational standard promulgated under this chapter.*

The regulatory definition of BACT in the PSD rules is similar, although it allows for non-numeric requirements only in limited circumstances. In particular, 35 IAC 204.280 provides:

> *"Best Available Control Technology" means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each regulated NSR pollutant that would be emitted from any proposed major stationary source or major modification that the Agency, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel*

combustion techniques for control of such pollutant. In no event shall application of BACT result in emissions of any pollutant that would exceed the emissions allowed by any applicable standard under 40 CFR 60, 61, 62 and 63 (incorporated by reference in Section 204.100). If the Agency determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means that achieve equivalent results.

8.2.1.2 Methodology for the BACT Analysis

In a memorandum dated December 1, 1987, the U.S. EPA stated its preference for a "top-down" analysis.[38] U.S. EPA outlined the BACT determination methodology following the top-down approach.[39] Accordingly, the BACT analyses presented in this application utilize the top-down approach. Under the "top-down" approach, progressively less stringent control technologies are analyzed until a level of control considered BACT is determined, based on the most effective control option that is determined to result in acceptable environmental, energy, and economic impacts. More specifically, the top-down BACT analysis methodology consists of five steps as follows:

1. Identify all "available" control options that might be utilized to reduce emissions of the subject pollutant for the type of unit subject to BACT.
2. Eliminate those available options that are technically infeasible to apply to the specific unit under consideration.
3. Rank the remaining feasible control options by control effectiveness.
4. Evaluate economic, energy and/or environmental impacts of each control option as applied to the subject units, rejecting those options for which the adverse impacts are inappropriate.
5. Based on the most effective control option not rejected in Step 4, select an emission limit or work practice standard as BACT, reflecting the level of control continuously achievable with the selected control option.

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[38] Memorandum from J.C. Potter to the Regional Administrators; U.S. EPA, Office of Air and Radiation; Washington, D.C.; December 1, 1987.

[39] See: *1990 New Source Review Workshop Manual, DRAFT,* at page B.2. (Environmental Appeals Board in *Prairie State Generating Station,* PSD Appeal No. 05-05, August 24, 2006, in footnote 2, noted that "[t]he NSR Manual has been used as a guidance document in conjunction with new source review workshops and training, and as a guide for state and federal permitting officials with respect to PSD requirements and policy. Although it is not a binding Agency regulation, the NSR Manual has been looked to by this Board as a statement of the Agency's thinking on certain PSD issues.")

8.2.1.3 Baseline Emission Rate

As used in the BACT analyses presented herein, the term "baseline emission rate" refers to the legal floor established in the definition of BACT, *i.e.*, applicable standards under 40 CFR parts 60, 61, 62 and 63.

8.2.1.4 Available Control Options

In the first step of the BACT analysis, all potentially "available" control strategies are identified for further consideration. In the context of the first step of a top-down BACT analysis, U.S. EPA's guidance describes "available" control strategies as:

> *Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation.*[40]

In the BACT analyses herein, the term "available" is used, consistent with the U.S. EPA guidance, to refer to any control strategy that is potentially applicable to the source type in question (*i.e.*, a technology or control option that has a practical potential for application to the source category in general). These may include fuel cleaning or treatment, inherently lower polluting processes, and end of pipe control devices. All identified control strategies that are not inconsistent with the fundamental purpose and basic design of the proposed facility are listed in this step.

The second step of the BACT analysis addresses source-specific or unit-specific factors that would prevent an otherwise available technology from being applied in the particular case. The criteria for "technical feasibility" are separate and distinct from the criteria used to determine whether a control option is considered to be "available" for purposes of BACT.

8.2.1.5 BACT Technical Feasibility Criteria

In the second step of a top-down BACT analysis, potentially available control strategies are evaluated for technical feasibility. A technically feasible control strategy is one that has been demonstrated to function efficiently on an emissions unit that is identical or similar to the emissions unit under review.[41] For the purposes of assessing technical feasibility of an add-on control technology, the determination of whether an emissions unit should be considered to be identical or similar is usually based on the physical and chemical characteristics of the gas stream to be controlled. An add-on control technology applicable to one emissions unit may not be technically feasible for application to an apparently similar unit depending on differences in physical and chemical gas stream characteristics, and rejection of a control option based on technical infeasibility for BACT purposes is appropriate if "it is uncertain the control device will work in the situation currently undergoing review."[42]

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[40] See: *1990 New Source Review Workshop Manual, DRAFT*, at page B.5.

[41] See, *Prevention of Significant Deterioration Workshop Manual*, EPA-450/2-80-081, October 1980, at pp. I-B-6 through I-B-7.

[42] See, *PSD and Title V Permitting Guidance for Greenhouse Gases*, EPA-457/B-11-001, March 2011, at p. 34.

For control strategies that are not demonstrated, the analysis of technical feasibility is somewhat more involved. Two key concepts are important in determining whether an undemonstrated technology is feasible: "availability[43]" and "applicability." A technology is considered "available" if it can be obtained by the applicant through commercial channels or is otherwise available within the common sense meaning of the term. An available technology is "applicable" if it can reasonably be installed and operated on the source type under consideration. A technology that is both available and applicable is technically feasible.

8.2.2 CO BACT Evaluation for Fuel Burning Units

This section presents the CO BACT analyses for the subject fuel burning emissions units. CO emissions from these units result primarily from incomplete combustion during the firing of BFG and natural gas. Therefore, the most direct approach for reducing these emissions is efficient combustion in the fuel burning emissions units, *i.e.*, appropriate combustion temperatures, adequate excess air, and good air/fuel mixing during combustion. Measures taken to reduce the formation of NOx during combustion can increase CO emissions. In particular lowering combustion temperatures through staged combustion to reduce NOx emissions can be counterproductive with regard to CO emissions. The existing boilers (Boiler 11 and Boiler 12) did not undergo any physical change or change in the method of operation as a result of the 1996 Project. Therefore, pursuant to 40 CFR § 52.21(j)(3Ind 35 IAC 204.1100(c), the boilers were not and are not subject to the BACT requirement for CO emissions.

8.2.2.1 Purpose and Design of Subject Fuel Burning Emissions Units

The fundamental purpose of the blast furnace stoves is to provide heat needs for the ironmaking process preferentially using the BFG fuel, as this fuel is produced as a byproduct at the facility. Any excess BFG unable to be used in the stoves and boilers at Granite City Works is flared through the BFG flares. Use of natural gas or other higher-Btu fuel in the blast furnace stoves as supplemental fuel, for purposes of flame stabilization, also is a necessary and inherent part of the design.

The fundamental purpose of the ladle drying preheaters and ancillary fuel burning units is to provide heat needs for the mill's processes using readily available gaseous fuels.

Alternative production processes that would be inconsistent with these fundamental objectives would impermissibly redefine the source and are not a part of the BACT analyses presented herein.

8.2.2.2 CO BACT Baseline

There are no federal emissions standards applicable to CO emissions from the fuel burning emission units.

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[43] In Step 2 of a top-down BACT analysis, the term "availability" has a different meaning than the term "available" in Step 1. Control strategies that are not "available" in Step 1 are not considered in Step 2.

8.2.2.3 Step 1– Identify Available CO Control Options

Based on a review of recent BACT determinations in U.S. EPA's RBLC database and other literature, the control options (individually and in certain combinations) that are being used to limit CO emissions from emissions units burning gaseous fuels include:

- CO Oxidation Catalysts;
- Thermal Incineration;
- Work Practice Standards, including good combustion practices.

CO oxidation catalysts have previously been applied to natural gas fired boilers located in CO and/or ozone nonattainment areas but are primarily used on large combustion turbines. The oxidation catalyst is typically a precious metal catalyst (e.g., platinum) that has been applied over a metal or ceramic substrate. The catalyst lowers the activation energy for the oxidation of CO so that it is oxidized at lower flue gas temperature (range of 650 - 1,100 °F). The CO removal efficiency in natural gas-fired systems at which CO oxidation catalysts are used is typically greater than 90 percent.

Other technology used for the control of CO for other sources include thermal incineration. Incineration requires the exhaust gas containing CO to be heated up to a temperature sufficiently high enough (> 1,300 °F) to thermally destroy CO. Typical methods used include regenerative thermal oxidizers, recuperative incinerators, and direct flame incinerators. These devices are typically employed to control sources with high levels of CO and VOM requiring less supplemental fuel for reheating the exhaust gas. Additionally, the exhaust gas CO concentrations from these devices would be similar to that expected from a gaseous fuel combustion device with good combustion design and operation.

Good combustion practices, as the name implies, are based upon maintaining good fuel/air mixing, a proper fuel/air ratio, and adequate time at an appropriate combustion temperature. These practices are an inherent part of the routine operation of the units, as maintaining good combustion is essential for efficient use of fuel.

8.2.2.4 Step 2– Eliminate Technically Infeasible CO Control Options

Technical feasibility of the CO emissions controls identified in Step 1 for the subject gaseous fuel burning emissions units is addressed in this section.

Blast Furnace Stoves
There are no known applications of add-on CO controls to blast furnace stoves. These control options are not feasible for this application for several reasons as discussed below.

First, the temperature of the exhaust gases from the blast furnace stoves averages around 500 °F, which is below the operating range for CO oxidation catalyst. Second, the CO concentration in the stove exhaust is relatively low at less than 0.3%. As the lower explosive limit for CO is 12.5%, the exhaust from the blast furnace stoves will not have enough CO to combust in thermal incineration.[44] Third, there is significant variation, both in exhaust flow and temperature, due to

[44] See, *e.g.*, www.cdc.gov/niosh/idlh/630080.html (last accessed Sept. 23, 2022).

cycling of the individual stoves between blow and heat steps. Fourth, oxidation catalyst would create unacceptable back-pressure on the stoves. These factors make add-on CO emissions controls infeasible.

Use of good combustion practices for the stoves is a technically feasible control option.

Other Fuel Burning Emissions Units
The No. 1 Flare, ladle drying preheaters, and fuel burning units at the continuous casters do not have specific stacks but exhaust through building ventilation or an open flame. It is not feasible to enclose the ladle drying preheaters or the ancillary fuel burning units in the BOF shop and at the continuous casters as the vessels containing molten steel need to be moved using overhead cranes in the building. Therefore, use of post-combustion control devices, such as CO oxidation catalyst, are not technically feasible for these operations.

Use of good combustion practices for the listed fuel-burning units is a technically feasible control option.

8.2.2.5 Steps 3 & 4– Rank and Evaluate CO Control Options

No add-on control devices options are technically feasible for CO emissions from the fuel burning emissions units. The only remaining control option is to follow good combustion practices. No further evaluation of control options is necessary.

Emissions from the fuel burning emissions units using good combustion practices are as described in Section 4.3 of this permit application.

8.2.2.6 Step 5 – Establish CO BACT

USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions—*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel burning emissions units subject to the BACT requirement for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves, there is no sampling port satisfying the location criteria in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.

For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves. USS Granite City is proposing that Illinois EPA define and impose work practice requirements, *i.e.*, good combustion practices, as BACT for the subject fuel burning emissions units. For the blast furnace stoves, USS Granite City proposes the following specific practices.

- Conduct annual adjustment and tune-up to include, at a minimum, inspecting, adjusting, cleaning, or replacing instrumentation and operational control system components and

[45] For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.
[46] Appendix A-1 to 40 CFR part 60.

inspecting the air-to-fuel ratio control system and adjusting as appropriate for proper operation.

- Inspect burners at least once per calendar quarter and make repairs as appropriate.

- Continuously monitor dome temperature and flue gas oxygen level for each stove during periods of fuel burning and adjust air-to-fuel ratio as necessary to maintain instantaneous temperature in the dome—the area at the top of the stove where hot gases from the combustion chamber are distributed into the regenerative checkers—of 2,300 °F ± 100 °F.

8.2.3 BACT Evaluation for Blast Furnace Casthouse

This section presents the CO BACT analysis for the blast furnace casthouse.

8.2.3.1 Purpose and Design of Subject Blast Furnace Casthouse

The fundamental purpose of the subject blast furnace casthouse is to facilitate transfer of molten iron produced in the process to the torpedo cars and separate slag produced in the process. This operation is inherent to production of molten iron in blast furnaces, and use of coke as reductant and fuel is inherent in the design and operation of the blast furnaces at Granite City Works. Any alternative production process that would be inconsistent with these fundamental objectives would impermissibly redefine the emissions unit and is not a part of the BACT analyses presented herein.

8.2.3.2 CO BACT Baseline

There are no federal emissions standards applicable to CO emissions from the blast furnace casthouse.

8.2.3.3 Step 1– Identify Available CO Control Options

Based on a review of BACT determinations in U.S. EPA's RBLC database and other literature, the control options that are potentially available to control CO emissions from the blast furnace casthouse are:

- Capture system and thermal Incineration and
- Capture system and catalytic Incineration

These control technologies have not been applied to a blast furnace casthouse; they are technologies developed and used to control CO emissions in exhaust streams that are substantially higher than those from blast furnace casthouses. As such, it is uncertain whether they are properly considered as available control options, but they are conservatively assumed to be available for purposes of this analysis.

8.2.3.4 Step 2– Eliminate Technically Infeasible CO Control Options

For purposes of this BACT analysis for CO emissions, both of the control options identified in Step 1—use of a capture system with either thermal incineration or catalytic incineration—are

conservatively assumed to be technically feasible for the blast furnace casthouse and will be carried on to Step 4 of the BACT analysis.

8.2.3.5 Step 3 – Rank CO Control Options

For purposes of this BACT analysis for CO emissions, both of the control options identified in Step 1—use of a capture system with either thermal incineration or catalytic incineration—are conservatively assumed to be capable of achieving 90 percent control of non-fugitive CO emissions from the blast furnace casthouse at Granite City Works.

8.2.3.6 Step 4 – Evaluate Impacts of CO Control Options

The casthouse is equipped with capture systems that were installed in the 1980's in conjunction with baghouses for control of PM emissions. The capture system associated with the casthouse baghouse is estimated to achieve 95% capture efficiency, as discussed in Section 5.2.2.3 of this permit application. It is therefore assumed for purposes of this analysis that there are no energy, environmental, or economic impacts with the portion of each control option involving use of a 95% efficient capture system.

A portion of the CO that is generated in the casthouse is not captured and routed through the baghouses but rather is emitted to atmosphere as fugitive emissions through the casthouse roof monitor. Neither of the identified and available CO control options will have any effect on these emissions, so they will not be discussed further in this analysis.

The mechanically exhausted gas streams from the blast furnace casthouse are characterized by low CO concentration: The CO concentrations in the exhaust gases from the casthouse baghouse and the iron spout baghouse are approximately 43 parts per million by volume ("ppmv") and 16 ppmv, respectively.

Both thermal incineration and catalytic incineration would require combustion of significant quantities of auxiliary fuel in order to raise the temperature of the blast furnace casthouse exhaust gas streams to the temperatures necessary for oxidation (and therefore requisite to achieve decreases in CO emissions). Based on U.S. EPA air pollution control device cost and design models, the outputs from which are shown in Appendix F to this permit application, the natural gas usage would be 38.1 MMBtu/hr for regenerative thermal oxidizers with 70 percent heat recovery or 191 MMBtu/hr for fixed-bed catalytic oxidizers with 50 percent heat recovery. Assuming 0.08 lb NOx per MMBtu heat input, the additional NOx emissions from this auxiliary fuel combustion would be 13 TPY from regenerative thermal oxidizers with 70 percent heat recovery or 67 TPY for fixed-bed catalytic oxidizers with 50 percent heat recovery. These are unacceptable, adverse energy and environmental impacts.[47]

Both control options also would impose significant economic cost. Regenerative thermal oxidizers with 70 percent heat recovery would require a capital cost of more than $15 million,

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[47] The air quality impacts analysis presented in Appendix C of this permit application shows that the impact of the Project on ambient CO concentration is acceptable even in the absence of any add-on controls on the blast furnace casthouse. The beneficial environmental impacts of using add-on controls to reduce CO emissions would therefore be minimal.

total annualized cost of nearly $6 million, and cost effectiveness of nearly $29,000 per ton of CO emission reduction. Fixed-bed catalytic oxidizers with 50 percent heat recovery would require a capital cost of nearly $8 million, total annualized cost of nearly $16 million, and cost effectiveness of more than $76,000 per ton of CO emission reduction. These are excessive, adverse economic impacts.

Because the adverse impacts of the identified control options greatly outweigh the trivial environmental benefit that would result from installing controls to reduce CO emissions, these control options are not BACT.

8.2.3.7 Step 5 – Establish CO BACT

USS Granite City proposes a CO emission limit of 70 lb/hr, combined for the casthouse baghouse and iron spout baghouse, as BACT for the blast furnace casthouse. This proposed limit is as stringent as any identified limit for a blast furnace casthouse at any similar facility.[48]

[48] The only CO emission limit identified for a blast furnace casthouse is a limit of 56.25 lb/hr for the casthouse baghouse stack at the Dearborn (MI) Works, currently owned and operated by Cleveland Cliffs. This casthouse has a permitted iron production rate of 8,000 tons per calendar day. See https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Permits/AQD/PTI/applications-of-interest/PTI-182-05C-Severstal-Conditions-2014-05-12.pdf (last accessed Sept. 23, 2022).

9. CO Source Impact Analysis (Including Dispersion Modeling)

In accordance with 35 IAC 204.1110 through 204.1130, requirements to conduct ambient air impacts analysis apply to a major modification for pollutants which are subject to PSD review. In issuing Construction Permit 95010001, Illinois EPA addressed PSD requirements for CO as the project was a major modification for CO. The proposed changes to the CO emission factors for gaseous fuels used in fuel burning emissions units at the facility and the recognition of CO emissions from the blast furnace casthouse will result in increases in permitted CO emission rates. The air impacts analysis for the Project with these CO emission increases is provided in Appendix C of this application. This analysis includes all of the CO emitting operations at the USS Granite City facility (including certain units that were constructed since 1996 *e.g.*, Cogeneration Boiler) and offsite sources in the area (*e.g.*, Gateway Energy and Coke Company). Results of this analysis demonstrate that the CO emissions from the Project will not cause or contribute to an exceedance of the applicable NAAQS.

10. Additional Impacts Analyses for CO

An additional impacts analysis was performed consistent with the requirements of 35 IAC 204.1110 to determine potential air emissions impacts on soils, vegetation, visibility, and growth as part of this application. The 1996 Project was a major modification for CO as its increase was in excess of the PSD significant emission rates. This application includes increases in the permitted CO emission rates; therefore, CO emissions are considered in the additional impacts analyses.

10.1 Soils and Vegetation Surveys

The only pollutant included in this analysis of the potential impairment to soils is CO. The results of this analysis show that no material impairment will occur as a result of the proposed revisions.

10.1.1 Soil Survey

Over 66,000 acres surrounding the USS Granite City site were evaluated for the soils analysis using the U.S. Department of Agriculture ("USDA") Natural Resource Conservation Service Web Soil Survey application. The area evaluated encompasses parts of Madison and St. Clair Counties in Illinois and a portion of St. Louis County in Missouri.[49] As presented in Table 10-1, the primary soil type in this area is some variety of silt clay or sandy loam or silty clay loam. These soils account for over 70 percent of the total acreage in the study. The types of soil in significant quantities around the facility include Tice-Fluvents, Landes-Fluvents, Shaffton-Fluvents. The pH of these soils ranged from 5.0 to 7.0.

[49] Source of data: U.S. Department of Agriculture, Natural Resource Conservation Service, Custom Soil Resource Report. February 18, 2020.

Table 10-1. Major Soil Types in Study Area

Map Unit Name	Acres	Percent of Total	pH	Cation Exchange Capacity (CEC) (milliequivalents per 100 grams of soil)
Darwin silty clay, 0 to 2 percent slopes	7,542.3	16.39%	7.1	32
Landes very fine sandy loam, 2 to 5 percent slopes, occasionally flooded	3,870.60	8.41%	6.9	9.4
Beaucoup silty clay loam, 0 to 2 percent slopes	3,473.80	7.55%	7	20
Nameoki silty clay loam, 0 to 2 percent slopes, frequently flooded	2,731.80	5.94%	6.8	19.5
Orthents loamy	2,415.5	5.25%	6.5	10.5
Shaffton clay loam, 0 to 2 percent slopes, occasionally flooded	2,222.60	4.83%	5.8	20
Shaffton-Fluvents-Urban land complex, 0 to 2 percent slopes, occasionally flooded	1,684.30	3.66%	5.6	16.2
Fults silty clay, 0 to 2 percent slopes, occasionally flooded	1,585.80	3.45%	6.7	21.3
Worthen silt loam	1,496.9	3.25%	6.8	16.1
Rocher loam, 2 to 5 percent slopes, frequently flooded	1,460.50	3.17%	7.8	7.8
Landes-Fluvents-Urban land complex, 2 to 5 percent slopes, occasionally flooded	1,323.70	2.88%	6.9	9.4
Dupo silt loam, 0 to 2 percent slopes, occasionally flooded	1,314.1	2.86%	6.6	26.8
Nameoki-Fluvents-Urban land complex, 0 to 2 percent slopes, occasionally flooded	1,215.40	2.64%	6.7	20
Menfro silt loam	1,173.2	2.55%	6	16
Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded	1,164.90	2.53%	6.8	19
Sylvan-Bold silt loams	1,108.3	2.41%	7.1	16
Fishpot-Urban land complex, 0 to 5 percent slopes, rarely flooded	944.1	2.05%	6.5	14.2
Dozaville silt loam, 0 to 2 percent slopes, occasionally flooded	930.6	2.02%	6.6	13.3
Other soil types	8,367.3	18.18%	5.6-8.0	5.8-31.6

The cation exchange capacity ("CEC") is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality or a pH of 7.0. Soils having a low CEC hold fewer cations and may require more frequent applications of fertilizer than soils having a high CEC. The ability to retain cations reduces the hazard of ground water pollution. The CEC of the types of soil in significant quantities in the study range from 8.0 to 31.0 milliequivalents per 100g soil.

The USDA considers a significant part of this land to be prime farmland. Additional land would be considered prime farmland if drained and/or protected from flooding. Further, the USDA soil survey rated all of the soil types listed in Table 10-1 as having somewhat or very limited use for recreational activities such as camping, paths and trails, picnic areas, and playgrounds. None of the total study area is identified as having unlimited recreational value.

10.1.2 Vegetation Survey

The natural vegetation located in these counties is primarily deciduous forest consisting of oaks, hickory, eastern white and red pine, ash, and cottonwood varieties.[50] According to a 2017 U.S. Department of Agriculture Forests of Illinois survey, approximately 21% of Madison County is forest land. [51]

Information provided in the 2012 USDA Census reports for Illinois was used to identify commercial vegetation in the study area.[52] The major crops are presented in Table 10-2. As shown, approximately 60 percent of the land included in the study area is used for harvested crops. Of this total, 26 percent is used for corn for grain and 29 percent is used for soybeans. Other crops, each harvested from less than 3 percent of the harvested area include forage, wheat for grain, and vegetables. Specific locations for the farms for these harvested crops are not provided in the Census reports.

Table 10-2. Land Use for Commercially Significant Crops

Vegetation	Area (Acres)
Corn	121,675
Wheat	16,331
Forage	7,145
Soybeans	137,628
Vegetables	2,331
Total Cropland	285,110
Total Land Area of Study	474,240

10.2 Pollutant Impacts on Soils, Vegetation, and Visibility

As explained in Section 9 and Appendix C of this permit application, ambient CO impacts from the Project and the proposed revisions to the CO limitations are below the primary CO NAAQS. CO, at ambient concentrations, is not known to cause any soils or vegetation impacts.[53] Elevated

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[50] Forest Inventory and Analysis. Design and Analysis Toolkit for Inventory and Monitoring web application, Version November 30, 2018 10.0 c9ded9d. St. Paul, MN: U.S. Department of Agriculture, Forest Service, Northern Research Station. Available only on internet: https://www.fs.usda.gov/emc/rig/DATIM/index.shtml (last accessed August 17, 2022).

[51] Forests of Illinois 2017, https://www.fs.usda.gov/treesearch/pubs/55799 (last accessed on August 17, 2022).

[52] 2017 Census of Agriculture, Illinois State and County Data, https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Illinois/cp17119.pdf (last accessed on August 17, 2022).

[53] Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings [https://www.epa.gov/criteria-air-pollutants/naaqs-table (last accessed on August 17, 2022)]. The U.S. EPA revoked the secondary NAAQS for CO in 1985 noting that "[c]arbon monoxide is a normal constituent of the plant environment. Plants can both metabolize and produce CO. This may explain the fact that relatively high levels of CO are necessary before damage occurs to vegetation. The lowest level for which significant effects on vegetation have been reported is 100 ppm for 3 to 35 days. The effect observed in this study was an inhibition of nitrogen fixation in legumes. Since CO concentrations of this magnitude are rarely if

CO may produce some impacts such as epinasty, chlorosis, and abscission. However, plant injury occurs at concentration over 100 ppm which is well over the CO primary NAAQS.[54] As noted in Section 9 and Appendix C, CO impacts from the facility are well below the CO primary NAAQS. Therefore, no adverse soil and vegetation impacts are expected as a result of the requested permit revisions relating to CO emissions.

In addition, CO emissions do not contribute to formation of the particulate that causes visibility impairment.[55]

10.3 Associated Growth

As stated in the 1995 Application, "The infrastructure surrounding the mill is already established due to the existing industrial nature of the area. Therefore, it is not anticipated that there will be secondary air quality impacts due to the increase in production." As part of its decision to issue Construction Permit No. 95010001 in 1996, Illinois EPA accepted this statement as part of its determination that National Steel Corporation had satisfied all requirements for impact analyses under the PSD program.

Because no physical changes are proposed, there will be no further industrial, commercial, or residential growth in the area in conjunction with the requested revisions to Construction Permit No. 95010001.

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ever observed in the ambient air, it is very unlikely that any damage to vegetation will occur from CO air pollution. No other effects on welfare have been associated with CO exposures at or near ambient levels. Because no standards appear to be requisite to protect the public welfare from any known or anticipated adverse effects from ambient CO exposures, EPA is rescinding the existing secondary standards." 50 Fed. Reg. 37484, September 13, 1985.

[54] "The Effects of Air Pollutants on Vegetation and the Role of Vegetation in Reducing Atmospheric Pollution," Iuliana Florentina Gheorghe and Barbu Ion, September 26, 2011, https://www.intechopen.com/books/the-impact-of-air-pollution-on-health-economy-environment-and-agricultural-sources/the-effects-of-air-pollutants-on-vegetation-and-the-role-of-vegetation-in-reducing-atmospheric-pollu (last accessed on Sept. 23, 2022).

[55] https://www.epa.gov/visibility/basic-information-about-visibility (last accessed on Sept. 23, 2022).

11. Regulatory Applicability Review

USS Granite City reviewed the federal and Illinois air quality regulations to determine their applicability to the proposed revisions to Construction Permit No. 95010001. Federal regulations delegated to the Illinois EPA include New Source Performance Standards ("NSPS"), and National Emission Standards for Hazardous Air Pollutants ("NESHAP"). Illinois air quality regulations are found at Title 35 of the Illinois Administrative Code ("IAC") Subtitle B. Chapters I and II of 35 IAC Subtitle B contain rules administered by the Illinois EPA.

Requirements associated with federal and State air quality regulations found to be applicable to the requested revisions of Construction Permit No. 95010001 are presented in this section.

11.1 Federal Air Quality Regulations

Federal regulations delegated to the Illinois EPA were reviewed to determine their applicability to the requested revisions. USS Granite City's conclusions regarding applicability of these rules and the supporting rationale are presented below.

11.1.1 New Source Performance Standards (NSPS, 40 CFR Part 60)

The federal NSPS regulations are codified at 40 CFR Part 60. Illinois has been delegated the authority to administer the federal NSPS.

NSPS apply to new or modified "affected facilities" as defined in specific subparts of 40 CFR Part 60. None of the emissions units covered by Construction Permit No. 95010001 are affected facilities under any NSPS. The proposed changes to the permit do not trigger applicability of NSPS requirements.

11.1.2 National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Parts 61 and 63)

The federal NESHAP regulations are codified at 40 CFR Part 61 and 40 CFR Part 63 (NESHAP for source categories also known as MACT standards). Illinois EPA has been delegated authority to administer the federal NESHAP programs.

The Part 61 NESHAPs apply to certain pollutants and/or area source types. None of the emissions units covered by Construction Permit No. 95010001 are affected facilities under any Part 61 NESHAPs. The proposed changes to the permit do not trigger applicability of Part 61 NESHAPs requirements.

The Part 63 NESHAPs apply to existing, new, or reconstructed affected sources at major sources of HAP emissions in accordance with applicability criteria specified in individual subparts. The following NESHAPs now apply to the extant units that were affected under the Project.

a) Boilers 11 and 12 at USS Granite City are parts of an existing affected source subject to 40 CFR Part 63 Subpart DDDDD.[56]
b) Blast furnaces A and B are each an existing affected source subject to 40 CFR Part 63 Subpart FFFFF.
c) The BOF shop is an existing affected source subject to 40 CFR Part 63 Subpart FFFFF. (The terminology used in Subpart FFFFF is "basic oxygen process furnace shop" or "BOPF shop.")

There will be no changes to the applicability of the Part 63 NESHAPs to the boilers or the blast furnaces in conjunction with the requested permit action. However, with this application, USS Granite City requests that Illinois EPA change the organization of Construction Permit No. 95010001 to be consistent with the affected source definition under Subpart FFFFF. Specifically, the emissions unit historically identified as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" and grouped with the Continuous Casting Operations in the permit is part of the "BOPF shop ancillary operations" as that term is used in Subpart FFFFF; emissions from these BOPF shop ancillary operations are subject to the emission standards and compliance demonstration requirements for BOPF shops in Subpart FFFFF. Accordingly, for clarity and consistency with these federal rule provisions, USS Granite City requests that this operation be renamed as the "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility" and grouped with the BOF Shop operations. In addition, several material handling operations historically grouped with the Blast Furnace Operations and the BOF Shop in Construction Permit No. 95010001 are not parts of those affected sources under Subpart FFFFF. For similar reasons regarding clarity and consistency with federal rule provisions, USS Granite City is requesting that those emissions units be covered under a separate group for Material Handling Operations, as detailed in Sections 5.5.1, 5.5.2, and 5.5.4 of this permit application.

11.2 Illinois Air Quality Regulations

USS Granite City performed a review of 35 IAC Subtitle B regulations to determine the applicability of specific standards to the proposed revisions to Construction Permit No. 95010001. A summary of this review and associated regulatory applicability conclusions are documented below. Only those rules deemed potentially relevant to the proposed revisions request are addressed.

11.2.1 35 IAC Part 201.142 Construction Permit Required

The proposed revisions to Construction Permit No. 95010001 involve changes to an existing construction permit for the modifications of existing emissions sources. Therefore, a revised permit in accordance with 35 IAC 201.142 is required. This permit application, including the permit application forms contained in Appendix A, is intended to fulfill the requirements of 35 IAC 201.142.

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[56] Boilers 11 and 12 are in the "units designed to burn gas 1 fuels" subcategory under Subpart DDDDD because the only regulated fuel burned in these boilers is natural gas, which falls within the definition of this term in 40 CFR § 63.7575. Blast furnace gas is expressly excluded from the definition of the term "gaseous fuel" and does not fall within any other fuel categories. These boilers previously burned COG and fuel oil but no longer do, so those fuels do not affect applicability of Subpart DDDDD to the boilers.

11.2.2 Prevention of Significant Deterioration (35 IAC Part 204) and Major Stationary Sources Construction and Modification [in Nonattainment Areas] (35 IAC Part 203)

The Illinois PSD regulations are codified at 35 IAC Part 204 and are applicable in attainment and unclassifiable areas within the State. The PSD regulations apply to new major stationary sources and to major modifications at an existing major stationary source. Emissions increases of PM, NOx, SO_2, and CO were evaluated under this program.

In nonattainment areas, Illinois EPA implements the requirements under 35 IAC Part 203 (NNSR program), with respect to major stationary sources and major modifications at major stationary sources for criteria pollutants for which the area is designated nonattainment. The area where Granite City Works is located was nonattainment for ozone and PM_{10} at the time of the 1996 Project. Therefore, emissions of NOx, VOM, and PM_{10} were evaluated under the requirements of this program.

As explained in Section 2.2 of this permit application, the revisions currently being requested to Construction Permit No. 95010001 addressed two sets of changes:

(a) Changes to the emission limits for PM, PM_{10}, NOx, and VOM, regulated NSR pollutants for which the 1996 Project was not subject to PSD or NNSR permitting requirements. (No changes are proposed to lead emissions.)
(b) Changes to the emissions rates for CO for some of the emissions units that were subject to PSD review. (The 1996 Project also was subject to PSD review for SO_2 emissions, but USS Granite City is not requesting changes to any emissions rates or permit terms relating to SO_2.)

As demonstrated in sections 5, 6, and 7, the net emissions increases for PM, PM_{10}, NOx, and VOM remain below the applicable significant emissions rates for these pollutants after the proposed revisions to the emissions limitations. Therefore, USS Granite City is not proposing any change to the applicability of PSD or NNSR requirements in regard to PM, PM_{10}, NOx, and VOM.

For CO, the 1996 Project was subject to the PSD requirements. Therefore, the proposed changes to the emissions limitations for CO have been evaluated per the PSD requirements. Sections 8, 9 and 10 herein address the PSD review requirements for CO.

11.2.3 35 IAC Part 270 CAAPP Permits

The CAAPP requirements are contained in Section 39.5 of the Illinois Environmental Protection Act and in 35 IAC Part 270. The Granite City Works is a major source subject to CAAPP requirements. As noted in Section 1 herein, this application package addresses the 'integrated processing' procedures for the proposed revisions to Construction Permit No. 95010001 for incorporation in the CAAPP permit via an administrative amendment.

11.2.4 Other State Regulations

There will be no change to the applicability of the limitations and requirements of other emissions standards under the Illinois Administrative Code that have already been addressed in the CAAPP permit for the USS Granite City facility.

Appendix A – Application Forms (Copies of Previously Submitted Versions)

RECEIV
STATE OF I R000849

OCT 07 2022
Environmental Protection Agency
BUREAU OF AIR

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: _____ Permit #: _____

☐ Complete ☐ Incomplete Date Complete: _____

Check Number: _____ Account Name: _____

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to Instructions (197-INST) for assistance.

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: 1996 Construction Permit Revision
3. Source ID #: (if applicable) 1191813AAI
4. Contact Name: Krista Armentrout
5. Contact Phone #: (618) 451-3013

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $23,000.00 = $23,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

$0.00
Section 1 Subtotal

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee.** If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

Addition or replacement of control devices on permitted units.

Pilot projects/trial burns by a permitted unit

Land remediation projects

Revisions related to methodology or timing for emission testing

Minor administrative-type change to a permit

Section 3: Fees for Current or Projected Non-Major Sources

9.	This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)	9.
10.	This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)	10.
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 25 x $1,000.	15. $25,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 4 x $3,000.	20. $12,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23. $6,000.00
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	26. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. ____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $23,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: Michael Patton
Signature

General Manager - Granite City Works
Title of Signatory

Michael Patton
Typed or Printed Name of Signatory

2/25/2020
Date

RECEIVED
R000851
OCT 07 2022
Environmental Protection Agency
BUREAU OF AIR

Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Construction Permit Application for a Proposed Project at a CAAPP Source

For Illinois EPA use only
ID No.:
Appl. No.:
Date Rec'd:
Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
1996 Construction Permit Revision

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 119813AAI

3. Does this application request a revision to an existing construction permit issued by the BOA?
☐ No ☒ Yes If Yes, provide Permit Number: 95010001

4. Brief Description of Proposed Project:
This application proposes revisions to certain emission limits and other requirements in the 1996 Construction Permit for the U.S. Steel Granite City facility.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☐ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: _____ or NAICS: _____
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☐ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☒ Owner ☐ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Krista Armentrout - Environmental Manager

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: United States Steel Corporation		
2. Address: 600 Grant Street		
3. City: Pittsburgh	4. State: PA	5. Zip code: 15219

* Is this information idifferent than previous information? ☐ Yes ☐ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name		
2. Address:		
3. City:	4. State:	5. Zip code:

* Is this information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☒ Applicant's contact ☐ Consultant	
2. Applicant's technical contact person for application: Christopher Hardin	
3. Contact person's telephone number(s) (412) 433-5904	4. Contact person's e-mail address: cwhardin@uss.com
5. Consultant for application: RTP Environmental Associates Inc. (Colin Campbell)	
6. Consultant's telephone number(s): (919) 845-1422, 20	7. Consultant's e-mail address: campbell@rtpenv.com

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.	
1. Address for billing Site Fees for the source: ☐ Source ☐ Other (provide below):	
2. Contact person for Site Fees:	3. Contact person's telephone number:
4. Address for Annual Emission Report for the source: ☐ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report:	6. Contact person's telephone number:

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☒ Yes ☐ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☒ Yes ☐ No ☐ N/A* * Source not major ☐ Project not major ☐
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not Issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: _____ General Manager - Granite City Works

AUTHORIZED SIGNATURE — TITLE OF SIGNATORY

Michael Patton — 02 25 2020

TYPED OR PRINTED NAME OF SIGNATORY — DATE

Appendix B – Emissions Calculations

Updated Emissions Calculations for the Construction Permit Revision Application

USS Granite City - 1996 Production Increase Project
Revised PM PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year tons of charge	0.03	lb/ton of hot metal	30.9			Minor correction to calculation (95.0% capture efficiency)
A & B Blast Furnace Charging	2,803,241	material/year	0.0024	lb/ton of material	3.4			No change
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.07026	lb/ton of hot metal	72.4			No change
Blast Furnace Slag Pits	2,059,557	tons of hot metal/year	0.00417	lb/ton of hot metal	4.3			No change
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.02548	lb/ton of hot metal	26.2			No change
Subtotal					137.1	215.0	77.9	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.16	lb/ton of steel	193.1			No change
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.428	lb/ton of steel	516.7			No change
BOF Hot Metal Transfer and Desulfurization Baghouse	2,059,557	tons of hot metal/year	0.03721	lb/ton of hot metal	38.3			No change
BOF Slag Skimming Baghouse	2,059,557	tons of hot metal/year	0.00502	lb/ton of hot metal	5.2			No change
Baghouse 2 for Argon Stirring Ladle Metallurgy	2,413,406	tons of molten steel/year	0.00715	lb/ton of steel	8.6			No change other than regrouping
Subtotal					761.9	525.0	-236.9	
Continuous Casting Operations								
Caster Mold - Casters #1 & #2	2,413,406	tons of molten steel/year	0.006	lb/ton of steel	7.2			No change
Continuous Casters #1 & #2 - Spray Chamber	2,413,406	tons of molten steel/year	0.00852	lb/ton of steel	10.3			No change
Slab Cutoff Casters #1 & #2	2,413,406	tons of molten steel/year	0.0071	lb/ton of steel	8.6			No change
Slab Ripping Casters #1 & #2	2,413,406	tons of molten steel/year	0.00722	lb/ton of steel	8.7			No change
Subtotal					34.8	52.0	17.2	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	2.90	lb/MMcf	65.2			No change
COG in stoves	374	MMcf/year	16.56	lb/MMcf	3.1			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	2.90	lb/MMcf	72.4			No change
COG in boilers	2,211	MMcf/year	43.13	lb/MMcf	47.7			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	9.72	lb/Mgal	0.1			No change
Natural gas in boilers	805	MMcf/year	1.9	lb/MMcf	0.8			Revised to use current AP-42 emission factor
BFG in BFG flare	26,132	MMcf/year	2.9	lb/MMcf	37.9			No change
Natural gas in ladle preheaters	340	MMcf/year	1.9	lb/MMcf	0.3			Revised to use current AP-42 emission factor
Subtotal					227.4	273.0	45.6	
Material Handling Operations at BF and BOF								
Material handling for Coke, Pellets, Limestone	Table F-3 of the 1995 Permit Application	tons of charge			17.2			This activity was previously listed only in the contemporaneous changes.
Iron Pellet Screen	2,803,241	material/year	0.00375	lb/ton of material	5.3			USS representation of 85% control to crushed stone EF
BOF Hopper Baghouse	2,413,406	tons of molten steel/year	0.00032	lb/ton of steel	0.4			No change other than regrouping
BOF Bin Floor Baghouse	2,413,406	tons of molten steel/year	0.0016	lb/ton of steel	1.9			No change other than regrouping
Baghouse 1 for Material Handling	2,413,406	tons of molten steel/year	0.00355	lb/ton of steel	4.3			No change other than regrouping
Subtotal					29.0	30.0	1.0	

R000857

USS Granite City - 1996 Production Increase Project
Revised PM PSD Net Emissions Increase Analysis

Contemporaneous Changes		
Remove Blast Furnace Slag Spout Hood	0.0	Removed from analysis because not contemporaneous
#2 Caster Production	0.0	Removed from analysis because not contemporaneous
Installation of #8 Galvanizing Line	0.0	Removed from analysis because not contemporaneous
Ingot Teeming Shutdown	-22.4	No change
Blooming Mill Shutdown	-3.4	No change
Batch Annealing Shutdown	-0.2	No change
Haul Roads emissions controls	-17.1	Revised to reflect only the haul road emissions changes
Subtotal	-43.1	
Total	-138.4	

R000858

USS Granite City - 1996 Production Increase Project
Revised PM10 PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year	0.0153	lb/ton of hot metal	15.8			Minor correction to calculation (95.0% capture efficiency)
A & B Blast Furnace Charging	2,803,241	tons of charge material/year	0.0012	lb/ton of material	1.7			USS representation includes basis for EF
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.07026	lb/ton of hot metal	72.4			No change
Blast Furnace Slag Pits	2,059,557	tons of hot metal/year	0.00417	lb/ton of hot metal	4.3			No change
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.02548	lb/ton of hot metal	26.2			No change
Subtotal					120.3	190.0	69.7	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.16	lb/ton of steel	193.1			No change
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.287	lb/ton of steel	346.2			No change
BOF Hot Metal Transfer and Desulfurization Baghouse	2,059,557	tons of hot metal/year	0.03721	lb/ton of hot metal	38.3			No change
BOF Slag Skimming Baghouse	2,059,557	tons of hot metal/year	0.00502	lb/ton of hot metal	5.2			No change
Baghouse 2 for Argon Stirring Ladle Metallurgy	2,413,406	tons of molten steel/year	0.00715	lb/ton of steel	8.6			No change other than regrouping
Subtotal					591.4	462.0	-129.4	
Continuous Casting Operations								
Caster Mold - Casters #1 & #2	2,413,406	tons of molten steel/year	0.006	lb/ton of steel	7.2			No change
Continuous Casters #1 & #2 - Spray Chamber	2,413,406	tons of molten steel/year	0.00852	lb/ton of steel	10.3			No change
Slab Cutoff Casters #1 & #2	2,413,406	tons of molten steel/year	0.0071	lb/ton of steel	8.6			No change
Slab Ripping Casters #1 & #2	2,413,406	tons of molten steel/year	0.00722	lb/ton of steel	8.7			No change
Subtotal					34.8	52.0	17.2	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	2.90	lb/MMcf	65.2			No change
COG in stoves	374	MMcf/year	14.21	lb/MMcf	2.7			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	2.90	lb/MMcf	72.4			No change
COG in boilers	2,211	MMcf/year	41.48		45.8			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	9.72	lb/Mgal	0.1			No change
Natural gas in boilers	805	MMcf/year	1.9	lb/MMcf	0.8			Revised to use current AP-42 emission factor
BFG in BFG flare	26,132	MMcf/year	2.9	lb/MMcf	37.9			No change
Natural gas in ladle preheaters	340		1.9		0.3			Revised to use current AP-42 emission factor
Subtotal					225.2	273.0	47.8	
Material Handling Operations at BF and BOF								
Material handling for Coke, Pellets, Limestone	Table F-3 of the 1995 Permit Application	tons of charge			17.2			This activity was previously listed only in the contemporaneous changes.
Iron Pellet Screen	2,803,241	material/year	0.00131	lb/ton of material	1.8			USS representation of 85% control to crushed stone EF
BOF Hopper Baghouse	2,413,406	tons of molten steel/year	0.00032	lb/ton of steel	0.4			No change other than regrouping
BOF Bin Floor Baghouse	2,413,406	tons of molten steel/year	0.0016	lb/ton of steel	1.9			No change other than regrouping
Baghouse 1 for Material Handling	2,413,406	tons of molten steel/year	0.00355	lb/ton of steel	4.3			No change other than regrouping
Subtotal					25.6	19.0	-6.6	

R000859

USS Granite City - 1996 Production Increase Project
Revised PM10 PSD Net Emissions Increase Analysis

Contemporaneous Changes		
Remove Blast Furnace Slag Spout Hood	4.9	No change
#2 Caster Production	11.7	No change
Installation of #8 Galvanizing Line	0.0	Removed from analysis because not contemporaneous
Ingot Teeming Shutdown	-22.4	No change
Blooming Mill Shutdown	-3.4	No change
Batch Annealing Shutdown	-0.2	No change
Haul Roads emissions controls	-17.1	Revised to reflect only the road emissions changes
Subtotal	-26.5	
Total	-27.8	

R000860

USS Granite City - 1996 Production Increase Project
Revised NOx PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year	0.00014	lb/ton of hot metal	0.1			3/2012 test assuming no NOx control and 5% fugitive
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.0027	lb/ton of hot metal	2.8			3/2012 test
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.0016	lb/ton of hot metal	1.6			3/2012 test
Subtotal					4.6	24.0	19.4	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.14	lb/ton of steel	170.8			Average of 4/2012, 7/2012, 11/2014 test results
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.0075	lb/ton of steel	9.1			Average from 2019-20 test result
Subtotal					179.8	400.0	220.2	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	5.28	lb/MMcf	118.74			No change
COG in stoves	374	MMcf/year	80	lb/MMcf	14.95			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	5.28	lb/MMcf	131.82			No change
COG in boilers	2,211	MMcf/year	404	lb/MMcf	446.23			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	55	lb/Mgal	0.44			No change
Natural gas in boilers	805	MMcf/year	306	lb/MMcf	123.17			No change
BFG in BFG flare	26,132	MMcf/year	5.28	lb/MMcf	68.99			No change
Natural gas in ladle preheaters	340		306		52.02			Revised to use current AP-42 emission factor
Subtotal					956.3	706.0	-250.3	
Contemporaneous Changes								
Installation of #8 Galvanizing Line							0.0	Removed from analysis because not contemporaneous
Batch Annealing Shutdown							-8.7	Removed from analysis because not contemporaneous
Blooming M[illegible] Shutdown							-217.8	No change
Subtotal							-226.5	
Total							-237.3	

R000861

USS Granite City - 1996 Production Increase Project
Revised VOM PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year	0.00073	lb/ton of hot metal	0.8			3/2012 test assuming no VOM control and 5% fugitive
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.014	lb/ton of hot metal	14.3			3/2012 test
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.0037	lb/ton of hot metal	3.8			3/2012 test
Subtotal					18.8	45.0	26.2	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.019	lb/ton of steel	22.4			Average of 4/2012, 7/2012, 11/2014 test results
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.0035	lb/ton of steel	4.2			Average from 2019-20 test result
BOF Hot Metal Transfer and Desulfurization Baghouse	2,059,557	tons of hot metal/year	0.00019	lb/ton of hot metal	0.2			5/2012 test
BOF Slag Skimming Baghouse	2,059,557	tons of hot metal/year	0.00015	lb/ton of hot metal	0.2			5/2012 test
Subtotal					27.0	45.0	18.0	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	0.24	lb/MMcf	5.40			Updated from Cogen Permit
COG in stoves	374	MMcf/year	0.18	lb/MMcf	0.03			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	0.24	lb/MMcf	5.99			Updated from Cogen Permit
COG in boilers	2,211	MMcf/year	1.22	lb/MMcf	1.34			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	0.28	lb/Mgal	0.00			No change
Natural gas in boilers	805	MMcf/year	5.5	lb/MMcf	2.21			1998 update to AP-42 Section 1.4
BFG in BFG flare	26,132	MMcf/year	0.24	lb/MMcf	3.14			Updated from Cogen Permit
Natural gas in ladle preheaters	340		5.5		0.94			1998 update to AP-42 Section 1.4
Subtotal					19.1	40.0	20.9	
Contemporaneous Changes								
Installation of #8 Galvanizing Line							0.0	Removed from analysis because not contemporaneous
NESHAP Controls Coke By-product							-31.6	No change
Batch Annealing Shutdown							-0.3	No change
Blooming Mill Shutdown							-0.9	No change
Subtotal							-32.8	
Total							32.3	

R000862

Emissions Calculations Included in the 1995 Construction Permit Application

Projected Emissions Based On: Blast Furnace @ 8,971NTPD
BOF @ 9,808 NTPD

TABLE 3-1
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - CO

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	13.7	lb/MMcf	22,774	MMcf	156.00	included in line 17	-	-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	13.7	lb/MMcf	22,203	MMcf	152.09	included in line 17	-	-	-
3	0008	01	Blast Furnace Gas Flare - BFG	13.7	lb/MMcf	26,132	MMcf	179.00	included in line 17	-	-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	13.7	lb/MMcf	37,501	MMcf	256.88	included in line 17	-	-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	40	lb/MMcf	361	MMcf	7.22	included in line 18	-	-	-
6	0044	01	Boiler #11 - BFG	13.7	lb/MMcf	5,323	MMcf	36.46	included in line 17	-	-	-
7	0044	91	Boiler #11 - NG	40	lb/MMcf	226	MMcf	4.52	included in line 18	-	-	-
8	0044	92	Boiler #11 - Fuel Oil	5.0	lb/Mgal	15.00	Mgal	0.04	included in line 18	-	-	-
9	0048	01	Boiler #12 - BFG	13.7	lb/MMcf	7,106	MMcf	48.68	included in line 17	-	-	-
10	0048	91	Boiler #12 - NG	40	lb/MMcf	218	MMcf	4.36	included in line 18	-	-	-
11	0048	92	Boiler #12 - Fuel Oil	5.0	lb/Mgal	1.00	Mgal	0.00	included in line 18	-	-	-
12	0033	01	BOF 2 Vessels	8.993	lb/ton proc.	2,413,406	ton proc.	10,851.88	3,580,000	ton proc.	16,097.47	5,245.59
13	0038	01	BOF Preheaters/Dryers - NG	40	lb/MMcf	283	MMcf	5.66	included in line 18	-	-	-
14	0071 & 0119	01	Continuous Casters #1 & #2 - NG	40	lb/MMcf	57	MMcf	1.14	included in line 18	-	-	-
15			Natural Gas	40	lb/MMcf	1,145	MMcf	inc. above	1,145	MMcf	22.90	-
16			Blast Furnace Gas	13.7	lb/MMcf	121,039	MMcf	inc. above	185,030	MMcf	1,267.46	-
17			Fuel Oil	5.0	lb/Mgal	16	Mgal	inc. above	365	Mgal	0.91	-
	TOTALS:							11,703.94			17,388.74	5,684.80
			Contemporaneous Changes									(11.51)
			Net Change									***5,673.29***

R000864

TABLE 3-2
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - NOx

Projected Emissions Based On: Blast Furnace @ [illegible]71NTPD
BOF @ 9,808 NTPD

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy	
1	0004	01	"A" Blast Furnace Stoves - BFG	5.28	lb/MMcf	22,774	MMcf	60.12	Included in Line 20	-	-	-	
2	0009	01	"B" Blast Furnace Stoves - BFG	5.28	lb/MMcf	22,203	MMcf	58.62	Included in Line 20	-	-	-	
3	0008	01	Blast Furnace Gas Flare - BFG	5.28	lb/MMcf	26,132	MMcf	68.99	Included in Line 20	-	-	-	
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	5.28	lb/MMcf	37,501	MMcf	99.00	Included in Line 20	-	-	-	
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	306	lb/MMcf	361	MMcf	55.23	Included in Line 19	-	-	-	
6	0044	01	Boiler #11 - BFG	5.28	lb/MMcf	5,323	MMcf	14.05	Included in Line 20	-	-	-	
7	0044	91	Boiler #11 - NG	306	lb/MMcf	226	MMcf	34.58	Included in Line 19	-	-	-	
8	0044	92	Boiler #11 - Fuel Oil	55	lb/Mgal	15.00	Mgal	0.41	Included in Line 21	-	-	-	
9	0048	01	Boiler #12 - BFG	5.28	lb/MMcf	7,108	MMcf	18.76	Included in Line 20	-	-	-	
10	0048	91	Boiler #12 - NG	306	lb/MMcf	218	MMcf	33.35	Included in Line 19	-	-	-	
11	0048	92	Boiler #12 - Fuel Oil	55	lb/Mgal	1.00	Mgal	0.03	Included in Line 21	-	-	-	
12	0033	01	BOF 2 Vessels	0.0389	lb/ton proc.	2,413,406	tons proc.	46.94	3,580,000	ton proc.	69.63	x -	+22.69
13	0038	01	BOF Preheaters/Dryers - NG	306	lb/MMcf	283	MMcf	43.30	Included in Line 19	-	-	-	
14	0007 & 0012	01	"A" & "B" Blast Furnace - Casthouse	0.01440	lb/ton proc.	2,059,557	tons proc.	14.83	3,165,000	tons proc.	22.79	x -	7.96
15	0005 & 0010	01	"A" & "B" Blast Furnace - Uncaptured Roof Emiss.	0.00072	lb/ton proc.	2,059,557	tons proc.	0.74	3,165,000	tons proc.	1.14	-	0.4
16	0070 &0120	01	Caster Mold - Casters #1 & #2	0.05	lb/ton prod.	2,413,406	tons prod.	60.34	3,580,000	ton prod.	89.50	x -	29.16
17	0071 & 0119	01	Continuous Casters #1 & #2 - NG	306	lb/MMcf	57	MMcf	8.72	Included in Line 19	-	-	-	60.21
18			Natural Gas	306	lb/MMcf	1,145	MMcf	inc. above	1,145	MMcf	175.19	-	
19			Blast Furnace Gas	5.28	lb/MMcf	121,039	MMcf	inc. above	185,030	MMcf	488.48	+168.94	52.9%
20			Fuel Oil	55	lb/Mgal	16	Mgal	inc. above	365	Mgal	10.04	+ 9.59	
	TOTALS:							618.01			856.76	238.75	229.15
			Contemperaneous Changes									(200.54)	
			Net Change									*38.21*	

+15%

R000865

TABLE 3-3
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - SO2

Projected Emissions Based On: Blast Furnace @ 8,671NTPD
BOF @ 9,808 NTPD

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy	COMMENTS
1	0004	01	"A" Blast Furnace Stoves - BFG	6.65	lb/MMcf	22,774	MMcf	75.72	included in line 19	-	-	-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	6.65	lb/MMcf	22,203	MMcf	73.82	included in line 19	-	-	-	-
3	0008	01	Blast Furnace Gas Flare - BFG	6.65	lb/MMcf	26,132	MMcf	86.89	included in line 19	-	-	-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	6.65	lb/MMcf	37,501	MMcf	124.69	included in line 19	-	-	-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	0.6	lb/MMcf	361	MMcf	0.11	included in line 18	-	-	-	-
6	0044	01	Boiler #11 - BFG	6.65	lb/MMcf	5,323	MMcf	17.70	included in line 19	-	-	-	-
7	0044	91	Boiler #11 - NG	0.6	lb/MMcf	226	MMcf	0.07	included in line 18	-	-	-	-
8	0044	92	Boiler #11 - Fuel Oil	141.3	lb/Mgal	15.00	Mgal	1.06	included in line 20	-	-	-	-
9	0048	01	Boiler #12 - BFG	6.65	lb/MMcf	7,106	MMcf	23.63	included in line 19	-	-	-	-
10	0048	91	Boiler #12 - NG	0.6	lb/MMcf	218	MMcf	0.07	included in line 18	-	-	-	-
11	0048	92	Boiler #12 - Fuel Oil	141.3	lb/Mgal	1.00	Mgal	0.07	included in line 20	-	-	-	-
12	0038	01	BOF Preheaters/Dryers - NG	0.6	lb/MMcf	283	MMcf	0.08	included in line 18	-	-	-	-
13	0007 & 0012	01	"A & B" Blast Furnace - Casthouse	0.2006	lb/ton proc.	2,059,557	tons proc.	206.57	3,165,000	tons proc.	422.00	215.43	Est. Annual Max
14	0005 & 0010	01	"A & B" Blast Furnace - Uncap. roof	0.0104	lb/ton proc.	2,059,557	tons proc.	10.71	3,165,000	tons proc.	21.94	11.23	Est. Annual Max
15	---	--	Iron Spout Baghouse	0.0073	lb/ton proc.	2,059,557	tons proc.	7.52	3,165,000	tons proc.	13.89	6.37	Est. Annual Max
16	113	1	Blast Furnace Slag Pits	0.0100	lb/ton	2,059,557	tons proc.	10.30	3,165,000	tons proc.	15.83	5.53	
17	0071 & 0119	01	Continuous Casters #1 & #2 - NG	0.6	lb/MMcf	57	MMcf	0.02	included in line 18	-	-	-	
18			Natural Gas	0.6	lb/MMcf	1,145	MMcf	-	1,145	MMcf	0.34	0.00	
19			Blast Furnace Gas	6.65	lb/MMcf	121,039	MMcf	-	185,030	MMcf	615.22	212.77	
20			Fuel Oil	141.3	lb/Mgal	16	Mgal	-	365	Mgal	25.79	24.66	
	TOTALS:							639.03			1,115.01	475.98	
			Contemporaneous Changes									(0.13)	
			Net Change									***475.85***	

R000866

TABLE 3-4
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - PM-10

Projected Emissions Based On: Blast Furnace @ 3,571NTPD
BOF @ 9,808 NTPD

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
3	0008	01	Blast Furnace Gas Flare - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
6	0044	01	Boiler #11 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
7	0044	91	Boiler #11 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
8	0044	92	Boiler #11 - Fuel Oil	9.72	lb/Mgal	Included in line 40	Mgal	-	Included in line 40	-			-	-
9	0048	01	Boiler #12 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
10	0048	91	Boiler #12 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
11	0048	92	Boiler #12 - Fuel Oil	9.72	lb/Mgal	Included in line 48	Mgal	-	Included in line 48	-			-	-
12	0033	01	BOF 2 Vessels	0.16	lb/ton proc.	2,413,406	tons proc.	193.07	8,760	hours	60	lbs/hr	262.80	69.73
13	0038	01	BOF Preheaters/Dryers - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
14	0005 & 0010	01	"A" & "B" Blast Furnace - Uncap. Fugitives	0.0155	lb/ton proc.	2,059,557	tons proc.	15.96	3,165,000	tons proc.			24.53	8.57
15	0006 & 0011	01	"A" & "B" Blast Furnace - Charging	0.0024	lb/ton pellets charged	2,803,241	tons proc.	3.36	4,308,581	tons proc.			5.17	1.81
16	0007 & 0012	01	"A" & "B" Blast Furnace - Baghouse Stack	0.0703	lb/ton proc.	2,059,557	tons proc.	72.35	3,165,000	tons proc.			111.19	38.83
17	0034	01	BOF Roof Monitor	0.287	lb/ton proc.	2,413,406	tons proc.	346.20	3,580,000	tons proc.	0.066144		118.40	(227.81)
18	0037	01	Flux Conv. & Xfer Pts., Bin Floor - BOF	0.0016	lb/ton proc.	2,413,406	tons proc.	1.93	3,580,000	tons proc.			2.86	0.93
19	0040	01	Hot Metal Chging Ladle Slag Skimmer	0.0050	lb/ton proc.	2,059,557	tons proc.	5.17	3,165,000	tons proc.			7.94	2.77

R000867

Projected Emissions Based On: Blast Furnace @ 8,071NTPD
BOF @ 9,808 NTPD

TABLE 3-4
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - PM-10

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
20	0070 & 0120	01	Caster Mold - Casters #1 & #2	0.006	lb/ton prod.	2,413,406	tons prod.	7.24	3,580,000	ton prod.			10.74	3.50
21	0071 & 0119	01	Cont. Casters #1 & #2 - Spray Chamber	0.00852	lb/ton proc.	2,413,406	tons prod.	10.28	3,580,000	ton prod.			15.25	4.97
22	0071 & 0119	01	Continuous Casters #1 & #2 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
23	0072 & 0118	01	Slab Cutoff - Casters #1 & #2	0.0071	lb/ton proc.	2,413,406	tons prod.	8.57	3,580,000	ton prod.			12.71	4.14
	73	1	Slab Ripping - Casters #1 & #2	0.00722	lb/ton proc.	2,413,406	tons prod.	8.71	3,580,000	ton prod.			12.92	4.21
25	0103, 0104 & 0121	01	LMF Argon Stirring #1 & #2, Material Handling Tripper	0.00715	lb/ton proc.	2,413,406	tons prod.	8.63	3,580,000	ton prod.			12.80	4.17
26	0105 & 0106	01	Deslagging Station & Material HS	0.00355	lb/ton proc.	2,413,406	tons prod.	4.28	3,580,000	ton prod.			6.35	2.07
27			BOF Hopper Baghouse	0.00032	lb/ton proc.	2,413,406	tons proc.	0.39	3,580,000	tons proc.			0.57	0.18
28	0107 & 0035	01	Desulf. Station (inside BOF shop) & Xfer Pit	0.03721	lb/ton proc.	2,059,557	tons prod.	38.32	3,165,000	ton prod.			58.88	20.57
29	0113	01	Blast Furnace Slag Pits	0.00417	lb/ton proc.	2,059,557	tons slag	4.29	3,165,000	ton prod.			6.60	2.30
30	9003	01	Iron Pellet Screen	0.00279	lb/ton pellets charged	2,803,241	tons proc.	3.91	4,308,581	tons proc.			6.01	2.10
31		01	Iron Spout Baghouse	0.02548	lb/ton proc.	2,059,557	tons proc.	26.24	3,165,000	tons proc.			40.32	14.08
32			Road Fugitive Emissions	Included in Contemporaneous Changes. See Appendix F						-				0.00
33			Material Handling	Included in Contemporaneous Changes. See Appendix F						-				0.00
34			Unpaved Parking Lots					-		-			-	-
35			Paved Parking Lots					-		-			-	-
36			Natural Gas	5.1	lb/MMcf	1,145	MMcf	2.92	1,145	MMcf			2.92	0.00
37			Blast Furnace Gas	2.9	lb/MMcf	121,039	MMcf	175.51	185,030	MMcf			268.29	92.79
38			Fuel Oil	9.72	lb/Mgal	16	Mgal	0.08	365	Mgal			1.77	1.70
	TOTALS:							937.42					989.04	61.62
			Contemporaneous Changes											(37.31)
			Net Change											*14.31*

+145

Note: Actual Emissions = Base Year Throughput * Emission Factor / 2000

Projected Actual Emissions = Projected Throughput * Emission Factor / 2000
except -
BOF Vessels Projected Actual Emissions = 60 lb/hr * 8760 hrs
BOF Roof Monitor Projected Actual Emissions = Projected Emission Factor * Projected Throughput

R000868

TABLE 3-5
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - TSP

Projected Emissions Based On: Blast Furnace @ 1,871NTPD
BOF @ 9,808 NTPD

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
3	0008	01	Blast Furnace Gas Flare - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
6	0044	01	Boiler #11 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
7	0044	91	Boiler #11 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
8	0044	92	Boiler #11 - Fuel Oil	9.72	lb/Mgal	Included in line 40	Mgal	-	Included in line 40	-			-	-
9	0048	01	Boiler #12 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
10	0048	91	Boiler #12 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
11	0048	92	Boiler #12 - Fuel Oil	9.72	lb/Mgal	Included in line 48	Mgal	-	Included in line 48	-			-	-
12	0033	01	BOF 2 Vessels	0.16	lb/ton proc.	2,413,406	tons proc.	193.07	8,760	hours	60	lbs/hr	262.80	69.73
13	0038	01	BOF Preheaters/Dryers - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
14	0005 & 0010	01	"A" & "B" Blast Furnace - Uncap. Fugitives	0.031	lb/ton proc.	2,059,557	tons proc.	31.92	3,165,000	tons proc.			49.06	17.13
15	0006 & 0011	01	"A" & "B" Blast Furnace - Charging	0.0024	lb/ton pellets charged	2,803,241	tons proc.	3.36	4,308,581	tons proc.			5.17	1.81
16	0007 & 0012	01	"A" & "B" Blast Furnace - Baghouse Stack	0.0703	lb/ton proc.	2,059,557	tons proc.	72.35	3,165,000	tons proc.			111.19	38.83
17	0034	01	BOF Roof Monitor	0.428	lb/ton proc.	2,413,406	tons proc.	516.72	3,580,000	tons proc.	0.0987		176.71	(340.01)
18	0037	01	Flux Conv. & Xfer Pts., Bin Floor - BOF	0.0016	lb/ton proc.	2,413,406	tons proc.	1.93	3,580,000	tons proc.			2.86	0.93
19	0040	01	Hot Metal Chging Ladle Slag Skimmer	0.0050	lb/ton proc.	2,059,557	tons proc.	5.17	3,165,000	tons proc.			7.94	2.77

R000869

TABLE 3-5
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - TSP

Projected Emissions Based On: Blast Furnace @ 8,571NTPD
BOF @ 9,808 NTPD

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
20	0070 & 0120	01	Caster Mold - Casters #1 & #2	0.006	lb/ton prod.	2,413,406	tons prod.	7.24	3,580,000	ton prod.			10.74	3.50
21	0071 & 0119	01	Cont. Casters #1 & #2 - Spray Chamber	0.00852	lb/ton proc.	2,413,406	tons prod.	10.28	3,580,000	ton prod.			15.25	4.97
22	0071 & 0119	01	Continuous Casters #1 & #2 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
23	0072 & 0118	01	Slab Cutoff - Casters #1 & #2	0.0071	lb/ton proc.	2,413,406	tons prod.	8.57	3,580,000	ton prod.			12.71	4.14
	73	1	Slab Ripping - Casters #1 & #2	0.00722	lb/ton proc.	2,413,406	tons prod.	8.71	3,580,000	ton prod.			12.92	4.21
25	0103, 0104 & 0121	01	Argon Stirring #1 & #2, Material Handling Tripper	0.00715	lb/ton proc.	2,413,406	tons prod.	8.63	3,580,000	ton prod.			12.80	4.17
26	0105 & 0106	01	Deslagging Station & Material HS	0.00355	lb/ton proc.	2,413,406	tons prod.	4.28	3,580,000	ton prod.			6.35	2.07
27			BOF Hopper Baghouse	0.00032	lb/ton proc.	2,413,406	tons proc.	0.39	3,580,000	tons proc.			0.57	0.18
28	0107 & 0035	01	Desulf. Station (inside BOF shop) & Xfer Pit	0.03721	lb/ton proc.	2,059,557	tons prod.	38.32	3,165,000	ton prod.			58.88	20.57
29	0113	01	Blast Furnace Slag Pits	0.00417	lb/ton proc.	2,059,557	tons slag	4.29	3,165,000	ton prod.			6.60	2.30
30	9003	01	Iron Pellet Screen	0.00279	lb/ton pellets charged	2,803,241	tons proc.	3.91	4,308,581	tons proc.			6.01	2.10
31		01	Iron Spout Baghouse	0.02548	lb/ton proc.	2,059,557	tons proc.	26.24	3,165,000	tons proc.			40.32	14.08
32			Road Fugitive Emissions	Included in Contemporaneous Changes. See Appendix F						-				0.00
33			Material Handling	Included in Contemporaneous Changes. See Appendix F						-				0.00
34			Unpaved Parking Lots					-		-			-	-
35			Paved Parking Lots					-		-			-	-
36			Natural Gas	5.1	lb/MMcf	1,145	MMcf	2.92	1,145	MMcf			2.92	0.00
37			Blast Furnace Gas	2.9	lb/MMcf	121,039	MMcf	175.51	185,030	MMcf			268.29	92.79
38			Fuel Oil	9.72	lb/Mgal	16	Mgal	0.08	365	Mgal			1.77	1.70
	TOTALS:							1,123.90					1,071.89	(52.01)
			Contemporaneous Changes											(37.16)
			Net Change											*(89.17)*

Note: Actual Emissions = Base Year Throughput * Emission Factor / 2000

Projected Actual Emissions = Projected Throughput * Emission Factor / 2000
except -
BOF Vessels Projected Actual Emissions = 60 lb/hr * 8760 hrs
BOF Roof Monitor Projected Actual Emissions = Projected Emission Factor * Projected Throughput

R000870

Projected Emissions Based On: Blast Furnace @8,[illegible]1 NTPD
BOF @ 9,808 NTPD

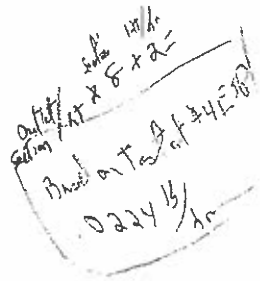
TABLE 3-6
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - VOM

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	0.0	lb/MMcf	22,774	MMcf	0.00	included in line 18	-	-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	0.0	lb/MMcf	22,203	MMcf	0.00	included in line 18	-	-	-
3	0008	01	Blast Furnace Gas Flare - BFG	0.0	lb/MMcf	26,132	MMcf	0.00	included in line 18	-	-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	0.0	lb/MMcf	37,501	MMcf	0.00	included in line 18	-	-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	2.8	lb/MMcf	361	MMcf	0.51	included in line 17	-	-	-
6	0044	01	Boiler #11 - BFG	0.0	lb/MMcf	5,323	MMcf	0.00	included in line 18	-	-	-
7	0044	91	Boiler #11 - NG	1.4	lb/MMcf	226	MMcf	0.16	included in line 17	-	-	-
8	0044	92	Boiler #11 - Fuel Oil	0.28	lb/Mgal	15.00	Mgal	0.00	included in line 19	-	-	-
9	0048	01	Boiler #12 - BFG	0.0	lb/MMcf	7,106	MMcf	0.00	included in line 18	-	-	-
10	0048	91	Boiler #12 - NG	1.4	lb/MMcf	218	MMcf	0.15	included in line 17	-	-	-
11	0048	92	Boiler #12 - Fuel Oil	0.28	lb/Mgal	1.00	Mgal	0.00	included in line 19	-	-	-
12	0033	01	BOF Preheaters/Dryers - NG	2.8	lb/MMcf	283	MMcf	0.40	included in line 17	-	-	-
13	0007 & 0012	01	"A & B" Blast Furnace - Casthouse	0.0946	lb/ton proc.	2,059,557	tons proc.	97.40	3,165,000	tons proc.	149.68	-
14	0005 & 0010	01	"A & B" Blast Furnace - Uncap. roof	0.0047	lb/ton proc.	2,059,557	tons proc.	4.83	3,165,000	tons proc.	7.42	-
15	0033	01	2 BOF Vessels	0.0060	lb/ton proc.	2,413,406	tons proc.	7.24	3,580,000	tons proc.	10.74	-
16	0035	01	Transfer Pits	0.0010	lb/ton proc.	2,059,557	tons proc.	1.03	3,165,000	tons proc.	1.58	-
17	0071 & 0119	01	Continuous Casters #1 & #2 - NG	2.8	lb/MMcf	57	MMcf	0.08	included in line 17	-	-	-
18			Natural Gas	2.8	lb/MMcf	-	MMcf	-	1,145	MMcf	1.60	-
19			Blast Furnace Gas	0.0	lb/MMcf	-	MMcf	-	185,030	MMcf	0.00	-
20			Fuel Oil	0.28	lb/Mgal	-	Mgal	-	365	lb/Mgal	0.05	-
	TOTALS:							111.80			171.08	59.28
			Contemporaneous Changes									(31.23)
			Net Change									*28.05*

R000871

TABLE 3-7
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - Pb

Projected Emissions Based On: Blast Furnace @ 8,671NTPD
BOF @ 9,808 NTPD



LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	EMISSION RATE lb/hr	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION TPY	PROJECTED THRUPUT OR PRODUCTION RATIO	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0044	03	Boiler #11 - Fuel Oil	0.01600000	lb/Mgal	0.01600000	15.00	Mgal	0.0001	included in line 19	-	-	-
2	0048	03	Boiler #12 - Fuel Oil	0.01600000	lb/Mgal	0.01600000	1.00	Mgal	0.0000	included in line 19	-	-	-
3	0005	01	"A" Blast Furnace - Uncap. Fugitives	0.00039000	lb/hr	0.00039000	8760	hours	0.0017	1.537	tons proc.	0.00262550	-
4	0006	01	"A" Blast Furnace - Charging	0.00055000	lb/hr	0.00055000	8760	hours	0.0024	1.537	tons proc.	0.00370263	-
5	0007	01	"A" Blast Furnace - Baghouse Stack	0.00022000	lb/hr	0.00022000	8760	hours	0.0010	1.537	tons proc.	0.00148105	-
6	0010	01	"B" Blast Furnace - Uncap. Fugitives	0.00036700	lb/hr	0.00036700	8760	hours	0.0016	1.537	tons proc.	0.00247067	-
7	0011	01	"B" Blast Furnace - Charging	0.00053700	lb/hr	0.00053700	8360	hours	0.0024	1.537	tons proc.	0.00361512	-
8	0012	01	"B" Blast Furnace - Baghouse Stack	0.00021400	lb/hr	0.00021400	8360	hours	0.0009	1.537	tons proc.	0.00144086	-
9	0033	01	BOF 2 Vessels Stack	0.19337500	lb/hr	0.19337500	8760	hours	0.8470	1.483	tons prod.	1.25607505	0.2858 lb/hr
10	0034	01	BOF Roof Monitor	0.01290000	lb/hr	0.01290000	8760	hours	0.0565	1.483	tons prod.	0.08379247	-
11	0035	01	Hot Metal Reladling - Xfer Pit	0.00002320	lb/hr	0.00002320	8760	hours	0.0001	1.483	tons prod.	0.00015070	-
12	0037	01	Flux Conv. & Xfer Pts., Bin Floor - BOF	0.00000062	lb/hr	0.00000062	8760	hours	0.0000	1.483	tons prod.	0.00000405	-
13	0040	01	Hot Metal Chging Ladle Slag Skimmer	0.00002250	lb/hr	0.00002250	8760	hours	0.0001	1.483	tons prod.	0.00014616	-
14	0103	01	Argon Stirring #1 & #2	0.00020200	lb/hr	0.00020200	8760	hours	0.0009	1.483	tons prod.	0.00131210	-
15	0105	01	Deslagging Station	0.00240000	lb/hr	0.00240000	8760	hours	0.0105	1.483	tons prod.	0.01558930	-
16	0107	01	Desulf. Station (inside BOF shop)	0.01330000	lb/hr	0.01330000	8760	hours	0.0583	1.483	tons prod.	0.08639068	-
17	0120	01	Caster Mold - Casters	0.00113000	lb/hr	0.00113000	8760	hours	0.0049	1.483	tons prod.	0.00733996	-
18			Boilers -Waste Oil	0.33600000	lb/Mgals		-	-	-	365	Mgals	0.06132000	-
	TOTAL					0.28			0.988			1.527	0.539
			Contemporaneous Changes										0.000
			Net Change										*0.539*

R000872

Contemporaneous Changes from the 1995 Application

APPENDIX E

The following table summarizes emissions changing projects that have been undertaken at Granite City Steel since 1990.

PROJECTS CHANGING EMISSIONS SINCE 1990 (TPY)

Project	Effective Date	TSP/PM_{10}	SO_2	NO_x	CO	VOM
Removal Blast Furnace Slag Sput Hood	January, 1990	+4.90				
# 2 Caster Production	December 1, 1990	+11.70				
Ingot Teeming Shutdown	April 1, 1991	-22.40				
Installation NESHAP Controls Coke By-Product	July, 1991					-31.6
Shutdown Blooming Mill	April 1, 1991	-3.38	-0.34	-217.82	-22.12	-0.92
Shutdown Batch Annealing	December, 1991	-0.18	-0.036	-8.72	-1.19	-0.31
Fugitive Dust Control Program (Roads and Material Handling)	November, 1991 to present	-32.00				
Installation of #8 Galvanizaing Line	Expected 1996	+4.20/+4.05	+.25	+26.0	+11.8	+1.6
Net Change		-37.16/-37.31	-0.126	-200.54	-11.51	-31.23

The following information presents how the emission change was calculated for each project.

REMOVAL OF BLAST FURNACE SLAG SPOUT HOOD - JANUARY, 1990

Based on May 8, 1989 submittal for modification of operating permit for "A" & "B" Blast Furnaces. +4.9 TPY

2 CASTER PRODUCTION - DECEMBER 1, 1990

Summary of Project Emission Changes (tons/yr)[1] (Assuming all steel produced is continuous cast.)

Argon Stirring and Baghouse	4.85
Tundish with Shrouds	--
Powder Addition	7.49
Slab Casting	2.01
Slab Cut-off	9.03
Slab Ripping with Baghouse	2.58
	26.0 tons/yr PM_{10}
Caster #1 Actual	14.3 tons/yr PM_{10}

Caster #2 PM_{10} emissions = 26.0 - 14.3 = 11.7 tons/yr

INGOT TEEMING SHUTDOWN - APRIL 1, 1991

670,000 tons / year X 0.067 lbs / ton = 22.4 tons / year PM_{10} reduction

[1] Reference - March 16, 1988 IEPA "Project Summary for Proposed Issuance of an Air Pollution Control Construction Permit for Continuous Caster".

SHUTDOWN BLOOMING MILL - APRIL 1, 1991

Coke oven gas consumed at Soaking Pits, 1,076,926 MMBtu in 1990.

The coke oven gas which was consumed at the Blooming Mill Soaking Pits (firing rate 408 MMBtu/hr/furnace) is to be used at the Hot Strip Slab Furnaces (1 - 3) (firing rate 321.8 MMBtu/hr/furnace) and #4 slab furnace (firing rate 495 MMBtu/hr).

The emission reductions for the displaced use of natural gas on the slab reheat furnaces is based on the AIRS 1990 emission factor for natural gas sources greater than 100 MMBtu/hr and the "ACT for NO_X Emissions from Iron and Steel Mills".

1990

Coke Oven Gas Soaking Pits - General < 10 MMBtu/hr

44,131 X 0.003 X 1/2000 = 0.066 tpy PM_{10} emission reduction

44,131 X 0.0006 X 1/2000 = 0.013 tpy SO_2 emission reduction

44,131 X 0.10 X 1/2000 = 2.21 tpy NO_X emission reduction

44,131 X 0.0053 X 1/2000 = 0.12 tpy VOC emission reduction

44,131 X 0.02 X 1/2000 = 0.44 tpy CO emission reduction

Natural Gas Blooming Mill < 10 MMBtu/hr

18,083 X 0.003 X 1/2000 = 0.027 tpy PM_{10} emission reduction

18,083 X 0.0006 X 1/2000 = 0.005 tpy SO_2 emission reduction

18,083 X 0.10 X 1/2000 = 0.90 tpy NO_X emission reduction

18,803 X 0.0053 X 1/2000 = 0.05 tpy VOC emission reduction

18,803 X 0.02 X 1/2000 = 0.18 tpy CO emission reduction

Coke Oven Gas Soaking Pits

1,076,926 X 0.005 X 1/2000 = 2.69 tpy PM_{10} emission reduction

1,076,926 X 0.0006 X 1/2000 = 0.32 tpy SO_2 emission reduction

1,076,926 X 0.399 X 1/2000 = 214.71 tpy NO_X emission reduction

1,076,926 X 0.0014 X 1/2000 = 0.75 tpy VOC emission reduction

1,076,926 X 0.04 X 1/2000 = 21.5 tpy CO emission reduction

EMISSION REDUCTION SUMMARY for SHUTDOWN of BLOOMING MILL (tons/year)

	PM_{10}	SO_2	NO_X	CO	VOC
Soaking Pit - General	0.66	0.013	2.21	0.44	0.12
Blooming Mill	0.027	0.005	0.90	0.18	0.05
Soaking Pits	2.69	0.32	214.71	21.5	0.75
Total	3.377	0.338	217.82	22.12	0.92

SHUTDOWN BATCH ANNEALING - DECEMBER, 1991

1990 Natural Gas Usage 118,612 MMBtu (< 10 MMBtu/hr)

118,612 X 0.003 X 1/2000 = 0.18 tpy PM_{10} emission reduction

118,612 X 0.0006 X 1/2000 = 0.036 tpy SO_2 emission reduction

118,612 X 0.147[2] X 1/2000 = 8.72 tpy NO_X emission reduction

118,612 X 0.0053 X 1/2000 = 0.31 tpy VOC emission reduction

118,612 X 0.02 X 1/2000 = 1.19 tpy CO emission reduction

[2] Based on the "ACT for NO_X Emissions from Iron and Steel Mills".

NO. 8 GALVANIZING LINE

Furnace

54.6 MMBtu/hr - natural gas fired

Pollutant	*Emission Factor/Source (lb/MMBtu)*	*Heat Input (MMBtu/hr)*	*Annual Emissions (tpy)*
NO_X	0.0378/Vendor Guarantee	54.6	9.04
TSP	0.003/AP-42	54.6	0.72
PM_{10}	0.003/AP-42	54.6	0.72
VOM	0.0028/AP-42	54.6	0.67
CO	0.035/AP-42	54.6	8.37
SO_2	0.0006/AP-42	54.6	0.14

Fume Scrubber

10,000 cfm

Pollutant	*Emission Factor (lb/hr)/Source*	*Annual Emissions (tpy)*
TSP	0.24/Vendor Guarantee	1.05
PM_{10}	0.24/ Vendor Guarantee	1.05

5 Space Heaters

3,440,000 Btu/hr per heater - natural gas fired
1,019 Btu/ft^3 (1993 emission inventory)
5 * 3,440,000 Btu/hr / (1,019 Btu/ft^3) = 16,879.3 ft^3/hr total natural gas consumption, 5 heaters

Pollutant	*Emission Factor(lb/MMft^3) AIRS-1-05-001-6*	*Heat Input (MMBtu/hr)*	*Annual Emissions (tpy)*
NO_X	100.0	16,879.3	7.39
TSP	3.0	16,879.3	0.22
PM_{10}	3.0	16,879.3	0.22
VOM	5.3	16,879.3	0.39
CO	20.0	16,879.3	1.48
SO_2	0.6	16,879.3	0.04

11 Galvanize Line Related Heaters

Heaters associated with the following galvanizing processes are to be installed as part of the No. 8 Galvanize Line Project:

Equipment	*Maximum Natural Gas Use (CFH)*
Entry Strip Dryer	2,078
Quench Strip Dryer	1,419
Chem. Treat Strip Dryer	1,370
Pre-clean Recirc. Tank	2,944
Electrolytic Recirc. Tank #1	2,748
Electrolytic Recirc. Tank #2	2,500
Hot Water Rinse Tank	883
Hot Water Make-up Tank	6,869
Chimical Treat Recirc. Tank	491
Chemical Treat Mix Tank	491
Roll Rig Preheaters	102
Total	21,895

Pollutant	*Emission Factor(lb/MMft^3) AIRS-1-05-001-6*	*Heat Input (MMBtu/hr)*	*Annual Emissions (tpy)*
NO_X	100.0	21,895	9.60
TSP	3.0	21,895	0.29
PM_{10}	3.0	21,895	0.29
VOM	5.3	21,895	0.51
CO	20.0	21,895	1.92
SO_2	0.6	21,895	0.06

Kettle Melting

32,000 tons product per month
0.1 tons Zn per ton product

32,000 tons product/month * 0.1 tons Zn/ton product * 0.1 lbs TSP/ton Zn * 12 months / 2000 lbs /ton = 1.92 tons TSP
1.92 tons TSP * 0.92 = 1.77 tons PM_{10}

Pollutant	*Emission Factor (lb/ton Zn)/Source*	*Annual Emissions (tpy)*
TSP	0.1/AP-42	1.92
PM_{10}	0.092/AP-42	1.77

TOTAL EMISSIONS ASSOCIATED WITH NO. 8 GALVANIZE LINE PROJECT

Pollutant	*Annual Emissions (tpy)*
NO_X	26.03
TSP	4.20
PM_{10}	4.05
VOM	1.56
CO	11.77
SO_2	0.25

INSTALLATION OF NESHAP CONTROLS AT COKE BY-PRODUCT PLANT

VOC Emissions Reduction at Coke By-Product Plant after Installation of NESHAPS Controls

It was reported, in Attachment 2 of the October 8, 1991 submittal of additional information in application for modification of Operating Permits for the Granite City Division Emission Reduction Plant Production Increase Project, that the installation of benzene emission controls (NESHAPS) at the Coke By-Product Recovery Plant would provide a reduction of 31.6 TPY VOC other than benzene. The following is a demonstration of the derivation of that VOC emission reduction.

All calculations are based on 1990 coke production of 577,473 tons.

Emission factors are taken from the publication EPA-450/3-83-016a, "Benzene Emissions from Coke By-Product Recovery Plants - Background Information for Proposed Standards." The NESHAPS emission factors contained in this publication are for benzene only. The emissions of other light oil (L.O.) constituents were calculated by taking the ratio of the mole fraction of each L.O. constituent (liquid) times the vapor pressure of that constituent to the mole fraction of benzene (liquid) times the vapor pressure of benzene, then multiplying that ration by the calculated benzene emissions. It is assumed that all emissions are vapors and that the vapors are in equilibrium with the liquid light oil.

Sample calculation:

For the direct water cooling tower, benzene emissions are calculated as follows:

$$(577{,}473 \text{ tons coke}) \times \frac{2000 \text{ lb.}}{\text{ton}} \times \frac{454 \text{g}}{\text{lb.}} \times \frac{1 \text{ Mg}}{10^6 \text{g}} = 524{,}346 \text{ Mg coke}$$

$$\frac{524{,}346 \text{ Mg coke}}{\text{yr.}} \times \frac{270 \text{g}}{\text{Mg}} \times \frac{1 \text{ lb.}}{454 \text{g}} = 311{,}836 \text{ lb./year}$$

where 270g/Mg = uncontrolled benzene emission factor from Table 3 - 7, attached.

From the Light Oil Constituents table, attached,

Benzene: $y(P^*) = .71(96) = 68.16$

where .71 = benzene mole fraction
and 96 = benzene vapor pressure

Similarly,

Toluene: $y(P^*) = .159(30) = 4.77$

Hence, the toluene emissions, with no controls, from the direct water cooling tower are

$$\frac{4.77}{68.16} \text{ (311,836 lb/yr.)} = 21{,}823 \text{ lb. toluene/year}$$

Toluene emissions after installation of NESHAPS controls with 100% efficiency are

21,823 lb. coluene (100 - 100) = 0 lb. toluene/yr.

Emission of benzene, toluene, xylene, ethylbenzene and styrene are calculated, as above, for the various emission sources at the By-Product Plant and presented in the table Emissions of Light Oil Constituents after Installation of NESHAPS Controls at the Coke Oven By-Products Plant, attached.

The non-benzene emissions controlled by the NESHAPS project are then calculated, for each light oil constituent considered, by subtracting the total emissions after controls were applied at all sources from the total emissions prior to application of controls at all sources. These calculations are presented in the table entitled Non-Benzene Emissions Controlled by NESHAPS Project, attached.

Non-Benzene Emissions Controlled by NESHAPS Project

	Total Uncontrolled Emissions	-	Total Uncontrolled Emissions after NESHAPS Controls Installed	=				=	
Toluene	59,584	-	997	=	58,587 lbs.	x	$\frac{1T}{2000}$	=	29.3 tons/yr.
Xylene	2,871	-	48	=	2,823 lbs.	x	$\frac{1T}{2000}$	=	1.4 tons/yr.
Ethylbenzene	959	-	10	=	949 lbs.	x	$\frac{1T}{2000}$	=	0.5 tons/yr.
Styrene	868	-	9	=	859 lbs.	x	$\frac{1T}{2000}$	=	0.4 tons/yr.
									31.6 tons/yr.

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Emissions of Light Oil Constituents after Installation of NESHAPS Controls at the By-Product Plant

By-Product Source	Uncontrolled Benzene Factor (g Mg)	NESHAPS Control	NESHAPS Control Effiency %	Benzene (lb./yr.) A*	Benzene (lb./yr.) B**	Toluene (lb./yr.) A	Toluene (lb./yr.) B	Xylene (lb./yr.) A	Xylene (lb./yr.) B	Ethylbenzene (lb./yr.) A	Ethylbenzene (lb./yr.) B	Styrene (lb./yr.) A	Styrene (lb./yr.) B
Direct Water Cooling Tower	270	Tar Spray Final Cooler	100	311,836	0	21,823	0	1,050	0	351	0	317	0
Light Oil Condenser Vent	89	Gas Blanket	98	102,790	2,056	7,193	144	346	7	116	2	105	2
Napthlene Separator	87	Tar Spray	100	100,480	0	7,032	0	339	0	113	0	102	0
Napthalene Processing	20	Tar Spray	100	23,099	0	1,617	0	78	0	26	0	23	0
Tar-Intercepting Sump	95	Gas Blanket	98	109,720	2,194	7,678	154	370	7	124	3	112	2
Tar Dewatering	21	Steam Blanket	98	24,254	485	1,697	34	82	2	27	1	25	1
Tar Decanter	77	Steam Blanket	98	88,931	1,779	6,224	125	300	6	100	2	90	2
Tar Storage	12	Steam Blanket	98	13,859	277	970	19	47	1	16	0	14	0
Light Oil Sump	15	Gas Blanket	98	17,324	347	1,212	24	58	1	20	0	18	0
Light Oil Storage	5.8	Gas Blanket	98	6,699	134	469	9	23	1	8	0	7	0
BTX Storage (ILO)	5.8	Gas Blanket	98	6,699	134	469	9	23	1	8	0	7	0
Leaks	14	Manual Detection	88	16,169	1,940	1,132	136	55	7	18	2	16	2
Flushing Liquor Circulation Tank	9	Steam Blanket	98	10,395	208	727	15	35	1	11	0	11	0
Excess Ammonia Liquor Tank	9	Steam Blanket	98	10,395	208	727	15	35	1	11	0	11	0
Wash Oil Decanter	3.8	Uncontrolled	0	4,389	4,389	307	307	15	15	5	0	5	0
Wash Oil Circulating Tank	3.8	Gas Blanket	98	4,389	88	307	6	15	0	5	0	5	0
				851,428	14,239	59,584	997	2,871	48	959	10	868	0

*Uncontrolled emissions

**Emissions after NESHAPS controls installed

SEP 13 '94 04:29PM GCS ENVIRONMENTAL

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LIGHT OIL CONSTITUENTS

Chemical	Weight fraction (X)	MW	$\frac{X}{MW}$	Mole fraction (y)	P° at 25°C
enzene	.5925	78.11	.0076	.710	96 mm Hg
oluene	.1598	92.13	.0017	.159	30
ylene (mixed)	.0336	106.16	.0003	.028	8.2
ylbenzene	.0100	106.16	.00009	.008	9.6
rene	.0136	104.14	.0001	.009	7.7
hthalene	.005	128.16	.00004	.004	<1
bon disulfide	.003	76.14	.00004	.004	366
marin	.0367	118.13	.00031	.029	100
lohexane	.0009	84.16	.00001	.001	98
lohexene	.0276	82.14	.00034	.032	100
lopentadiene	.0064	66.10	.00009	.008	600
lene	.0029	70.13	.00004	.004	654
tane	.0014	72.15	.00002	.002	533
ophene	.0024	84.13	.00003	.003	79
,5-trimethylbenzene	.0028	120.20	.00002	.002	7.0
,3-trimethylbenzene	.0130	120.20	.0001	.002	6.8

$\Sigma \frac{X}{MW} = .01071$

* Benzene, toluene, and xylene weight fractions were the average of two analysis OM of light oil samples: Environmetrics on March 1, 1991, and by Doug Stracke of Granite City Steel on March 24, 1985.

Average molecules weight of light oil = ΣyM = 84.47
Average vapor pressure of light oil = ΣyP = 89.67

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Environmental Protection Agency — Research Triangle Park NC 27711 — R000886
Air

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Benzene Emissions from Coke By-Product Recovery Plants - Background Information for Proposed Standards

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NESHAP

TABLE 3-7. UNCONTROLLED BENZENE EMISSION FACTORS FOR COKE BY-PRODUCT PLANTS

Source	Emission factor (g benzene/Mg coke)	Industry emissions (Mg/yr)[36]
Cooling tower		
Direct-water	270	6,340
Tar-bottom	70	1,090
Light-oil condenser vent	89	4,080
Naphthalene separation	87	2,040
Naphthalene processing	20	470
Tar-intercepting sump	95	5,360
Tar dewatering	21	1,090
Tar decanter	77	4,350
Tar storage	12	680
Light-oil sump	15	780
Light-oil storage	5.8	300
BTX storage	5.8	80
Benzene storage	5.8	80
Flushing-liquor circulation tank	9	510
Excess-ammonia liquor tank	9	510
Wash-oil decanter	3.8	180
Wash-oil circulation tank	3.8	180
Pump seals	a	600
Valves	a	400
Pressure-relief devices	a	270
Exhausters	a	30
Sample connections	a	50
Open-ended lines	a	20
Total (rounded)		29,000

[a] Emissions were estimated on the basis of number of potentially leaking units. Emission factors are listed in Table 3-6.

APPENDIX F

FUGITIVE PARTICULATE EMISSIONS

EMISSION CALCULATIONS

Fugitive particulate emissions from paved and unpaved roads were calculated based on information provided in "Granite City Area PM-10 Emission Inventory", MRI Final Report, 1988, and the 1991 PM_{10} SIP developed by the Illinois Environmental Protection Agency.

Based on information in these sources, fugitive particulate inventories were developed for three scenarios:

- Initial Uncontrolled Emissions - These are uncontrolled emission estimates taken from the 1988 MRI report.
- Projected Initial Uncontrolled Emissions - These emission estimates reflect uncontrolled emissions reported in the 1988 MRI document scaled up by a factor related to the requested production increase. That factor is derived by dividing the requested production level by the base period production level. The factor applied is dependent on the potential increase in activity on each specific road segment. A factor of one was used for those areas where activity is not a function of production level. A factor of 1.1 was used in those areas where some increase in activity may occur, but that increase is expected to be minor.
- Projected Controlled Emissions - These estimates start with the Projected Initial Uncontrolled Emissions and are then reduced to reflect the fugitive emission control program that will be in effect with the production increase.

EMISSION CONTROL PROGRAM

Table F-1 presents intitial uncontrolled, projected uncontrolled, and projected controlled emissions.

Projected controlled emissions reflect an extensive fugitive dust control program. As a part of this application, Granite City Steel is committing to a fugitive emission control program that adds to the commitments that were implemented earlier. The resulting control program is outlined below in **Table F-2.**

MATERIALS HANDLING

Uncontrolled and controlled emissions from materials handling activities that will be affected by the production increase were estimated using the same sources previously cited. These estimates are presented in **Table F-3**.

SUMMARY

Fugitive emissions ard credits are summarized on **Table F-4**.

TABLE F-1

Granite City Division of National Steel Company
Projected PM-10 Emissions - Roads

Area	Segment ***	Initial Uncontrolled Emissions * (TPY)	Production Increase Factor	Projected Initial Uncontrolled Emissions **	Control Efficiency for Projected Emissions (%) *	Projected Controlled Emissions ***
South Plant	A ****	26.09	1.00	26.09	95.00%	1.30
	B	9.91	1.00	9.91	98.00%	0.20
	C	7.46	1.00	7.46	98.00%	0.15
Steelworks	D****	45.72	1.48	67.80	98.00%	1.36
	K ****	6.23	1.48	9.24	98.00%	0.18
	M ****	7.39	1.48	10.96	98.00%	0.22
	E	8.79	1.00	8.79	98.00%	0.18
	F ****	148.15	1.48	219.71	98.84%	2.55
	G ****	3.96	1.48	5.87	96.24%	0.22
	H [2]	11.24	1.00	11.24	97.90%	0.24
	J	8.10	1.00	8.10	98.00%	0.16
	L	161.37	1.48	239.31	98.00%	4.79
	R ****	2.57	1.48	3.81	98.00%	0.08
BOF	O ****	37.61	1.48	55.78	98.00%	1.12
	N	27.76	1.48	41.15	98.00%	0.82
	P [2]	28.44	1.48	42.18	99.30%	0.30
Furnace	V [2]	65.65	1.10	72.22	99.50%	0.36
	W ****	6.59	1.10	7.25	96.54%	0.25
	X ****	238.15	1.54	366.04	97.52%	9.08
	Y	11.06	1.00	11.06	98.00%	0.22
	Z [1]	43.70	1.54	67.17	99.67%	0.22
North Plant	S ****	17.84	1.00	17.84	95.00%	0.89
	T ****	21.09	1.00	21.09	95.00%	1.05
Area	D-D [2]	41.87	1.54	64.35	98.98%	0.66
	E-E [2]	1.69	1.54	2.60	97.87%	0.06
	F-F	1.53	1.54	2.35	98.00%	0.05
	CS(1) ****	13.57	1.00	13.57	98.00%	0.27
	CS(2)	8.49	1.00	8.49	98.00%	0.17
	G-G	5.81	1.00	5.81	95.00%	0.29
	Total:	1,017.82		1,427.23		27.42

* Based on IEPA PM10 SIP
** Base case emissions times production increase factor
*** Unpaved roads paved as per proposed schedule.
**** Paved Road.
[1] Road 72% paved. The remaining 28% will be paved prior to the production increase.
[2] Road to be paved prior to production increase.

TABLE F-2
GRANITE CITY DIVISION of NATIONAL STEEL
FUGITIVE PARTICULATE EMISSION CONTROL PROGRAM for REQUESTED PRODUCTION INCREASE

AREA	SEGMENT	SURFACE	CONTROL
South Plant	A	Paved	Sweep or Flush once per month
	B	Unpaved	Spray three times per month
	C	Unpaved	Spray three times per month
Steelworks	D	Paved	Sweep or flush daily
	K	Paved	Sweep or flush daily
	M	Paved	Sweep or flush daily
	E	Unpaved	Spray three times per month
	F	Paved	Sweep or flush daily
	G	Paved	Sweep or flush daily
	H *	Paved	Sweep or flush once per month
	J	Paved	Sweep or flush daily
	L	Unpaved	Spray four times per month
	R	Paved	Sweep or flush daily
BOF	O	Paved	Sweep or flush daily
	N	Unpaved	Spray three times per month
	P *	Paved	Sweep or flush five days per week
Blast Furnace	V *	Paved	Sweep or flush five days per week
	W	Paved	Sweep or flush five days per week
	X	Paved	Sweep or flush five days per week
	Y	Unpaved	Spray three times per month
	Z *	Paved	Sweep or flush five days per week
North Plant	S	Paved	Sweep or flush every other day
	T	Paved	Sweep or flush every other day
Area	D-D *	Paved	Sweep or flush five days per week
	E-E *	Paved	Sweep or flush five days per week
	F-F	Unpaved	Spray three times per month
	CS(1)	Paved	Sweep or flush five days per week
	CS(2)	Unpaved	Spray three times per month
	G-G	Unpaved	Spray quarterly

* Sprayed four times per month as of production increase; paved by July 31, 1996.

TABLE F-3

Granite City Division of Nation Steel

Base Case PM10 Emissions and Contemporaneous Emissions Reductions - Materials Handling

Material			Control * Efficiency		Production Increase			Production Increase Related
	TPY (1)	TPY		TPY		TPY	TPY	TPY
Coke	7.45	7.45	90%	0.64	1.54	0.98	(6.47)	0.34
Coke Breeze	0.01	0.01	90%	0.00	1.54	0.00	(0.01)	0.00
Pellets	7.84	7.84	90%	0.67	1.54	1.03	(6.81)	0.36
Limestone	1.88	1.88	90%	0.16	1.54	0.25	(1.63)	0.09
	17.18	**17.18**		**1.47**		**2.26**	**(14.92)**	0.79

*** Based on IEPA PM10 SIP**

**** Reductions based Contemporaneous Controls**

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TABLE F-4
FUGITIVE EMISSION SUMMARY
Granite City Division of National Steel

IEPA Fugitive PM10 SIP Control Requirement for GCS			61.68	tons / year
PM10 Emissions from Roads	27.42	tons / year		
PM10 Emissions from Materials Handling	2.26	tons / year		
Total Fugitive PM10 Emissions After Production Increase			29.68	tons / year
Excess Fugitive PM10 Reduction (Credit)			32.00	tons / year

R000893

Appendix C – Air Quality Modeling Report

CARBON MONOXIDE AIR DISPERSION MODELING FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND CONSTRUCTION PERMIT REVISION FOR UNITED STATES STEEL GRANITE CITY WORKS

Prepared for:
United States Steel Corporation
Granite City Works
20th and State Streets
Granite City, IL 62040

Prepared by:
RTP Environmental Associates, Inc.
304A West Millbrook Road
Raleigh, North Carolina 27609

October 2022

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1.0 INTRODUCTION

This document presents the results of the air quality dispersion modeling analysis conducted for the United States Steel Corporation, Granite City Works ("US Steel") iron and steel making facility in Granite City, Illinois. The analysis has been conducted by RTP Environmental Associates, Inc. ("RTP Environmental") on behalf of US Steel.

The analysis evaluated the emissions of the criteria pollutant carbon monoxide ("CO") as regulated under the applicable provisions of the Prevention of Significant Deterioration ("PSD") regulations of 40 CFR § 52.21, incorporated by reference in the federally approved Illinois State Implementation Plan at 40 CFR § 52.738(b).[1] The criteria pollutant analysis was conducted to ensure that the proposed revisions to the CO emission limitations in the Prevention of Significant Deterioration ("PSD") and Construction Permit (Permit Number 95010001) ("1996 Construction Permit") do not cause or contribute to violation of a National Ambient Air Quality Standard (NAAQS).

As required by 40 CFR § 52.21(l), the analysis conforms with the modeling procedures outlined in the Guideline on Air Quality Models[1] promulgated by United States Environmental Protection Agency ("USEPA") (the "Guideline" or "Appendix W"). It also conforms to the Illinois Environmental Protection Agency's (IEPA) Prevention of Significant Deterioration Modeling Guidance[2], the modeling protocol submitted to the IEPA on February 3, 2020, and associated USEPA modeling policy and guidance.

[1] All citations to the PSD regulations herein are to the currently applicable provisions of 40 CFR § 52.21. The analysis also is designed to satisfy the parallel requirements of the currently pending Illinois PSD rule, 35 Ill. Adm. Code Part 204.

2.0 PROJECT DESCRIPTION

The 1996 Construction Permit authorized National Steel to increase iron and steel production limitations for the blast furnaces and basic oxygen furnace ("BOF") shop at the existing integrated iron and steel manufacturing facility in Granite City, in Madison County, Illinois. US Steel purchased the assets of National Steel in 2003, including Granite City Works. US Steel is proposing revisions to the 1996 Construction Permit that involve increases in the CO emission limitations that were established per the PSD requirements. Therefore, the proposed increases in the CO rates were evaluated for PSD requirements including compliance with the NAAQS for CO. No physical changes are proposed in conjunction with the requested revisions to the 1996 Construction Permit.

3.0 FACILITY AND SITE DESCRIPTION

The US Steel Granite City Works produces high-quality hot-rolled, cold-rolled and coated sheet steel products to customers in the construction, container, piping and tubing, service center, and automotive industries. Granite City Works has an annual raw steelmaking capability of 3.58 million net tons.

The facility occupies approximately 400 acres and is located approximately 12 miles east of Lambert, St. Louis International Airport. The approximate Universal Transverse Mercator (UTM) coordinates of the facility are 749,000m East and 4,287,000m North (NAD83, Zone 15). Figure 1 shows the general location of the facility. Figure 2 shows the specific facility location on a 7.5-minute U.S. Geological Survey ("USGS") topographic map.

The US Steel facility is classified under the regulations governing PSD and Title V as a major source. The area of Madison County where US Steel facility is located is classified as attainment or unclassifiable for all regulated pollutants except ozone. St. Louis is classified as marginal nonattainment for the 2015 8-hour ozone standard.

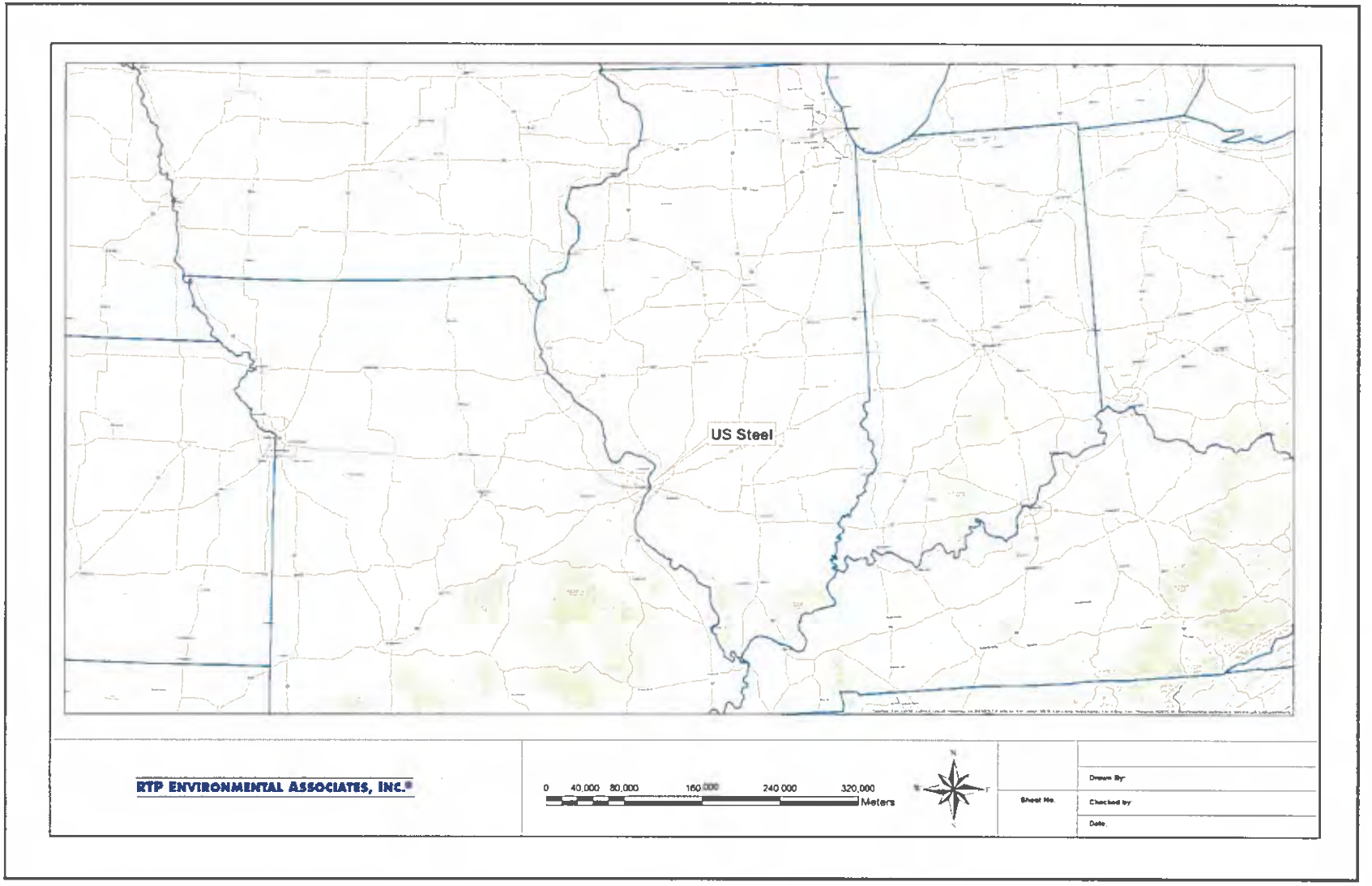

Figure 1. General Location of the US Steel Granite City Works

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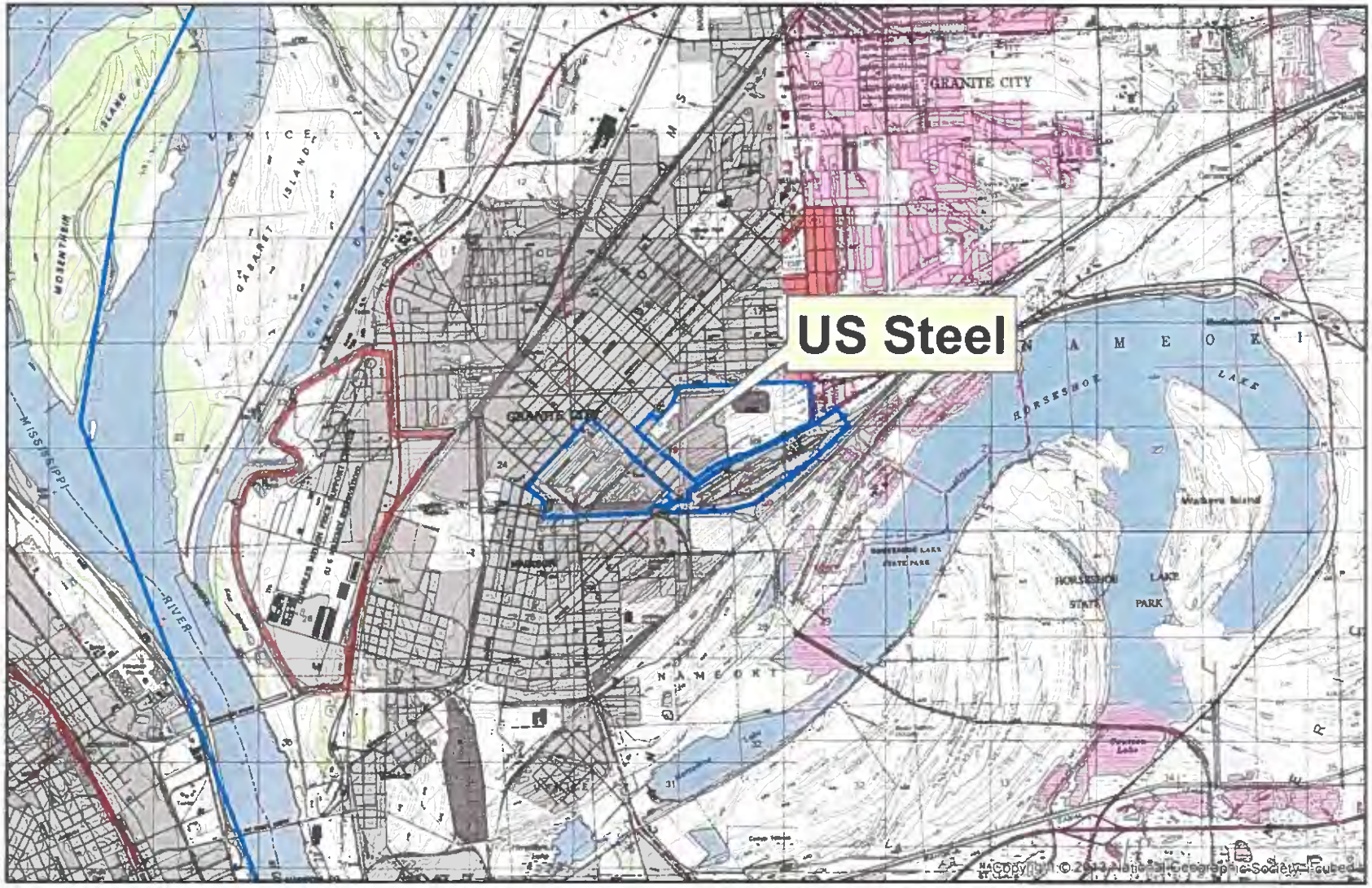
US Steel
GRANITE CITY
VENICE
GRANITE CITY
NAMEOKI
HORSESHOE LAKE
LAKE
PARK
MISSISSIPPI
RIVER
NAMEOKI
Horseshoe Lake
Pontoon Lake
Madora Island
Mosenthein Island
Gabaret Island
Chain of Rocks Canal
Granite City Army Depot
Chain of Rocks Bridge
Route 66 Bridge
Mississippi River Bridge
Granite City Steel
Granite City Steel Airport
Granite City Steel Recreation
Horseshoe Lake State Park
Horseshoe Lake Conservation Area
Pontoon Beach
Venice
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4.0 MODEL SELECTION AND MODEL INPUT

4.1 Model Selection

The latest version of the AMS/EPA Regulatory Model (AERMOD, Version 22112) was used to conduct the dispersion modeling analysis. AERMOD is a Gaussian plume dispersion model that is based on planetary boundary layer principals for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions with the probability density function and the superposition of several Gaussian plumes. AERMOD is a modeling system with three components: AERMAP is the terrain preprocessor program, AERMET is the meteorological data preprocessor and AERMOD includes the dispersion modeling algorithms.

AERMOD is the required default model for calculating ambient concentrations near the US Steel facility based on the model's ability to incorporate multiple sources and source types. The model can also account for convective updrafts and downdrafts and meteorological data throughout the plume depth. The model also provides parameters required for use with up to date planetary boundary layer parameterization. The model also has the ability to incorporate building wake effects and to calculate concentrations within the cavity recirculation zone. All model options were selected as recommended in the USEPA Guideline on Air Quality Models.

Oris Solution's BEEST Graphical User Interface ("GUI") was used to run AERMOD. The GUI uses an altered version of the AERMOD code to allow for flexibility in the file naming convention. The dispersion algorithms of AERMOD are not altered. Therefore, a model equivalency evaluation pursuant to Section 3.2 of 40 CFR 51, Appendix W was not warranted.

4.2 Model Control Options and Land Use

AERMOD was run in the regulatory default mode for all pollutants with the default rural dispersion coefficients. These coefficients were used by the Illinois Environmental

Protection Agency ("IEPA") in its evaluation of the facility as part of the 1-hr sulfur dioxide ("SO2") Data Requirements Rule ("DRR").

4.3 Source Data

The modeling input data and modeled CO emission rates can be found in Appendix A of this report.

Source Characterization

The majority of modeled source input parameters were obtained from the IEPA's model conducted for the Data Requirements Rule ("DRR").

Point Sources

Most emission sources at the site vent to stacks with a well defined opening. These sources were modeled as point sources in AERMOD. Several other types of sources such as fugitive emissions also required evaluation.

Fugitive Emissions

Fugitive emissions are those that are not emitted from a well defined opening. These sources were modeled as volume sources. The initial dispersion coefficients (sigma y and sigma z) were provided by the IEPA and were calculated based upon the dimensions of the area of release and the equations contained in Table 3-1 of the AERMOD User's Guide.

Flares

The facility uses blast furnace gas flares to combust excess process gas. Emissions that occur only during periods of malfunction are not required to be modeled per 40 CFR Part 51 Appendix W. Non-malfunction emissions were modeled using the procedures outlined in the AERSCREEN Manual[3]. The effective stack height (H, in meters) was computed by the IEPA as a function of heat release rate according to the following equation, where Q is the heat release rate of the flare stack in caloriesper second:

$$H_{equivalent} = H_{actual} + 4.56x10^{-3} \times Q^{0.478}$$

The effective flare stack diameter (d, in meters) was computed as a function of heat release rate according to the following equation, where Q is the heat release rate of the flare in calories per second:

$$d_{equivalent} = 9.88x10^{-4} \times (Q \times 0.45)^{0.5}$$

An exit temperature of 1273K and velocity of 20 m/sec is assumed.

All source locations were based upon a NAD83, UTM Zone 15 projection.

Good Engineering Practice Stack Height Analysis

A Good Engineering Practice ("GEP") stack height evaluation was conducted to determine appropriate building dimensions to include in the model and to calculate the GEP formula stack height used to justify stack height credit for any stacks n excess of 65m. Procedures used are in accordance with those described in the USEPA Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations-Revised)[4]. GEP formula stack height, as defined in 40 CFR 51, is expressed as GEP = H_b + 1.5L, where H_b is the building height and L is the lesser of the building height or maximum projected width. Building/structure locations were determined from a facility plot plan. The structure locations and heights were obtained from the IEPA and were input to the USEPA's Building Profile Input Program (BPIP-PRIME) computer program to calculate the direction-specific building dimensions needed for AERMOD. The structures included in the GEP analysis are shown as the green blocks in Figure 3. All stacks and structures that are located near a stack were included in the BPIP runs.

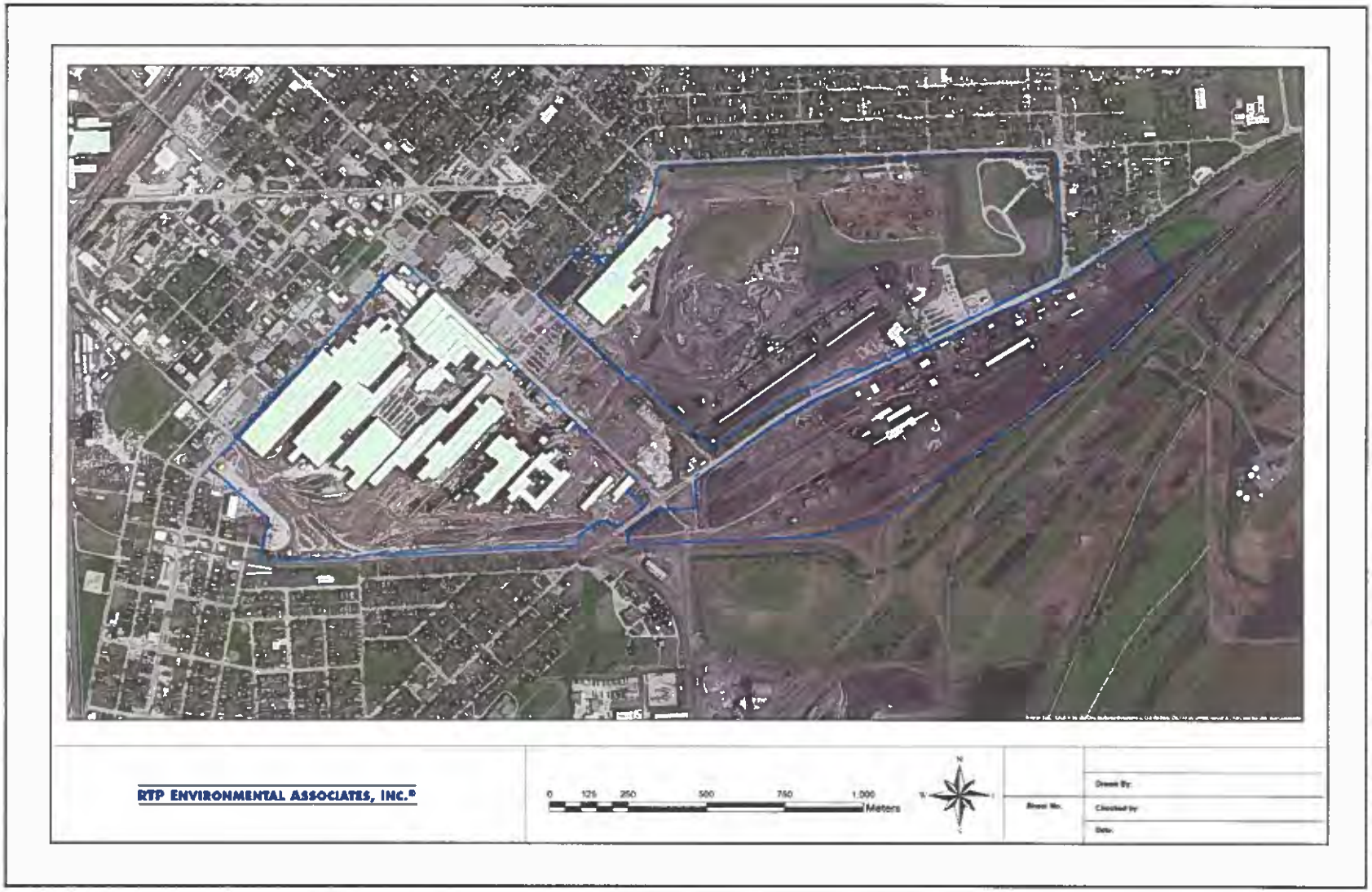

Figure 3. Structures Included in the US Steel GEP Analysis

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4.4 Monitored Background Data

Ambient, background pollutant concentrations are needed to establish a representative background concentration to complete the NAAQS portion of the *Source Impact Analysis* of 40 CFR § 52.21(k). The background concentrations are added to the modeled concentrations to assess NAAQS compliance. Ambient pollutant concentrations are also needed to fulfill the *Air Quality Analysis* requirement of 40 CFR § 52.21(m), as discussed in Section 5.0herein.

Pursuant to 40 CFR § 52.21(i)(5), requirements for ambient monitoring data may be waived by the permitting authority if projected increases in ambient concentrations due to the project are less than the Significant Monitoring Concentrations. However, in light of the decision of the D.C. Circuit Court of Appeals *Sierra Club v. EPA*,[5] US Steel has elected not to request such a waiver at this time.

The USEPA Monitoring Guidelines[6], other USEPA interpretive guidance, and USEPA administrative decisions clarify that representative, existing air quality monitoring data may be used to fulfill the PSD pre-construction monitoring requirements and establish background concentrations needed for assessing NAAQS compliance, in lieu of monitoring data. USEPA's Monitoring Guidelines suggest specific criteria to determine representativeness of off-site data: *quality of the data, currentness of the data, and monitor location*.

There are many existing ambient CO monitors within 100 miles in the facility (Figure 4). Existing monitoring data have been evaluated in relation to the criteria provided in USEPA's Ambient Monitoring Guidelines as being representative of the US Steel site.

We have used recently available, quality assured data (2016-2018) from the AQS monitor in East St. Louis, IL (AQS Site # 17-163-0010). 2018 is the latest year of complete, available data. The 4th quarter of 2019 is incomplete and data are not

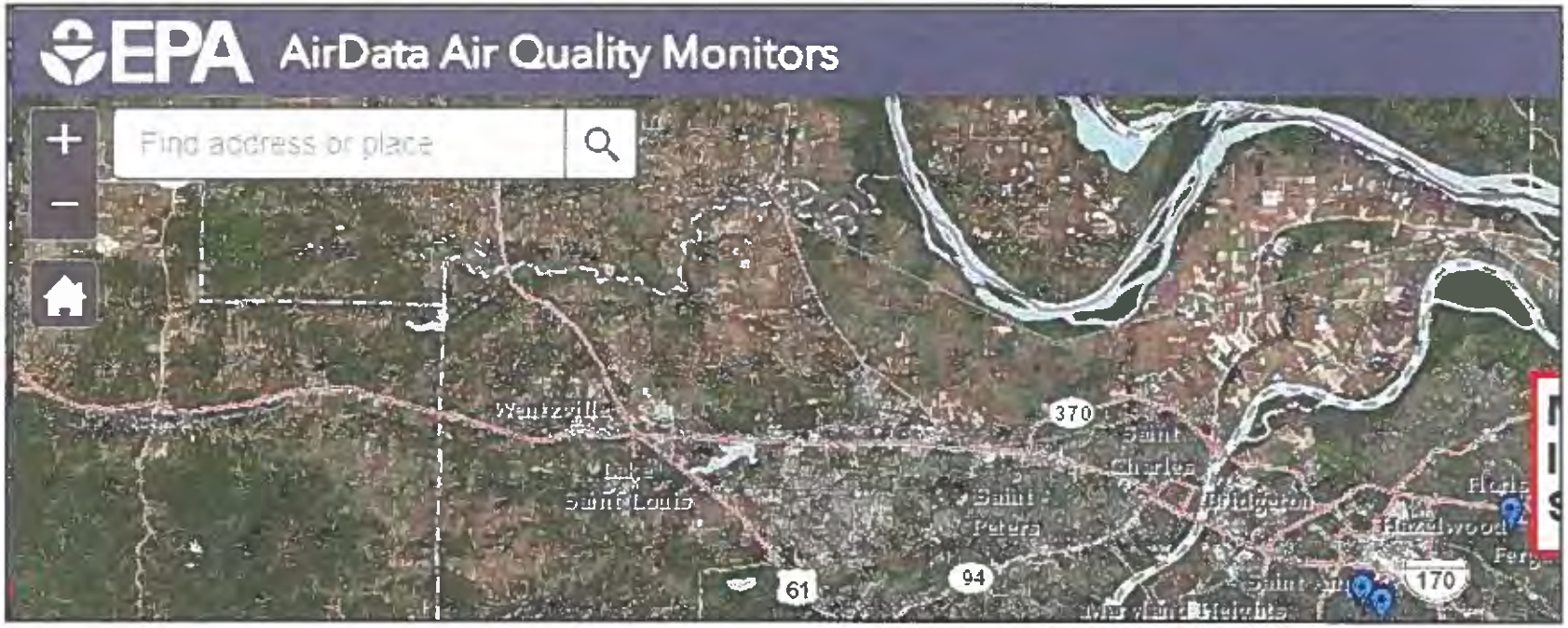

Figure 4. Ambient Air Quality Monitors in the Vicinity of the US Steel Facility

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available for 2020-2021. This monitor best represents background concentrations near the facility as it is the closest monitor with current CO data and is in the vicinity of the site and therefore representative of conditions as the site. The background data are presented in Table 1.

Table 1. Proposed Background Concentrations 2016-2018

Pollutant	Averaging Time	Design Value (ppb)[µg/m^3]	Basis	AQS Site No.
CO	1-hour	(2,200) [2,515]	Maximum	17-163-0010 St. Louis
	8-hour	(1,440) [1,646]		

The existing monitoring data satisfy the criteria provided in USEPA's Ambient Monitoring Guidelines[7] as being representative of the site.

Monitor Location

Of the monitors available, the East St. Louis monitor represents background concentrations as it is the closest monitor with data for the pollutants of concern that is not also significantly influenced by the localized source impacts.

Data Quality

The monitor data were collected and quality assured by the IEPA.

Currentness of Data

The data were collected during 2016-2018, which represents the recently available, quality assured data available for use in assessing compliance.

4.5 Receptor Data

Modeled receptors were placed in all areas considered as "ambient air" pursuant to 40 CFR 50.1(e). Ambient air is defined as that portion of the atmosphere, external to buildings, to which the general public has access. Approximately 14,100 receptors were used in the AERMOD significant impacts analysis. The receptor grid consisted of three cartesian grids and receptors located at 50m intervals along the facility fence line.

The first cartesian grid extended to approximately 3.0km from the facility in all directions. Receptors in this region were spaced at 100m intervals. The second grid extended to 7.5km. Receptor spacing in this region were 250m. A third grid extended to 15km with a spacing of 500m. The receptor grid was designed such that maximum facility impacts fall within the 100m spacing of receptors. The receptor grid spacing is presented in Table 2.

Table 2. Receptor Grid Spacing

Receptor Spacing (m)	Distance from Facility (m)
100	3,000
250	5,000
500	15,000

The US Steel facility is located in southern Illinois. Terrain within 10km of the site is generally flat. Receptor elevations and hill height scale factors were calculated with AERMAP (18081). The elevation data were obtained from the USGS one arc second National Elevation Data (NED) obtained from the USGS. Locations were based upon a NAD83, UTM Zone 15 projection. The near-field receptor grid is presented in Figure 5.

4.6 Meteorological Data

The 2016-2020, 5-year sequential hourly surface meteorological data from the National Weather Service (NWS) at St. Louis Lambert Field (WBAN No. 13994) and upper air data from the NWS station in Lincoln, IL (WBAN No. 04833) were used in the analysis. These data were processed into a "model-ready" format using AERMET version 21112.

The AERMET meteorological processor requires estimates of the following surface characteristics: surface roughness length, albedo, and Bowen ratio. The surface roughness length is related to the height of obstacles to the wind flow. It is the height above the surface where the average wind speed is zero. The smoother the surface, the lower the roughness length. The surface roughness length influences the surface shear stress and is an important factor in calculating mechanical turbulence and stability. The albedo is the fraction of the total incident solar radiation reflected by the surface back to space without absorption.

Figure 5. US Steel Facility Near-field Receptor Grid

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The Bowen ratio is an indicator of surface moisture and is the ratio of the sensible heat flux to the latent heat flux. The albedo and Bowen ratio are used for determining the planetary boundary layer parameters for convective conditions due to the surface sensible heat flux. Estimates of the surface characteristics were made by the IEPA using USEPA's AERSURFACE program (Version 13016) and provided to RTP Environmental. A 1km search radius was employed at the location of the meteorological tower. Twelve sectors of 30 degrees each and seasonal resolution were used in the AERSURFACE analysis. RTP employed the "ADJ_U*" option to allow for adjustments to the friction velocity under low wind speeds was employed.

The use of NWS meteorological data for dispersion modeling can often lead to a high incidence of calms and variable wind conditions if the data are collected by Automated Surface Observing Stations ("ASOS"), as are in use at most NWS stations since the mid-1990's. A calm wind is defined as a wind speed less than 3 knots and is assigned a value of 0 knots. In addition, variable wind observations may include wind speeds up to 6 knots, but the wind direction is reported as missing, if the wind direction varies more than 60 degrees during the 2-minute averaging period for the observation. The AERMOD model currently cannot simulate dispersion under calm or missing wind conditions. To reduce the number of calms and missing winds in the surface data, archived 1-minute winds for the ASOS stations were used to calculate hourly average wind speed and directions, which were used to supplement the standard archive of hourly observed winds processed in AERMET. The USEPA AERMINUTE program (Version 15272) was used for these calculations. A wind rose of the 5-year meteorological dataset is provided in Figure 6.

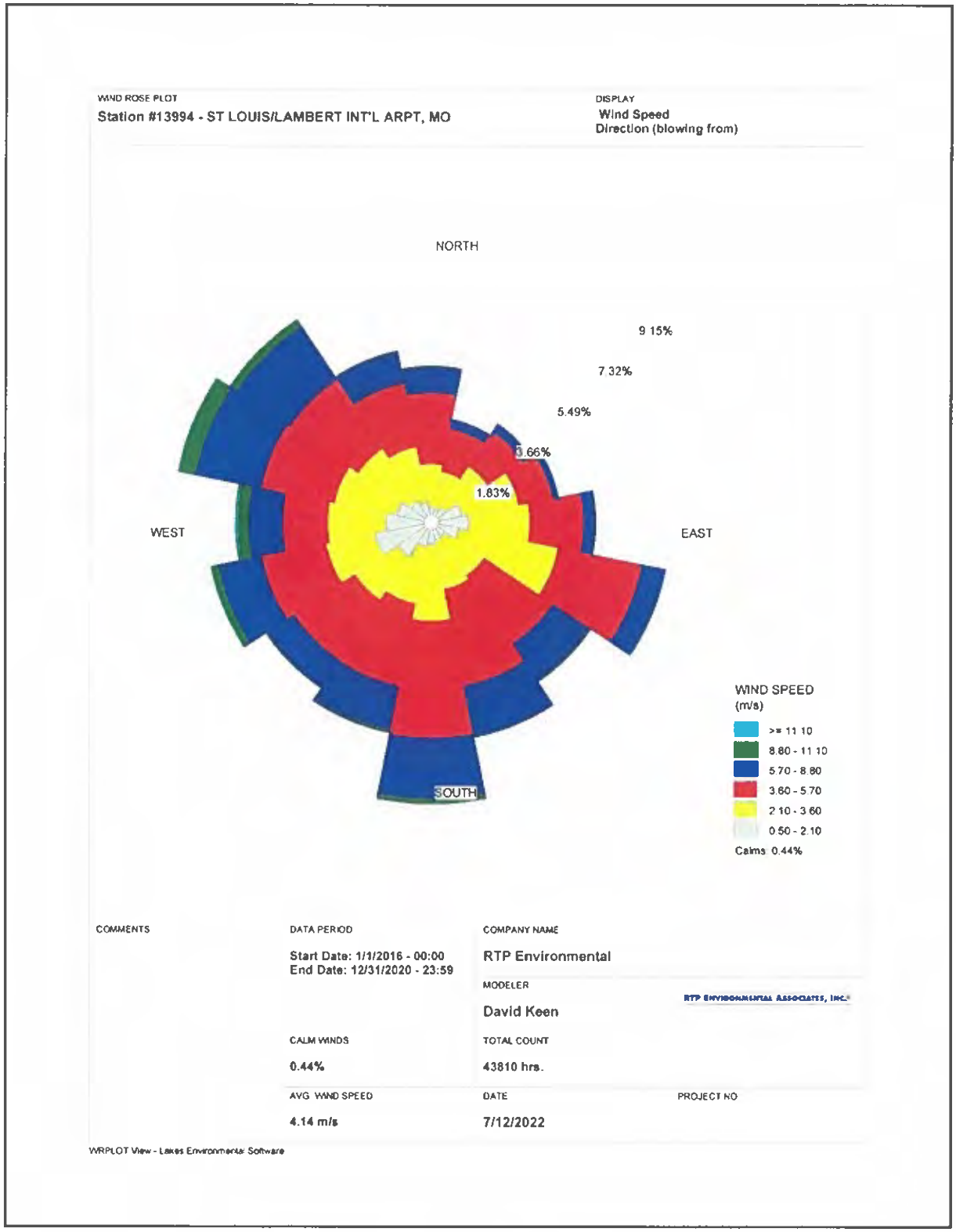

Figure 6. Lambert Field Windrose 2014-2018.

5.0 MODELING METHODOLOGY

5.1 Pollutants Subject to Review

USS Steel is proposing changes to the CO emission limitations in the 1996 Construction Permit that were established per the PSD requirements. Therefore, as requested by Illinois EPA, dispersion modeling of CO emissions have been evaluated and compared to the NAAQS.

5.2 Significant Impact Analysis

The air quality analysis was conducted in two phases: an initial or significant impact analysis, and a refined phase NAAQS analysis. In the significant impact analysis, the calculated maximum impacts due to the project were determined for CO.[b] These impacts determined the net change in air quality resulting from the proposed revision to modification permitted under the 1996 Construction Permit. Five years of meteorological data were used in the significant impact analysis. Maximum modeled CO concentrations were compared to the significance levels. The PSD Class II Significant Impact Levels for CO are listed in Table 3.

Table 3. PSD Class II Significant Impact Levels

Pollutant	Averaging Time	PSD Class II Significant Impact Levels ($\mu g/m^3$)
CO	1-hour	2,000
	8-hour	500

[b] For some of the affected emissions units, in place of project related emissions increases, we conservatively used the potential to emit of CO.

5.3 NAAQS Analysis

Following the determination of significant impacts, a refined air quality analysis to determine compliance with the CO NAAQS was conducted. In the NAAQS analysis, impacts from the US Steel facility were added to concentrations calculated from other nearby sources, plus a regional background concentration. The resultant total concentrations were compared to the NAAQS to assess compliance. The receptors modeled in the NAAQS analyses were limited to those showing a significant CO impact. Five years of meteorological data were again used in this analysis.

Nearby Source Inventory

Off-site sources were included in the NAAQS analysis. A 50km radius was used to define the screening area. A list of sources that are located within the screening area has been obtained from the IEPA as well as the Missouri Department of Natural Resources ("MDNR"). Section 8.3.3.b of Appendix W to 40 CFR Part 51 states that the number of nearby sources to be explicitly modeled is expected to be few, except in unusual situations. Appendix W further states that the sources to be included will usually be located within the first 10 to 20km from the source under consideration. In addition, it states that identification of nearby sources calls for the exercise of professional judgment by the appropriate reviewing authority. Further, USEPA's Guidance for PM2.5 Permit Modeling reiterates the Appendix W emphasis on a 10km screening radius for determining which nearby sources to include in the cumulative modeling analysis.

We conservatively included all sources provided by the IEPA and MDNR that are located within 50km of the US Steel facility. Total facility, potential emissions (i.e., all sources at a facility) were used in the NAAQS evaluation.

NAAQS Compliance Assessment

Ambient background concentrations (as discussed in more detail in Section 4.4) were then added to assess NAAQS compliance. The modeled and monitored values shown in Table 4 were used for this assessment.

Table 4. Monitored and Modeled Values Used to Assess NAAQS Compliance

Pollutant	Averaging Time	Monitored Value	Modeled Value
CO	1-hour & 8-hour	Maximum over 3 years	Highest, second high over 5 years

The NAAQS are shown in Table 5.

Table 5. National Ambient Air Quality Standards

Pollutant	Averaging Time	National Ambient Air Quality Standards ($\mu g/m^3$)	
		Primary	Secondary
CO	1-hour	40,000	--
	8-hour	10,000	--

6.0 RESULTS

Attachment B to this report provides the model summary output. AERMOD input and output files, including the BPIP-PRIME files, are included on the enclosed CD.

6.1 Significant Impact Analysis Results

The project results in CO impacts in excess of the 8-hour Significant Impact Level shown in Table 3. The significant impact analysis results are presented in Table 6. Based upon the results of the significant impacts analysis, a cumulative, NAAQS analysis was conducted.

6.2 NAAQS Analysis Results

Following the determination of significant impacts, an analysis was conducted to assess compliance with the CO NAAQS. The project resulted in insignificant 1-hr CO impacts, as a result the 1-hr average was not included in the NAAQS assessment. All sources located within 50km of the US Steel facility were modeled in conjunction with the US Steel facility in assessing compliance. Background concentrations were added to the model results to assess compliance. Evaluation of compliance with the CO short term standards was based upon the maximum of the highest-second-highest values from the five-year meteorological dataset.

The results of the NAAQS analysis are presented in Table 7. As can be seen, the model demonstrates compliance.

Table 6. Significant Impact Analysis Results

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	PSD Significant Class II Impact Level ($\mu g/m^3$)	Significant Monitoring Concentration ($\mu g/m^3$)	Maximum Distance to a Significant Impact (km)
CO	1-hr	1,157	2,000	N/A	NA
	8-hr	692	500	575	2.2

N/A – Not applicable, impacts calculated to be insignificant.

Table 7. NAAQS Analysis Results

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Comment
CO	8-hour	2,045	1,646	3,691	10,000	Compliant

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ATTACHMENT A
MODELING INPUT DATA

US Steel Granite City Point Source Model Input (NAD83, Zone 15)
Last Update (10-5-22)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	CO Potential Emissions (lb/hr)	CO Emissions Increase (lb/hr)
132833	DEFAULT	Blast Furnace A Stoves	749816.02	4286809.08	416.83	217.0	500.0	49.66	7.0	1604.52	1604.52
132838	DEFAULT	Blast Furnace B Stoves	749665.50	4286719.93	417.16	225.0	500.0	51.05	9.8	1837.76	1837.76
132837	DEFAULT	Blast Furnace Gas Flare #1	749777.33	4286841.02	418.21	221.8	1831.7	65.62	15.4	6280.99	6280.99
240479	DEFAULT	Blast Furnace Gas Flare #2	749865.93	4286920.23	416.24	221.8	1831.7	65.62	15.4	6280.99	0.00
132836	DEFAULT	Casthouse Baghouse	749616.61	4286732.18	417.75	63.0	150.0	63.88	11.0	63.77	21.68
132927	DEFAULT	Blast Furnace A and B Iron Spout Baghouse	749831.35	4286818.73	415.98	43.0	123.0	43.04	7.8	6.43	2.19
238459	DEFAULT	Cogeneration Boiler BFG-fired some NG-firing	749776.38	4287073.85	415.19	137.0	400.1	62.11	6.0	203.08	0.00
132867	DEFAULT	Boiler 11	749865.15	4286883.84	416.24	149.9	335.0	29.82	8.0	90.48	90.48
132872	DEFAULT	Boiler 12	749881.40	4286887.85	416.50	150.0	335.0	26.74	8.0	90.48	90.48
BOF	DEFAULT	BOF ESP	748415.00	4286681.00	416.57	125.0	400.0	50.00	15.0	4121.79	1274.01
BOF2ND	DEFAULT	BOF Secondary Baghouse	748625.57	4286763.99	413.00	160.0	275.0	38.55	17.0	19.69	19.69
132842	DEFAULT	Slab Reheat Furnace #1	747729.70	4286762.02	417.52	56.8	650.1	44.88	8.0	26.52	0.00
172532	DEFAULT	Slab Reheat Furnace #2	747715.25	4286747.05	416.47	56.8	650.1	44.88	8.0	26.52	0.00
172512	DEFAULT	Slab Reheat Furnace #3	747700.79	4286730.53	415.88	56.8	650.1	44.88	8.0	26.52	0.00
172514	DEFAULT	Slab Reheat Furnace #4	747700.27	4286714.00	416.08	146.0	736.1	26.94	13.7	40.76	0.00
132849	DEFAULT	Galvanizing line #8 - fume scrubber	748883.00	4287195.00	416.57	80.0	80.0	41.66	3.0	0.00	0.00
229337	DEFAULT	Galvanizing line #8 - space heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229338	DEFAULT	Galvanizing line #8 - drying oven and storage area heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229339	DEFAULT	Galvanizing line #8 - miscellaneous heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229601	DEFAULT	Emergency Generator (3500 HP)	749641.00	4286863.00	416.17	37.0	442.0	32.80	1.9	0.00	0.00
GTEWY1	DEFAULT	Gateway Energy & Coke Co., LLC - Coking (New Main Stack)	749279.00	4286984.00	415.78	199.9	293.1	48.249	13.0	2.62E+01	0.00
GTEWY2	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 2 of 6	749549.00	4287055.00	418.18	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY3	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 3 of 6	749433.00	4286972.00	418.93	26.0	299.9	68.093	4.5	6.64E-02	0.00
GTEWY4	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 4 of 6	749357.00	4286918.00	418.64	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY5	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 5 of 6	749278.00	4286861.00	418.44	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY6	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 6 of 6	749202.00	4286808.00	418.60	26.0	299.9	68.093	4.5	6.64E-02	0.00
GTEWY7	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 1 of 6	749624.00	4287108.00	418.50	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY8	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 1	749199.00	4286809.00	418.60	85.0	2000.0	74.653	9.0	7.30E-01	0.00
GTEWY9	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 1 of 6	749620.00	4287113.00	418.11	20.0	400.0	69.602	5.0	1.31E+00	0.00
GTEWY10	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 2	749274.00	4286862.00	418.31	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY11	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 3	749353.00	4286919.00	418.67	85.0	2000.0	74.653	9.0	7.30E-01	0.00
GTEWY12	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 4	749429.00	4286973.00	419.00	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY13	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 5	749545.00	4287055.00	418.27	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY14	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 6	749620.00	4287109.00	418.34	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY15	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 2 of 6	749545.00	4287060.00	418.24	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY16	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 3 of 6	749429.00	4286977.00	418.93	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY17	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 4 of 6	749352.00	4286923.00	418.57	20.0	400.0	69.602	5.0	1.31E+00	0.00
GTEWY18	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 5 of 6	749274.00	4286866.00	418.24	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY19	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 6 of 6	749198.00	4286813.00	418.77	20.0	400.0	69.602	5.0	1.32E+00	0.00

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US Steel Granite City Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	CO Potential Emissions (lb/hr)	CO Emissions Increase (lb/hr)
26070	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748457.20	4286596.40	413.88	169.0	21.6	78.6	1.373	1.373
26080	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748466.60	4286606.00	413.98	169.0	21.6	78.6	1.373	1.373
26090	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748475.40	4286616.10	413.88	169.0	21.6	78.6	1.373	1.373
26100	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748483.60	4286624.10	413.85	169.0	21.6	78.6	1.029	1.029
26110	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748495.20	4286635.90	414.01	169.0	21.6	78.6	1.029	0.000
26120	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748504.10	4286646.00	414.37	169.0	21.6	78.6	1.029	0.000
26130	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748513.90	4286656.70	414.63	169.0	21.6	78.6	1.029	0.000
26570	Galv Line 8	748368.26	4287046.91	420.41	101.7	12.3	48.5	0.254	0.000
26580	Galv Line 8	748374.01	4287041.49	420.11	101.7	12.3	48.5	0.254	0.000
26590	Galv Line 8	748379.56	4287036.28	419.82	101.7	12.3	48.5	0.254	0.000
26600	Galv Line 8	748420.52	4286997.79	419.55	38.0	15.1	38.0	0.254	0.000
26610	Galv Line 8	748428.00	4286990.81	419.95	38.0	15.1	38.0	0.254	0.000
26620	Galv Line 8	748436.60	4286982.91	419.85	38.0	15.1	38.0	0.254	0.000
26630	Galv Line 8	748444.54	4286975.49	419.62	38.0	15.1	38.0	0.254	0.000
26640	Galv Line 8	748451.78	4286968.87	418.50	38.0	15.1	38.0	0.254	0.000
26650	Galv Line 8	748324.79	4287118.60	421.65	38.0	15.6	17.7	0.254	0.000
26660	Galv Line 8	748331.95	4287112.00	421.52	38.0	15.6	17.7	0.254	0.000
26670	Galv Line 8	748340.34	4287104.30	421.39	38.0	15.6	17.7	0.254	0.000
26680	Galv Line 8	748347.69	4287097.51	421.29	38.0	15.6	17.7	0.254	0.000
26690	Galv Line 8	748354.48	4287091.31	421.16	38.0	15.6	17.7	0.254	0.000
26700	Galv Line 8	748362.29	4287084.18	420.87	38.0	15.6	17.7	0.254	0.000
26710	Galv Line 8	748370.46	4287076.71	420.51	38.0	15.6	17.7	0.254	0.000
26720	Galv Line 8	748378.04	4287069.70	420.14	38.0	15.6	17.7	0.254	0.000
26730	Galv Line 8	748385.51	4287062.91	419.52	38.0	15.6	17.7	0.254	0.000
0126A_1	Slag Pit Volume 1	749691.91	4286762.44	418.70	53.0	29.0	17.7	0.000	0.000
0126A_2	Slag Pit Volume 2	749708.01	4286772.50	421.33	53.0	29.0	17.7	0.000	0.000
0126A_3	Slag Pit Volume 3	749724.24	4286782.31	420.44	53.0	29.0	17.7	0.000	0.000
0126A_4	Slag Pit Volume 4	749740.84	4286791.62	419.00	53.0	29.0	17.7	0.000	0.000
0126A_5	Slag Pit Volume 5	749757.20	4286801.31	418.86	53.0	29.0	17.7	0.000	0.000

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Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL131772	DEFAULT	Star Memorial Pet Crematory - Crematory	749244.00	4324486.00	641.44	16.0	800.0	27.585	1.0	2.70E+00	0.00E+00	0.00E+00
IL131841	DEFAULT	Alton Steel Inc. - Electric arc furnaces	747753.00	4307832.00	433.07	100.0	250.1	31.029	24.2	2.25E+02	7.07E+01	7.07E+01
IL131845	DEFAULT	Alton Steel Inc. - 14 inch rolling mill reheat furnace	747645.00	4307692.00	432.64	106.0	200.0	2.394	16.0	2.40E+01	0.00E+00	0.00E+00
IL131945	DEFAULT	Alton Memorial Hospital - 3 Boilers	746364.00	4309470.00	521.36	89.0	389.9	24.108	3.0	0.00E+00	1.28E+01	1.28E+01
IL132052	DEFAULT	Olin Winchester, LLC - Package Boiler (B-4)	750887.00	4308614.00	435.63	35.0	400.0	84.854	2.0	0.00E+00	4.57E+00	4.57E+00
IL132062	DEFAULT	Olin Winchester, LLC - Package Boiler (B-3)	750891.00	4308619.00	435.89	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132063	DEFAULT	Olin Winchester, LLC - Package Boiler (B-2)	750892.00	4308613.00	435.53	35.0	400.0	84.854	2.0	0.00E+00	4.57E+00	4.57E+00
IL132064	DEFAULT	Olin Winchester, LLC - Package Boiler (B-1)	750888.00	4308609.00	435.30	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132065	DEFAULT	Olin Winchester, LLC - Package Boiler (B-5)	750883.00	4308610.00	435.27	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132148	DEFAULT	Amsted Rail Co., Inc. - Electric Arc Furnace #1 (EF-1)	747122.00	4287625.00	425.26	55.0	250.1	54.087	6.2	3.84E+01	4.07E+00	4.07E+00
IL132149	DEFAULT	Amsted Rail Co., Inc. - Electric Arc Furnace #2 (EF-2)	747147.00	4287625.00	425.20	44.0	250.1	42.443	7.0	3.84E+01	4.07E+00	4.07E+00
IL132193	DEFAULT	Velocity Services, LLC. - North American Boiler	748928.00	4286192.00	416.21	27.0	450.1	24.305	2.3	2.36E+00	0.00E+00	0.00E+00
IL132194	DEFAULT	Velocity Services, LLC. - Cleaver Brooks boiler	748928.00	4286192.00	416.21	29.0	440.0	39.590	2.0	2.36E+00	0.00E+00	0.00E+00
IL132225	DEFAULT	Gateway Regional Medical Center - Boiler #3	748587.00	4287448.00	426.05	48.0	600.0	41.131	4.5	1.53E+00	1.28E+01	1.28E+01
IL132226	DEFAULT	Gateway Regional Medical Center - Boilers #1 and 2	748592.00	4287452.00	425.95	48.0	600.0	38.966	4.5	3.07E+00	2.57E+01	2.57E+01
IL132247	DEFAULT	Prairie Farms Dairy, Inc. - Boiler #1	747505.00	4287550.00	424.64	75.0	375.0	30.078	2.5	1.30E-01	0.00E+00	0.00E+00
IL132248	DEFAULT	Prairie Farms Dairy, Inc. - Boiler #2	747505.00	4287550.00	424.64	25.0	375.0	65.010	2.5	2.40E-01	1.19E+00	1.19E+00
IL132324	DEFAULT	Precoat Metals - Afterburner AB1 and AB2	749469.00	4292538.00	424.97	34.0	1000.0	64.518	4.0	3.23E+00	0.00E+00	0.00E+00
IL132424	DEFAULT	Highland Electric Light Plant - Engine IC-5	788126.93	4293320.17	534.65	28.0	612.1	84.854	2.0	2.07E+01	0.00E+00	0.00E+00
IL132425	DEFAULT	Highland Electric Light Plant - Engine IC-7	788126.93	4293320.17	534.65	57.0	734.1	6.265	11.4	2.51E+01	0.00E+00	0.00E+00
IL132496	DEFAULT	ConocoPhillips Co. - Catalytic reformer #1 (STK12-4)	754869.00	4302625.00	442.55	349.9	600.0	56.810	15.0	6.28E+01	9.53E+01	9.53E+01
IL132510	DEFAULT	ConocoPhillips Co. - Distilling unit: HTR-DU1-F301 (STK5-2)	754327.00	4303077.00	444.69	185.0	319.0	21.878	8.0	1.21E+01	0.00E+00	0.00E+00
IL132511	DEFAULT	ConocoPhillips Co. - Distilling unit: HTR-DU1-F302 (STK5-1)	754326.00	4303100.00	444.49	150.0	150.0	11.677	8.5	1.57E+01	5.29E+00	5.29E+00
IL132512	DEFAULT	ConocoPhillips Co. - Steam methane reformer: SMR Heater (HTR-SMR - STK12-8)	754873.00	4302750.00	443.04	199.9	749.9	36.638	12.0	4.75E+01	6.82E+01	6.82E+01
IL132516	DEFAULT	ConocoPhillips Co. - Rectified absorption unit: Reboiler heater (HTR-RAU-DEBUT - STK5-5)	754470.00	4302943.00	444.98	75.0	850.0	34.440	5.0	7.14E+00	0.00E+00	0.00E+00
IL132517	DEFAULT	ConocoPhillips Co. - Rectified absorption system to RFG	754240.00	4303144.00	443.47	150.0	710.0	26.338	6.0	0.00E+00	1.20E+02	1.20E+02
IL132519	DEFAULT	ConocoPhillips Co. - Cracked absorption unit (HTR-CAU-ROSTILL - STK5-4)	754468.00	4302963.00	445.41	85.0	800.0	22.173	7.2	6.72E+00	0.00E+00	0.00E+00
IL132526	DEFAULT	ConocoPhillips Co. - CCU-1 Startup heater B-1	754240.00	4303144.00	443.47	212.0	500.1	86.953	4.5	0.00E+00	3.55E+01	3.55E+01
IL132535	DEFAULT	ConocoPhillips Co. - Catalytic cracking unit #2 (STK6-3)	754848.00	4302895.00	443.27	199.9	175.0	49.954	11.0	4.72E+01	2.17E+03	2.17E+03
IL132551	DEFAULT	ConocoPhillips Co. - Alkylation unit: HTR-ALKY-HM2 (STK6-6)	754930.00	4303043.00	442.59	150.9	475.1	12.398	5.7	4.32E+00	0.00E+00	0.00E+00
IL132556	DEFAULT	ConocoPhillips Co. - Utility boiler #15 (STK12-15)	754859.00	4302776.00	443.44	132.0	425.0	43.165	7.0	2.65E+01	1.62E+01	1.62E+01
IL132557	DEFAULT	ConocoPhillips Co. - Utility boiler #16 (STK12-16)	754875.00	4302778.00	443.21	132.0	425.0	43.165	7.0	2.78E+01	1.41E+01	1.41E+01
IL132558	DEFAULT	ConocoPhillips Co. - Utility boiler 17 (STK12-17)	754902.00	4302784.00	442.91	150.0	317.0	52.218	10.0	3.60E+01	1.82E+01	1.82E+01
IL132559	DEFAULT	ConocoPhillips Co. - Utility boiler 18 (STK6-9)	754919.00	4302809.00	442.52	100.0	325.0	14.465	6.2	3.00E+01	6.61E+00	6.61E+00
IL132561	DEFAULT	ConocoPhillips Co. - Hydrodesulfurization unit #1: Charge heater (HTR-HDU-1 - STK13-1)	755217.00	4302588.00	442.16	150.0	790.1	32.144	5.0	5.60E+00	0.00E+00	0.00E+00
IL132564	DEFAULT	ConocoPhillips Co. - Hydrodesulfurization unit #2: Charge heater (HTR-HDU-2 - STK12-14)	755022.00	4302530.00	442.95	150.0	900.1	31.422	5.8	4.90E+00	0.00E+00	0.00E+00
IL132565	DEFAULT	ConocoPhillips Co. - Cat reformer #3: Stabilizer reboiler (HTR-CR3-H2 - STK12-9)	755014.00	4302580.00	442.62	150.0	950.1	7.019	7.8	4.79E+00	0.00E+00	0.00E+00
IL132567	DEFAULT	ConocoPhillips Co. - Catalytic reformer unit #3: Charge heater (HTR-CR3 -H4)	755019.00	4302571.00	442.65	150.0	800.0	28.766	7.8	1.75E+01	8.04E+00	8.04E+00
IL132568	DEFAULT	ConocoPhillips Co. - Catalytic reformer unit #3: First interreactor heater (HTR-CR3-H5)	755019.00	4302548.00	442.78	150.0	749.9	26.929	7.8	2.11E+01	6.93E+00	6.93E+00
IL132569	DEFAULT	ConocoPhillips Co. - Cat reformer #3: Second interreactor heater (HTR-CR3-H6 - STK12-12)	755019.00	4302559.00	442.72	150.0	749.9	14.006	7.8	5.55E+00	0.00E+00	0.00E+00
IL132594	DEFAULT	ConocoPhillips Co. - Sulfuric acid tank	755114.00	4302829.00	441.93	40.0	186.0	26.273	2.0	1.78E+00	2.35E+00	2.35E+00
IL132598	DEFAULT	ConocoPhillips Co. - CCU-2 Startup heater B-1	754240.00	4303144.00	443.47	16.0	509.1	32.964	3.2	4.40E-01	0.00E+00	0.00E+00
IL132599	DEFAULT	Airgas USA, LLC - Liquified carbon dioxide plant	756314.00	4302509.00	435.93	30.0	70.1	79.573	0.2	4.10E-01	0.00E+00	0.00E+00
IL132701	DEFAULT	Kinder Morgan Liquids Terminals, LLC - New Truck loading rack	752998.00	4303578.00	435.63	20.0	70.1	0.262	2.2	4.87E+00	0.00E+00	0.00E+00
IL132739	DEFAULT	National Maintenance and Repair - Cleaver Brooks boiler (Stack 1 of 2)	750915.00	4300904.00	402.46	34.0	450.1	23.321	2.0	1.90E+00	5.00E+00	5.00E+00
IL132777	DEFAULT	Elias Kallal & Schaaf Funeral Home & Crematory - Crematorium	742098.00	4312210.00	627.20	30.0	1400.1	18.368	1.7	3.00E+00	0.00E+00	0.00E+00
IL132781	DEFAULT	Christ Bros Products, LLC - Baghouse	754160.00	4283243.00	419.46	32.0	240.0	83.706	3.9	5.56E+01	2.48E+01	2.48E+01
IL132928	DEFAULT	Enable Mississippi River Transmission, LLC - Engine SN-02	782556.00	4285336.00	492.29	30.0	1000.0	9.414	2.6	1.36E+01	0.00E+00	0.00E+00
IL133625	DEFAULT	Waterloo City Light Plant - Engine #1	748326.00	4246769.00	640.45	29.0	749.9	13.579	2.3	4.00E+01	1.35E+00	1.35E+00
IL133627	DEFAULT	Waterloo City Light Plant - Engine #9	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL133628	DEFAULT	Waterloo City Light Plant - Engine #10	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL135983	DEFAULT	Lakeview Memorial Gardens - Crematory	762896.00	4273894.00	579.89	16.0	895.0	26.666	2.6	8.40E+00	0.00E+00	0.00E+00
IL136012	DEFAULT	Breckenridge of IL - Natural gas combustion	756461.00	4277782.00	423.82	38.0	341.0	25.781	2.7	3.94E+00	0.00E+00	0.00E+00
IL136014	DEFAULT	Touchette Regional Hospital - 2 Boilers	751890.00	4273014.00	415.94	39.0	800.0	6.560	3.7	2.26E+00	0.00E+00	0.00E+00
IL136018	DEFAULT	Upchurch Ready Mix Concrete Company - Boiler	749859.00	4276616.00	418.44	30.0	376.1	29.684	3.7	0.00E+00	3.00E-01	3.00E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL136098	DEFAULT	Safety Kleen Systems, Inc. - Pipe still (heat exchanger)	749786.00	4276425.00	420.28	15.0	170.0	0.295	1.0	0.00E+00	1.38E+00	1.38E+00
IL136125	DEFAULT	Milam Recycling and Disposal Facility - Open flare	750434.00	4282812.00	420.54	42.0	1800.1	10.070	1.0	1.83E+01	6.00E+00	6.00E+00
IL136129	DEFAULT	Village of Freeburg - Engine #6	769352.00	4257578.00	509.42	24.0	749.9	24.239	1.8	3.93E+00	0.00E+00	0.00E+00
IL136130	DEFAULT	Village of Freeburg - Engine #4	769352.00	4257578.00	509.42	25.0	550.0	87.871	1.3	9.60E+00	0.00E+00	0.00E+00
IL136131	DEFAULT	Village of Freeburg - Engine #7	769352.00	4257578.00	509.42	22.0	900.1	18.926	2.7	4.50E+01	4.43E+00	4.43E+00
IL136169	DEFAULT	Darling Ingredients, Inc. - Continuous rendering process	747472.00	4281438.00	414.93	44.0	74.9	84.854	4.0	6.67E+00	1.43E+00	1.43E+00
IL136187	DEFAULT	Asphalt Sales & Products Inc. - Drum mix asphalt plant	772959.00	4275690.00	514.30	33.0	325.0	47.134	4.5	6.49E+01	2.90E+01	2.90E+01
IL136486	DEFAULT	Cerro Flow Products, LLC. - Piercing Mill Furnace #2	746228.00	4275272.00	407.32	25.0	299.9	38.901	2.0	8.65E-01	0.00E+00	0.00E+00
IL136547	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	747162.00	4269805.00	448.72	36.0	315.1	86.592	3.5	1.34E+01	5.91E+00	5.91E+00
IL142809	DEFAULT	Magnesium Elektron North America - Combustion units	746452.00	4285724.00	415.49	60.0	450.1	30.537	2.0	1.02E+01	4.44E+00	4.44E+00
IL143317	DEFAULT	Waterloo City Light Plant - Engine #11	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL143319	DEFAULT	Waterloo City Light Plant - Engine #7	748326.00	4246769.00	640.45	33.0	749.9	84.854	2.0	3.41E+01	0.00E+00	0.00E+00
IL143320	DEFAULT	Waterloo City Light Plant - Engine #8	748326.00	4246769.00	640.45	27.0	680.1	84.230	2.3	1.87E+01	1.36E+00	1.36E+00
IL145809	DEFAULT	ConocoPhillips Co. - Crude heaters (STK5-3)	754415.00	4303016.00	445.93	311.9	530.0	87.970	14.0	7.81E+01	1.98E+01	1.98E+01
IL145820	DEFAULT	ConocoPhillips Co. - Sulfur recovery unit #1 (STK3-1)	752928.00	4303077.00	428.41	125.0	965.9	17.712	7.2	0.00E+00	4.05E+01	4.05E+01
IL145826	DEFAULT	ConocoPhillips Co. - Supplemental air compressor engine CCU-1	754240.00	4303144.00	443.47	15.0	117.1	20.369	1.5	7.10E-01	1.74E+00	1.74E+00
IL145838	DEFAULT	ConocoPhillips Co. - Sulfur recovery unit #2 (STK3-2)	752929.00	4303071.00	428.38	125.0	965.9	17.712	7.2	0.00E+00	4.05E+01	4.05E+01
IL145850	DEFAULT	ConocoPhillips Co. - Flare for major effluent treatment project	754240.00	4303144.00	443.47	30.0	78.0	14.006	9.2	4.51E+00	0.00E+00	0.00E+00
IL147845	DEFAULT	Mayco Mfg, LLC - Britt kettles combustion stack	747189.00	4286970.00	421.78	34.0	250.1	2.362	1.1	2.00E-01	0.00E+00	0.00E+00
IL147846	DEFAULT	Mayco Mfg, LLC - Mixed metals A-II dross baghouse discharge stack	747189.00	4286970.00	421.78	30.0	95.1	52.611	5.0	5.77E-01	0.00E+00	0.00E+00
IL148354	DEFAULT	ConocoPhillips Co. - Catalytic cracking unit #1 (STK6-2)	754864.00	4302895.00	442.88	199.9	175.0	49.954	11.0	2.32E+01	3.84E+01	3.84E+01
IL149873	DEFAULT	City of Alton - Incinerator	749456.00	4310990.00	446.33	25.0	1400.1	53.038	1.0	1.40E+00	0.00E+00	0.00E+00
IL149908	DEFAULT	Charles E. Mahoney - Drum mix asphalt plant	749517.00	4309892.00	443.14	25.0	295.1	66.289	4.0	5.74E+01	2.56E+01	2.56E+01
IL154190	DEFAULT	Milam Recycling and Disposal Facility - Engine #1	750544.00	4282853.00	411.88	26.0	820.0	86.231	0.8	6.93E+00	1.78E+00	1.78E+00
IL154191	DEFAULT	Milam Recycling and Disposal Facility - Engine #2	750538.00	4282852.00	412.01	26.0	820.0	86.231	0.8	6.93E+00	1.78E+00	1.78E+00
IL154192	DEFAULT	Milam Recycling and Disposal Facility - Engine #3	750548.00	4282855.00	411.81	26.0	820.0	86.231	0.8	7.14E+00	1.84E+00	1.84E+00
IL155302	DEFAULT	Alton Steel Inc. - Ladle Furnace	747753.00	4307832.00	433.07	74.0	275.1	87.215	3.0	2.24E+01	1.12E+01	1.12E+01
IL155304	DEFAULT	Precoat Metals - Boiler B1	749469.00	4292538.00	424.97	24.0	700.1	20.730	1.6	8.80E-01	0.00E+00	0.00E+00
IL155305	DEFAULT	Granite City Pickling & Warehousing - Boiler	746973.00	4286890.00	422.41	50.0	331.1	15.449	2.7	7.06E-01	0.00E+00	0.00E+00
IL155307	DEFAULT	Kraft Heinz Co. - Boiler B	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL155437	DEFAULT	Southwestern Illinois Correctional Center - 2 Boilers	753202.00	4278290.00	421.46	32.0	450.1	15.285	1.5	7.06E-01	0.00E+00	0.00E+00
IL155441	DEFAULT	Asphalt Sales & Products Inc. - Asphalt heaters and boilers	772959.00	4275690.00	514.30	33.0	341.0	18.368	3.2	0.00E+00	2.80E+00	2.80E+00
IL156624	DEFAULT	US Air Force/Scott Air Force Base - Boilers and Heaters	774337.00	4270862.00	440.32	30.0	331.1	23.288	2.2	4.81E+00	0.00E+00	0.00E+00
IL156970	DEFAULT	Olin Winchester, LLC - Package Boiler (B-6)	750906.00	4308625.00	436.06	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL159940	DEFAULT	Afton Chemical Corp. - 258 Sulfonation Stack	746513.00	4276305.00	407.05	158.0	70.1	41.820	1.0	0.00E+00	5.59E+00	5.59E+00
IL159942	DEFAULT	Afton Chemical Corp. - Unit 266: Flare 36-0011/36-0610	746653.00	4276356.00	410.10	100.0	700.1	59.368	0.7	8.55E+00	4.90E+01	4.90E+01
IL159965	DEFAULT	Afton Chemical Corp. - Flare 36-0219	746513.00	4276305.00	407.05	146.0	1000.0	42.837	0.4	3.84E+00	2.74E+01	2.74E+01
IL160741	DEFAULT	Brady McCasland, Inc. - Compaction plant	748518.00	4276987.00	413.75	17.0	1521.1	65.469	1.8	5.20E-01	0.00E+00	0.00E+00
IL160742	DEFAULT	Darling Ingredients, Inc. - Kewanee boiler	747472.00	4281438.00	414.93	35.0	450.1	54.448	2.6	1.96E+00	1.51E+01	1.51E+01
IL160799	DEFAULT	ConocoPhillips Co. - Supplemental air compressor engine CCU-2	754240.00	4303144.00	443.47	48.0	117.1	20.369	1.5	0.00E+00	1.74E+00	1.74E+00
IL160898	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0110	746653.00	4276489.00	405.22	45.0	350.0	17.318	7.0	4.89E+00	0.00E+00	0.00E+00
IL165120	DEFAULT	BFI Waste Systems of North America, Inc. - Flare	758882.00	4264336.00	574.97	35.0	1600.1	23.485	0.8	6.80E+00	0.00E+00	0.00E+00
IL166479	DEFAULT	Union Electric Co. - Turbine CT02A	745573.00	4283620.00	420.60	30.0	850.0	18.860	11.4	7.73E+01	2.73E+01	2.73E+01
IL166491	DEFAULT	Enable Mississippi River Transmission, LLC - Turbine SN-03	782556.00	4285336.00	492.29	30.0	749.9	86.854	2.5	9.56E+00	0.00E+00	0.00E+00
IL167781	DEFAULT	Amsted Rail Co., Inc. - Pouring and casting (PR/CST-1)	747025.00	4287611.00	424.80	101.0	251.0	34.768	9.7	0.00E+00	6.70E-01	6.70E-01
IL167787	DEFAULT	Amsted Rail Co., Inc. - Ladle Preheater (LDP-1)	747039.00	4287611.00	424.93	82.0	505.0	31.488	6.1	6.50E+00	2.20E-01	2.20E-01
IL167858	DEFAULT	ConocoPhillips Co. - Scot unit	754240.00	4303144.00	443.47	16.0	115.1	15.580	9.0	0.00E+00	1.72E+02	1.72E+02
IL169226	DEFAULT	Messer, LLC - 2 Boilers	752309.00	4301220.00	434.42	15.0	800.0	0.525	1.4	2.52E+00	0.00E+00	0.00E+00
IL172707	DEFAULT	St. Anthony's Hospital - Boiler #4	745097.00	4310364.00	584.58	64.0	400.0	58.614	2.3	0.00E+00	6.02E+00	6.02E+00
IL179611	DEFAULT	Highland Electric Light Plant - Engine IC-1	788126.93	4293320.17	534.65	12.0	656.0	86.920	1.2	1.44E+01	0.00E+00	0.00E+00
IL179671	DEFAULT	Village of Freeburg - Engine #1	769352.00	4257578.00	509.42	30.0	500.1	40.311	1.0	8.55E+00	8.25E-01	8.25E-01
IL179672	DEFAULT	Village of Freeburg - Engine #2	769352.00	4257578.00	509.42	30.0	500.1	40.311	1.0	8.55E+00	8.25E-01	8.25E-01
IL179673	DEFAULT	Village of Freeburg - Engine #3a	769352.00	4257578.00	509.42	25.0	500.1	55.170	1.0	5.92E+00	0.00E+00	0.00E+00
IL181173	DEFAULT	ConocoPhillips Co. - Loading rack	752292.00	4299987.00	429.92	40.0	1800.1	87.510	2.0	1.53E+00	0.00E+00	0.00E+00
IL183733	DEFAULT	Veolia ES Technical Solutions, LLC - Hazardous waste incinerator #4 (rotary kiln)	745532.00	4275942.00	414.76	57.0	650.9	32.570	2.8	3.17E+00	1.16E+01	1.16E+01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL189069	DEFAULT	US Air Force/Scott Air Force Base - Diesel generators	774337.00	4270862.00	440.32	37.0	402.0	29.389	1.3	5.83E+01	0.00E+00	0.00E+00
IL190090	DEFAULT	Contract Services, LLC - 3 Boilers	746767.00	4275755.00	417.81	40.0	310.0	50.381	4.2	8.53E+00	5.14E+00	5.14E+00
IL192953	DEFAULT	Midwest Metal Coatings, LLC - Chemical coater/infrared oven (CC/ IRO)	748281.00	4290395.00	423.88	34.0	110.0	18.926	3.0	2.90E-01	0.00E+00	0.00E+00
IL192964	DEFAULT	Midwest Metal Coatings, LLC - Afterburner	748281.00	4290395.00	423.88	34.0	900.1	23.780	5.0	3.28E-01	0.00E+00	0.00E+00
IL192967	DEFAULT	Midwest Metal Coatings, LLC - Boiler (B1)	748281.00	4290395.00	423.88	34.0	400.0	67.338	1.5	2.12E+00	0.00E+00	0.00E+00
IL198552	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	778702.00	4276345.00	439.34	35.0	297.1	62.254	3.8	2.95E+01	1.32E+01	1.32E+01
IL201652	DEFAULT	Empire Comfort Systems - Stack	763529.00	4266192.00	477.26	25.0	800.0	14.334	1.0	2.69E+00	0.00E+00	0.00E+00
IL204833	DEFAULT	Milam Recycling and Disposal Facility - 3 Passive solar flares	750550.00	4282537.00	594.06	20.0	1800.1	57.138	0.7	4.23E+00	4.38E+00	4.38E+00
IL207740	DEFAULT	Chemtrade Solutions, LLC - Scrubber C007	753339.00	4281367.00	422.21	30.0	70.1	0.394	0.3	0.00E+00	2.00E-01	2.00E-01
IL208343	DEFAULT	Center Point Terminal Co. - Asphalt and polymer modified blend tank (T-9)	746361.00	4289240.00	416.44	33.0	185.1	0.951	1.5	1.00E-01	0.00E+00	0.00E+00
IL209238	DEFAULT	Concrete Supply, LLC - Natural gas combustion	757768.00	4302270.00	444.69	20.0	341.0	25.781	2.7	9.69E-01	0.00E+00	0.00E+00
IL209433	DEFAULT	Alton Water Treatment Facility - Stack	742583.00	4309460.00	488.98	22.0	400.0	85.083	0.7	0.00E+00	5.50E-01	5.50E-01
IL211274	DEFAULT	Kienstra-Illinois, LLC - Natural gas combustion	764550.00	4296982.00	575.95	20.0	341.0	25.781	2.7	7.68E-01	0.00E+00	0.00E+00
IL211772	DEFAULT	Center Point Terminal Co. - Incinerator/waste heat boiler	746361.00	4289240.00	416.44	18.0	650.0	7.970	2.0	1.83E-01	1.05E+00	1.05E+00
IL212692	DEFAULT	Chain of Rocks Recycling & Disposal - Open flare	746945.00	4293274.00	431.59	20.0	1400.1	47.265	0.7	6.92E+00	1.06E+00	1.06E+00
IL212881	DEFAULT	Koch Fertilizer, LLC - Ammonia heater	750008.00	4305316.00	428.15	25.0	250.1	42.443	1.0	2.43E+00	5.30E-01	5.30E-01
IL213573	DEFAULT	Illinois Department of Transportation - R and K model 367-1 incinerator	732106.00	4332182.00	623.79	15.0	736.1	30.865	2.8	2.88E+00	0.00E+00	0.00E+00
IL213834	DEFAULT	Darling Ingredients, Inc. - Johnson boiler	747472.00	4281438.00	414.93	33.0	450.1	46.937	2.8	1.96E+00	1.51E+01	1.51E+01
IL213854	DEFAULT	Solvay Fluorides, LLC - Boiler	750245.00	4276115.00	419.72	30.0	361.0	7.314	2.8	1.44E+00	0.00E+00	0.00E+00
IL215315	DEFAULT	Madison County Sand, LLC - Drum mix asphalt plant	758921.00	4289026.00	422.01	32.0	245.0	64.452	4.1	1.63E+01	5.00E-01	5.00E-01
IL217756	DEFAULT	Phillips 66 Pipeline, LLC - Truck loading racks	744935.00	4274152.00	407.25	20.0	70.1	10.594	2.0	1.10E+01	0.00E+00	0.00E+00
IL218530	DEFAULT	ConocoPhillips Co. - North property ground flare (FLR1-2)	754486.00	4303322.00	445.08	195.0	1800.1	2.394	3.0	1.41E+01	0.00E+00	0.00E+00
IL218537	DEFAULT	Custom Steel Processing - Scrubber	746335.00	4286043.00	416.99	55.0	70.1	49.036	4.2	0.00E+00	1.00E-01	1.00E-01
IL218539	DEFAULT	Custom Steel Processing - Sulfuric acid storage tank	746335.00	4286043.00	416.99	35.0	127.0	0.000	2.4	0.00E+00	1.00E-01	1.00E-01
IL218569	DEFAULT	Contract Services, LLC - Boiler #4	746767.00	4275755.00	417.81	40.0	310.0	49.036	3.7	1.30E+01	1.64E+00	1.64E+00
IL218687	DEFAULT	ConocoPhillips Co. - Gas plant sour water stripper	754240.00	4303144.00	443.47	15.0	128.9	11.382	2.9	1.06E+00	0.00E+00	0.00E+00
IL218995	DEFAULT	Asphalt Sales & Products Inc. - Asphalt silos and truck loadout	772959.00	4275690.00	514.30	32.0	86.1	84.854	1.5	1.26E+00	0.00E+00	0.00E+00
IL219420	DEFAULT	Crown Textile Services - Boiler	744287.00	4259382.00	466.40	24.0	450.1	35.227	1.7	1.03E+00	0.00E+00	0.00E+00
IL220266	DEFAULT	American Colloid Co. - Sand drying	746862.00	4287239.00	419.91	72.0	491.1	28.766	3.3	1.29E+00	0.00E+00	0.00E+00
IL220267	DEFAULT	American Colloid Co. - Space Heaters	746862.00	4287239.00	419.91	35.0	198.1	21.484	1.4	2.30E-01	0.00E+00	0.00E+00
IL220618	DEFAULT	Asphalt Sales & Products Inc. - Drum mix asphalt plant	757560.00	4299901.00	441.63	32.0	280.0	68.322	4.3	7.61E+01	3.40E+01	3.40E+01
IL220849	DEFAULT	ConocoPhillips Co. - Alkylation unit flare (FLR6-1)	755035.00	4303081.00	442.55	199.9	1800.1	2.034	2.5	1.85E+01	0.00E+00	0.00E+00
IL222033	DEFAULT	Waterloo City Light Plant - Dual fuel-fired Turbine GT1	748326.00	4246769.00	640.45	39.0	612.1	41.590	4.8	1.77E+01	0.00E+00	0.00E+00
IL222134	DEFAULT	Asphalt Sales & Products Inc. - Asphalt silo loading	757560.00	4299901.00	441.63	26.0	123.0	4.986	1.7	7.00E-01	0.00E+00	0.00E+00
IL222135	DEFAULT	Asphalt Sales & Products Inc. - Asphalt heaters and boilers	757560.00	4299901.00	441.63	35.0	361.0	26.896	3.7	0.00E+00	2.80E+00	2.80E+00
IL222988	DEFAULT	Apex Oil Co., Inc. - Thermal oxidizers	752471.00	4302667.00	431.07	18.0	820.0	43.985	2.3	2.98E+00	0.00E+00	0.00E+00
IL223796	DEFAULT	Union Electric Co. - Turbine CT03	745735.00	4282930.00	420.96	38.0	603.1	74.948	3.4	4.90E+01	1.30E+00	1.30E+00
IL223797	DEFAULT	Union Electric Co. - Turbine CT04	745776.00	4282947.00	421.16	38.0	603.1	74.948	3.4	4.90E+01	1.30E+00	1.30E+00
IL223798	DEFAULT	Union Electric Co. - Turbine CT05	745538.00	4283620.00	420.90	38.0	603.1	74.948	3.4	6.90E+01	9.00E-01	9.00E-01
IL224167	DEFAULT	Interurban ILAWC - Emergency generator	757265.00	4276109.00	482.38	29.0	880.1	51.463	1.3	1.10E+01	4.60E+00	0.00E+00
IL224416	DEFAULT	Belleville Landfill, Inc. - Flare	760402.00	4264040.00	571.88	35.0	1600.1	8.659	0.8	1.22E+01	0.00E+00	0.00E+00
IL224592	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	755685.00	4299823.00	431.10	32.0	251.0	53.628	4.1	3.09E+01	1.38E+01	1.38E+01
IL224594	DEFAULT	Christ Bros Products, LLC - Asphalt tank heaters and boilers	755701.00	4299841.00	427.46	10.0	416.0	42.443	1.0	1.18E+00	2.80E+00	2.80E+00
IL224838	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-01	750039.00	4285426.00	410.47	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224839	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-02	750044.00	4285416.00	410.24	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224840	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-03	750049.00	4285406.00	410.37	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224841	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-04	750054.00	4285397.00	410.30	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224901	DEFAULT	Premcor Refining Group, Inc. - Thermal oxidizer	752775.00	4302414.00	429.95	20.0	342.1	49.462	0.8	7.40E-01	0.00E+00	0.00E+00
IL225166	DEFAULT	Metro Crematory - Crematory	754120.00	4290785.00	417.29	18.0	736.1	84.854	1.0	1.50E+00	0.00E+00	0.00E+00
IL225832	DEFAULT	ConocoPhillips Co. - Startup/malfunction/breakdown	754240.00	4303144.00	443.47	103.0	623.9	21.681	4.6	2.86E+01	1.91E+02	1.91E+02
IL225843	DEFAULT	City of O'Fallon - 400 kW (591 HP) Diesel generator	774612.00	4277280.00	434.42	13.0	500.1	86.592	0.7	3.37E+00	0.00E+00	0.00E+00
IL225844	DEFAULT	City of O'Fallon - 900 kW (1 322 HP) Diesel generator	774612.00	4277280.00	434.42	17.0	500.1	86.592	0.7	7.55E+00	0.00E+00	0.00E+00
IL225960	DEFAULT	Waterloo City Light Plant - Engine #4	748326.00	4246769.00	640.45	37.0	680.1	87.904	2.5	3.32E+01	0.00E+00	0.00E+00
IL226013	DEFAULT	Milam Recycling and Disposal Facility - 325 HP Tub grinder	750550.00	4282537.00	594.06	7.0	627.0	74.030	0.3	2.20E+00	8.00E-01	8.00E-01
IL226014	DEFAULT	Milam Recycling and Disposal Facility - Enclosed flare	750476.00	4282825.00	419.62	55.0	1400.1	0.656	12.0	2.40E+01	6.08E+00	6.08E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL226015	DEFAULT	Milam Recycling and Disposal Facility - 760 HP Tub grinder	750550.00	4282537.00	594.06	8.0	627.0	70.881	0.7	5.10E+00	1.90E+00	1.90E+00
IL226184	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - 1F Mix muller (MM-3) Low profile turbine (LF-1) and Induction form sta	750075.00	4306259.00	432.32	41.0	209.9	36.080	2.1	2.00E+00	0.00E+00	0.00E+00
IL226204	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #4 (SA-4)	750150.00	4308388.00	431.10	90.0	350.0	41.426	1.6	9.33E+01	0.00E+00	0.00E+00
IL226256	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip Anneal #3 (SA-3)	750439.00	4308328.00	433.83	100.0	350.0	62.746	1.3	9.83E+01	0.00E+00	0.00E+00
IL226257	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - #7 Strip Anneal (SA-7)	750222.00	4308335.00	433.20	89.0	850.0	38.671	1.5	1.18E+02	0.00E+00	0.00E+00
IL226352	DEFAULT	Olin Winchester, LLC - Hammermill 1 2 and 3 (HM-1 HM-2 and HM-3)	750495.00	4308287.00	434.42	21.0	160.1	19.647	1.8	8.03E+00	0.00E+00	0.00E+00
IL226612	DEFAULT	Solutia Inc. - Santoflex process: Thermal oxidizer 2770934	746325.00	4275822.00	405.12	112.0	865.0	16.794	12.6	1.50E+01	0.00E+00	0.00E+00
IL226783	DEFAULT	Schildknecht Funeral Home, Inc. - Crematory	769033.00	4275796.00	549.57	17.0	1241.0	13.612	1.7	1.20E+00	0.00E+00	0.00E+00
IL227030	DEFAULT	ConocoPhillips Co. - #4 Crude unit heater H-24 (STK9-5)	753051.00	4302413.00	428.81	179.9	550.0	26.207	8.5	2.27E+01	0.00E+00	0.00E+00
IL227032	DEFAULT	ConocoPhillips Co. - Hydrogen plant #1 flare (FLR12-2)	755194.00	4302793.00	443.67	130.0	1800.1	7.970	1.7	1.62E+01	0.00E+00	0.00E+00
IL227034	DEFAULT	ConocoPhillips Co. - Sulfur operation	754240.00	4303144.00	443.47	158.0	590.1	37.753	3.4	0.00E+00	3.00E+01	3.00E+01
IL227035	DEFAULT	ConocoPhillips Co. - Process heater HP-1 (STK12-6)	755194.00	4302793.00	443.67	127.0	360.1	27.093	7.5	6.97E+00	0.00E+00	0.00E+00
IL227038	DEFAULT	ConocoPhillips Co. - SZU Charge heater H-3	755219.00	4302667.00	442.29	150.0	567.1	25.518	5.0	5.75E+00	0.00E+00	0.00E+00
IL227333	DEFAULT	Waterloo City Light Plant - Engine SG5	750635.00	4249410.00	628.97	8.0	924.0	61.172	0.7	1.40E+00	0.00E+00	0.00E+00
IL227400	DEFAULT	Collinsville Wastewater Treatment Plant - Emergency diesel generator (2922 HP/2180 kW)	758289.00	4283982.00	419.36	36.0	692.0	67.371	2.0	1.72E+01	1.20E+00	0.00E+00
IL227432	DEFAULT	Total Metal Recycling, Inc. - Safety certification unit	748030.00	4289120.00	422.74	6.0	587.0	8.069	1.2	1.00E-01	0.00E+00	0.00E+00
IL227590	DEFAULT	Illinois Electric Works - 3 Burn off ovens	747872.00	4288124.00	423.20	46.0	250.1	41.230	2.4	1.17E+00	6.90E-02	6.90E-02
IL227679	DEFAULT	Union Electric Co. - Diesel generator	745516.00	4283326.00	430.38	26.0	490.0	60.811	1.4	1.30E+00	1.60E-01	1.60E-01
IL228119	DEFAULT	St. Clair Crematory - Human crematory	773291.00	4275644.00	507.28	17.0	1241.0	13.612	1.7	1.20E+00	0.00E+00	0.00E+00
IL228260	DEFAULT	Center Ethanol Co. - West boiler	745888.00	4275662.00	412.66	75.0	428.1	43.460	3.0	3.23E+00	0.00E+00	0.00E+00
IL228262	DEFAULT	Center Ethanol Co. - East boiler	745888.00	4275662.00	412.66	75.0	428.1	45.428	3.0	3.23E+00	0.00E+00	0.00E+00
IL228263	DEFAULT	Center Ethanol Co. - RTO	745888.00	4275662.00	412.66	50.0	310.0	70.684	5.5	6.85E+00	0.00E+00	0.00E+00
IL228294	DEFAULT	ConocoPhillips Co. - Distilling west refinery flare (FLR10-1)	753647.00	4302546.00	430.31	197.0	1800.1	6.626	3.0	2.51E+01	0.00E+00	0.00E+00
IL228295	DEFAULT	ConocoPhillips Co. - SZU Regenerator vent	755209.00	4302720.00	442.32	44.0	135.1	32.341	2.0	1.78E+00	2.35E+00	2.35E+00
IL229921	DEFAULT	Christ Bros Products, LLC - 8 Heaters and boilers	754160.00	4283243.00	419.46	37.0	400.0	20.664	1.8	1.18E+00	2.80E+00	2.80E+00
IL229922	DEFAULT	Christ Bros Products, LLC - Silo filling	754160.00	4283243.00	419.46	25.0	74.0	0.262	0.4	5.10E-01	0.00E+00	0.00E+00
IL229923	DEFAULT	Christ Bros Products, LLC - Truck loading	754160.00	4283243.00	419.46	29.0	135.1	48.052	2.0	5.80E-01	0.00E+00	0.00E+00
IL230300	DEFAULT	Afton Chemical Corp. - Flare 36-0090	746478.00	4276293.00	407.28	45.0	1600.1	0.656	8.0	2.20E+00	0.00E+00	0.00E+00
IL230350	DEFAULT	Village of Freeburg - Engine #10	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL230355	DEFAULT	Asphalt Sales & Products Inc. - Truck loadout	757560.00	4299901.00	441.63	28.0	135.1	43.198	1.9	7.90E-01	0.00E+00	0.00E+00
IL231259	DEFAULT	Village of Freeburg - Engine #11	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL231260	DEFAULT	Village of Freeburg - Engine #12	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL231291	DEFAULT	Kurrus Funeral Home - 2 Crematories	759066.00	4271234.00	547.11	18.0	787.0	13.186	1.1	2.70E+00	0.00E+00	0.00E+00
IL232739	DEFAULT	ConocoPhillips Co. - Benzene extraction unit #3 (STK6-4)	754923.00	4302930.00	442.59	185.0	470.0	16.138	9.7	1.22E+01	0.00E+00	0.00E+00
IL232785	DEFAULT	Roxana Landfill, Inc. - Enclosed flare	759153.00	4301368.00	619.62	35.0	1600.1	20.008	12.0	2.31E+01	1.76E+00	1.76E+00
IL233294	DEFAULT	Gateway Terminals, LLC. - Marine vapor combustion unit (MVCU)	744607.00	4275093.00	422.70	74.0	514.0	25.158	3.3	1.69E+01	0.00E+00	0.00E+00
IL233295	DEFAULT	Gateway Terminals, LLC. - Truck/Rail vapor destruction unit (TRCU)	744607.00	4275093.00	422.70	74.0	514.0	25.158	3.3	8.39E+00	0.00E+00	0.00E+00
IL235261	DEFAULT	Gulfstream Aerospace Services Corp. - Make-up air unit 19-3	747629.00	4273560.00	410.10	42.0	577.0	29.356	2.5	1.63E+00	0.00E+00	0.00E+00
IL235939	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #5 (SA-5)	750151.00	4308373.00	430.91	90.0	450.1	54.087	1.4	1.07E+02	0.00E+00	0.00E+00
IL235940	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #6 (SA-6)	750207.00	4308390.00	431.82	110.0	580.0	62.779	1.3	1.07E+02	0.00E+00	0.00E+00
IL236260	DEFAULT	Bunge-SF Grain, LLC. - Grain Dryer	746158.00	4281045.00	417.55	96.0	105.0	87.904	8.2	5.06E+00	1.71E+01	1.71E+01
IL236359	DEFAULT	City of Belleville - 2 Emergency generators (1500 kW each)	763544.00	4265595.00	474.70	28.0	627.0	73.767	1.2	2.57E+01	1.84E+00	0.00E+00
IL236927	DEFAULT	Kraft Heinz Co. - Boiler C	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236928	DEFAULT	Kraft Heinz Co. - Boiler D	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236929	DEFAULT	Kraft Heinz Co. - Boiler E	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236930	DEFAULT	National Maintenance and Repair - Cleaver Brooks boiler (Stack 2 of 2)	750920.00	4300904.00	402.46	34.0	450.1	23.321	2.0	1.90E+00	5.00E+00	5.00E+00
IL237099	DEFAULT	Union Electric Co. - Turbine CT02B	745573.00	4283613.00	419.69	30.0	850.0	18.860	11.4	7.74E+01	2.73E+01	2.73E+01
IL237182	DEFAULT	Highland Electric Light Plant - Engine IC-6	788126.93	4293320.17	534.65	28.0	612.1	84.854	2.0	1.32E+01	0.00E+00	0.00E+00
IL237183	DEFAULT	Highland Electric Light Plant - Engine IC-8	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	2.57E+01	0.00E+00	0.00E+00
IL237340	DEFAULT	Charles E. Mahoney - Asphalt silo filling	749517.00	4309892.00	443.14	25.0	74.0	0.262	0.4	5.30E-01	0.00E+00	0.00E+00
IL237341	DEFAULT	Charles E. Mahoney - Truck loadout	749517.00	4309892.00	443.14	27.0	136.0	42.050	1.9	6.00E-01	0.00E+00	0.00E+00
IL237362	DEFAULT	Charles E. Mahoney - Asphalt heaters and boilers	749517.00	4309892.00	443.14	10.0	350.0	69.995	1.0	1.18E+00	2.80E+00	2.80E+00
IL237659	DEFAULT	Green Plains Madison, LLC - Boiler #1	745256.00	4285477.00	414.14	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL237660	DEFAULT	Green Plains Madison, LLC - Fire Pump back-up Engine (460 HP)	745191.00	4285409.00	413.85	13.0	627.0	86.231	0.8	4.80E-01	9.40E-01	0.00E+00
IL237661	DEFAULT	Green Plains Madison, LLC - Electrical system backup Engine (1495 HP)	745144.00	4285537.00	415.88	28.0	627.0	73.767	1.2	3.54E+00	1.21E+01	0.00E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL237679	DEFAULT	Green Plains Madison, LLC - Indirect dryer #1	745191.00	4285468.00	415.12	71.0	387.1	12.136	4.6	7.97E+00	4.10E-01	4.10E-01
IL237866	DEFAULT	Amsted Rail Co., Inc. - Curing oven	746913.00	4287625.00	419.23	39.0	258.0	27.978	1.9	2.52E-01	0.00E+00	0.00E+00
IL237899	DEFAULT	Center Ethanol Co. - Emergency generator	745888.00	4275662.00	412.66	28.0	627.0	73.767	1.2	3.30E+00	0.00E+00	0.00E+00
IL237903	DEFAULT	Center Ethanol Co. - Ethanol loadout Rack	745888.00	4275662.00	412.66	19.0	99.1	7.806	0.7	8.86E-01	0.00E+00	0.00E+00
IL238199	DEFAULT	Solutia Inc. - An in-situ soil vapor extraction system	746325.00	4275822.00	405.12	15.0	70.1	73.406	0.2	4.00E-01	0.00E+00	0.00E+00
IL238839	DEFAULT	Waterloo City Light Plant - Turbine Generator (GT2)	748326.00	4246769.00	640.45	39.0	965.9	87.937	4.8	1.78E+01	0.00E+00	0.00E+00
IL238942	DEFAULT	ConocoPhillips Co. - Rental Boiler #3	754240.00	4303144.00	443.47	20.0	550.0	46.412	4.0	1.65E+00	0.00E+00	0.00E+00
IL239395	DEFAULT	Amsted Rail Co., Inc. - Sand dryer	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	1.24E+00	0.00E+00	0.00E+00
IL239396	DEFAULT	Amsted Rail Co., Inc. - Thermal sand reclaimer	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	3.70E-01	0.00E+00	0.00E+00
IL239899	DEFAULT	Shell Oil Products US - RTO	753758.00	4303650.00	442.59	19.0	200.0	33.948	2.5	0.00E+00	8.47E-01	8.47E-01
IL240053	DEFAULT	Westwood Lands, Inc. - Process heater DFH-1	748864.00	4285684.00	412.99	39.0	284.1	23.157	2.0	8.30E-01	0.00E+00	0.00E+00
IL240359	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0210	746660.00	4276488.00	405.74	45.0	350.0	17.318	7.0	4.89E+00	0.00E+00	0.00E+00
IL240360	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0310	746674.00	4276485.00	407.25	45.0	350.0	17.318	7.0	4.91E+00	0.00E+00	0.00E+00
IL241300	DEFAULT	ConocoPhillips Co. - VOC Flare (West - FLR4-1)	753428.00	4303073.00	428.81	30.0	1800.1	26.174	0.7	1.43E+00	0.00E+00	0.00E+00
IL241301	DEFAULT	ConocoPhillips Co. - VOC Flare (East - FLR4-2)	753441.00	4303073.00	428.77	30.0	1800.1	26.174	0.7	1.43E+00	0.00E+00	0.00E+00
IL241302	DEFAULT	ConocoPhillips Co. - Coker north flare (FLR1-3)	754947.00	4303684.00	444.23	139.0	911.0	26.535	5.4	0.00E+00	3.08E+01	3.08E+01
IL241303	DEFAULT	ConocoPhillips Co. - VF-5 Heater (H350H4 - STK1-1)	754937.00	4303459.00	444.98	150.0	650.0	26.765	12.0	0.00E+00	1.35E+01	1.35E+01
IL241304	DEFAULT	ConocoPhillips Co. - Coker north heater (H351H2 - STK1-2)	754953.00	4303305.00	444.85	150.0	500.1	22.304	10.0	0.00E+00	7.37E+00	7.37E+00
IL241305	DEFAULT	ConocoPhillips Co. - Coker north heater (H351H1 - STK1-3)	754986.00	4303306.00	444.82	150.0	500.1	22.304	10.0	0.00E+00	7.38E+00	7.38E+00
IL241312	DEFAULT	ConocoPhillips Co. - Heater HP-2 (STK7-1)	755263.00	4302920.00	443.86	118.0	400.0	45.002	10.8	0.00E+00	2.87E+01	2.87E+01
IL241405	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #1	756504.00	4295421.00	425.00	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL241449	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #2	756494.00	4295735.00	424.74	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL242126	DEFAULT	Center Point Terminals Co. - Tank Heater	746359.00	4289027.00	411.84	49.0	331.1	32.144	2.5	1.03E+00	0.00E+00	0.00E+00
IL245579	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #3	756198.00	4295409.00	424.97	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL245580	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #4	756182.00	4295721.00	424.77	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL245839	DEFAULT	Milam Recycling and Disposal Facility - Landfill gas conversion plant	750666.00	4282895.00	413.09	55.0	70.1	0.000	4.5	3.80E+00	9.00E-01	9.00E-01
IL246759	DEFAULT	Stookey Township WWTP - 2000 kW Emergency generator	756253.00	4269975.00	518.86	28.0	627.0	73.767	1.2	1.54E+01	0.00E+00	0.00E+00
IL246761	DEFAULT	Omega Partners Hartford, LLC - Truck Rail Marine racks loadout and VCUs	752232.00	4300866.00	430.74	33.0	69.5	0.328	0.3	6.60E+00	0.00E+00	0.00E+00
IL246762	DEFAULT	Omega Partners Hartford, LLC - Boiler 1 and 2	752273.00	4300698.00	430.18	58.0	436.0	27.650	3.4	3.83E+00	0.00E+00	0.00E+00
IL248060	DEFAULT	Kraft Heinz Co. - Boiler F	748105.00	4289580.00	423.56	26.0	380.0	34.407	2.0	1.44E+00	0.00E+00	0.00E+00
IL248262	DEFAULT	Olin Winchester, LLC - New Rotary retort process (RDR-2)	750495.00	4308287.00	434.42	16.0	119.9	26.634	1.7	9.62E+00	0.00E+00	0.00E+00
IL248799	DEFAULT	Gateway Terminals, LLC. - 600 HP Boiler	744607.00	4275093.00	422.70	26.0	440.0	39.557	2.2	2.11E+00	0.00E+00	0.00E+00
IL249480	DEFAULT	Highland Electric Light Plant - Engine IC-2	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.44E+01	0.00E+00	0.00E+00
IL249481	DEFAULT	Highland Electric Light Plant - Engine IC-3	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.25E+01	0.00E+00	0.00E+00
IL249482	DEFAULT	Highland Electric Light Plant - Engine IC-9	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.50E+01	0.00E+00	0.00E+00
IL249483	DEFAULT	Highland Electric Light Plant - Engine IC-10	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.50E+01	0.00E+00	0.00E+00
IL249499	DEFAULT	Roxana Landfill, Inc. - Zink ultra-Low emissions (Zule) Flare	759153.00	4301368.00	619.62	60.0	1800.1	46.838	13.0	1.25E+01	1.55E+01	1.55E+01
IL250343	DEFAULT	Mayco Mfg, LLC - Natural gas combustion	747189.00	4286970.00	421.78	39.0	284.1	23.157	2.0	1.74E+00	0.00E+00	0.00E+00
IL250892	DEFAULT	ConocoPhillips Co. - Lift station pump (21028)	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	1.40E+00	4.90E-01	4.90E-01
IL250893	DEFAULT	ConocoPhillips Co. - Lift station pump (21029)	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	1.30E+00	4.60E-01	4.60E-01
IL250894	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #1	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250895	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #2	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250896	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #3	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	5.98E+00	2.10E+00	2.10E+00
IL250897	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #4	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250898	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #5	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250899	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #6	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	5.98E+00	2.10E+00	2.10E+00
IL251099	DEFAULT	Amsted Rail Co., Inc. - Annealing Furnace 18	747071.00	4287670.00	426.02	39.0	284.1	23.157	2.0	1.12E+00	1.00E-01	1.00E-01
IL251286	DEFAULT	Premcor Refining Group, Inc. - Vapor Combustion Unit	752775.00	4302414.00	429.95	53.0	289.0	24.830	2.9	1.00E+01	0.00E+00	0.00E+00
IL251735	DEFAULT	ConocoPhillips Co. - Diesel engine (605 HP)	754240.00	4303144.00	443.47	15.0	69.5	0.328	0.3	3.50E+00	0.00E+00	0.00E+00
IL251754	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #1	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL253107	DEFAULT	Allnex USA, Inc. - Natural gas combustion	749698.00	4276478.00	418.37	58.0	436.0	27.650	3.4	3.26E+00	0.00E+00	0.00E+00
IL253166	DEFAULT	Cerro Flow Products, LLC. - Generators	746228.00	4275272.00	407.32	26.0	490.0	60.811	1.4	9.23E-01	2.82E-01	2.82E-01
IL253167	DEFAULT	City of Belleville - Emergency diesel generator (1500 kW)	762469.00	4266351.00	468.70	26.0	490.0	60.811	1.4	1.16E+01	0.00E+00	0.00E+00
IL253300	DEFAULT	Phillips 66 Pipeline, LLC - Engines (insignificant activities)	744935.00	4274152.00	407.25	26.0	490.0	60.811	1.4	9.23E-01	0.00E+00	0.00E+00
IL253361	DEFAULT	Amsted Rail Co., Inc. - Sand regeneration process (combustion)	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	2.80E-01	2.80E-01	2.80E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL253367	DEFAULT	Green Plains Madison, LLC - Boiler #2	745258.00	4285486.00	414.27	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253368	DEFAULT	Green Plains Madison, LLC - Boiler #3	745260.00	4285491.00	414.24	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253369	DEFAULT	Green Plains Madison, LLC - Boiler #4	745262.00	4285500.00	414.21	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253370	DEFAULT	Green Plains Madison, LLC - Indirect dryer #2	745164.00	4285430.00	414.60	81.0	387.1	8.430	5.5	7.97E+00	4.10E-01	4.10E-01
IL253386	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Engines (insignificant activities)	750423.00	4308352.00	434.28	26.0	490.0	60.811	1.4	9.23E-01	0.00E+00	0.00E+00
IL253738	DEFAULT	Milam Recycling and Disposal Facility - 2000 scfm Utility Flare	750550.00	4282537.00	594.06	36.0	852.0	18.565	4.6	1.83E+01	7.32E+00	7.32E+00
IL253769	DEFAULT	Veolia ES Technical Solutions, LLC - 2 Emergency generators	745532.00	4275942.00	414.76	26.0	490.0	60.811	1.4	7.41E-01	0.00E+00	0.00E+00
IL254175	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #2	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254176	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #3	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254177	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #4	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254178	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #5	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254179	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #6	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254699	DEFAULT	HSHS St. Elizabeth's Hospital - 2 Emergency generators	767237.00	4275111.00	541.01	28.0	627.0	73.767	1.2	1.93E+01	0.00E+00	0.00E+00
IL255341	DEFAULT	Roxana Landfill, Inc. - New open flare	759153.00	4301368.00	619.62	45.0	1800.1	61.434	1.3	3.77E+01	8.17E+00	8.17E+00
IL255527	DEFAULT	Magnesium Elektron North America - Natural gas combustion	746452.00	4285724.00	415.49	39.0	284.1	23.157	2.0	4.20E-01	0.00E+00	0.00E+00
IL255741	DEFAULT	ConocoPhillips Co. - Utility Boiler #19 (BLR-19)	754755.00	4302798.00	442.16	132.0	304.1	46.281	7.0	0.00E+00	1.54E+01	1.54E+01
IL255816	DEFAULT	Mayco Mfg, LLC - Expansion: Natural gas combustion	747189.00	4286970.00	421.78	39.0	284.1	23.157	2.0	1.94E+00	0.00E+00	0.00E+00
IL255953	DEFAULT	Moore Recycling Concrete & Asphalt, LLC. - Drum mix asphalt plant	762178.00	4246660.00	463.19	35.0	251.0	56.908	4.0	1.32E+01	0.00E+00	0.00E+00
IL256624	DEFAULT	PBT Acquisition, LLC - ASR Dryer	748704.00	4280830.00	418.77	32.0	305.0	19.483	1.5	2.53E+00	0.00E+00	0.00E+00
IL257535	DEFAULT	Marathon Ashland Pipe Line, LLC - Marine vapor combustion unit	751239.00	4302663.00	402.85	51.0	810.1	27.749	7.4	2.71E+01	0.00E+00	0.00E+00
SJEFF1	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	410.0	370.0	54.081	19.0		1.44E+02	1.44E+02
SJEFF2	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	125.0	210.0	59.173	6.6		2.04E-02	2.04E-02
SJEFF3	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	10.0	1100.0	23.333	0.5		1.32E-01	0.00E+00
SJEFF15	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	52.0	260.0	10.666	2.0		5.09E-03	5.09E-03
SJEFF16	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.29E-01	2.29E-01
SJEFF17	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.40E-03	2.40E-03
SJEFF18	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.29E-01	0.00E+00
SJEFF19	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		1.80E-03	1.80E-03
SJEFF20	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		1.20E-03	1.20E-03
SJEFF21	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		5.40E-04	5.40E-04
SJEFF22	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		4.80E-04	4.80E-04
SJEFF23	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		4.20E-04	4.20E-04
SJEFF24	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		3.00E-04	3.00E-04
SJEFF25	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	15.0	1049.0	149.734	0.2		4.80E-04	0.00E+00
SJEFF26	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	700.0	270.0	82.001	20.7		1.73E+03	1.73E+03
SJEFF27	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	700.0	270.0	82.001	29.0		2.50E+03	2.50E+03
SJEFF28	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	30.0	985.0	105.633	1.3		8.52E-06	0.00E+00
SJEFF29	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	240.0	600.0	32.999	7.0		3.54E-03	3.54E-03
SJEFF59	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	3.03E-01	2.17E-03	2.17E-03
SJEFF60	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	3.03E-01	2.17E-03	2.17E-03
SJEFF61	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	4.20E-02	3.00E-04	3.00E-04
SJEFF62	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.000	1.7	1.12E-02	7.98E-05	7.98E-05
SJEFF63	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	27.0	1800.0	10.046	1.5	2.86E-02	1.63E-01	1.63E-01
SJEFF65	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	0.0	0.000	0.5	1.45E-02	4.34E-04	4.34E-04
SJEFF66	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	0.0	0.000	0.5	1.40E-02	4.20E-04	4.20E-04
SJEFF67	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	-459.7	0.003	2.0	8.35E-02	5.97E-04	5.97E-04
SJEFF68	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	-459.7	0.003	2.0	3.54E-01	2.53E-03	2.53E-03
SJEFF69	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	-459.7	0.003	2.0	2.51E-01	1.79E-03	1.79E-03
SJEFF70	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	1.11E+00	3.37E-01	0.00E+00
SJEFF71	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	1.11E+00	3.37E-01	0.00E+00
SJEFF72	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	3.32E-01	1.02E-01	0.00E+00
SJEFF73	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	10.0	-459.7	0.003	1.0	1.92E-05	1.37E-07	1.37E-07
SJEFF74	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	10.0	-459.7	0.003	1.0	1.92E-05	1.37E-07	1.37E-07
SJEFF82	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	156.0	611.0	39.902	5.8	7.38E-02	3.77E+00	3.77E+00
SJEFF83	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	156.0	611.0	39.902	5.8	1.96E-01	6.37E+00	6.37E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SJEFF86	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	20.0	0.0	0.000	0.5	1.26E-01	9.00E-04	9.00E-04
SJEFF92	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	10.0	1100.0	23.333	0.5		2.17E+00	0.00E+00
SJEFF99	DEFAULT	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	2.5	170.0	46.499	2.0	5.60E-01	4.25E-02	4.25E-02
SJEFF100	DEFAULT	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	2.5	170.0	46.499	2.0	1.60E-01	1.14E-03	1.14E-03
SJEFF125	DEFAULT	FRED WEBER, INC. ANTONIA	720102.79	4248877.71	670.57	20.0	250.0	49.249	5.0		5.88E-02	5.88E-02
SJEFF128	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		2.33E-01	2.33E-01
SJEFF129	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1354.0	25.666	1.0		1.92E-02	1.92E-02
SJEFF130	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	30.0	1448.0	22.418	2.0		9.62E-03	9.62E-03
SJEFF131	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		3.50E-01	3.50E-01
SJEFF132	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		2.95E-01	2.95E-01
SJEFF133	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1347.0	16.316	1.0		1.54E-02	1.54E-02
SJEFF134	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	30.0	1448.0	22.418	2.0		6.01E-03	6.01E-03
SJEFF135	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1354.0	25.666	1.0		1.44E-02	1.44E-02
SJEFF136	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1600.0	18.734	2.0		7.50E-02	7.50E-02
SJEFF137	DEFAULT	JEFFERSON COUNTY CREMATION SERVICES LC PEVELY	728536.07	4239554.88	583.23	10.0	1100.0	23.333	0.5		9.39E-02	9.39E-02
SJEFF138	DEFAULT	SIMPSON CONSTRUCTION MATERIALS PAULINA HILLS SITE	726459.86	4259186.04	426.64	12.0	885.0	42.441	0.5		1.29E-01	1.29E-01
SJEFF144	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	32.0	247.0	0.853	3.7	3.03E+00	1.21E+00	1.21E+00
SJEFF145	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	5.0	400.0	0.003	2.0	5.35E-02	3.07E-01	3.07E-01
SJEFF146	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	5.0	400.0	0.003	2.0	3.61E-03	9.62E-08	9.62E-08
SSTC1	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	496.5	138.7	46.759	23.6		2.32E+02	2.32E+02
SSTC2	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	496.5	136.6	46.844	23.6		2.89E+02	2.89E+02
SSTC3	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	212.0	325.0	50.000	4.5		8.90E-04	8.90E-04
SSTC4	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	25.0	1100.0	23.333	1.0		1.42E+00	0.00E+00
SSTC9	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC10	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC11	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC12	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC13	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC14	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC15	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	14.0	1063.0	40.515	0.4		3.59E-01	0.00E+00
SSTC16	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	3.0	1011.0	154.085	0.8		1.08E+00	0.00E+00
SSTC17	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	3.0	1011.0	154.085	0.8		1.06E+00	0.00E+00
SSTC18	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	14.0	1063.0	56.732	0.4		3.66E-01	2.38E-04
SSTC28	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		2.16E+01	2.16E+01
SSTC29	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		7.21E+02	7.21E+02
SSTC30	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		2.16E+01	2.16E+01
SSTC31	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	53.0	520.0	58.999	1.8		1.33E-01	1.33E-01
SSTC45	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		2.31E+00	2.31E+00
SSTC46	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		2.66E-02	2.66E-02
SSTC47	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	10.0	1100.0	23.333	0.5		1.52E+00	0.00E+00
SSTC48	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		1.50E-03	1.50E-03
SSTC57	DEFAULT	BLASTCO INC	690213.84	4297755.23	543.44	20.0	0.0	0.000	0.5		3.96E-04	3.96E-04
SSTC63	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	65.0	16.499	1.5		4.20E-03	4.20E-03
SSTC64	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	17.0	450.0	27.631	1.3		4.09E-03	4.09E-03
SSTC65	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	20.0	0.0	0.000	0.5		4.10E-03	4.10E-03
SSTC66	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	77.0	33.015	1.5		1.56E-03	1.56E-03
SSTC67	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	77.0	33.015	1.5		8.40E-04	8.40E-04
SSTC68	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	450.0	39.416	1.5		1.44E-03	1.44E-03
SSTC69	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	400.0	29.708	1.0		1.74E-03	1.74E-03
SSTC70	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	450.0	24.803	1.2		4.68E-03	4.68E-03
SSTC71	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	28.0	475.0	1.667	0.5		0.00E+00	0.00E+00
SSTC72	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	28.0	450.0	27.500	2.3		0.00E+00	0.00E+00
SSTC73	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	10.0	1100.0	23.333	0.5		3.07E+00	0.00E+00
SSTC87	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	2.10E-02	6.31E-04	6.31E-04
SSTC88	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	3.14E-02	1.73E-04	1.73E-04

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTC89	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	1.20E+00	3.65E-01	3.65E-01
SSTC98	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC99	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC100	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC101	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC102	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC103	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC104	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC105	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC106	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC107	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTL1	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	250.0	326.0	101.627	11.0		2.28E-02	2.28E-02
SSTL2	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	250.0	326.0	101.627	11.0		2.20E-02	2.20E-02
SSTL3	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	350.0	345.0	135.400	14.0		2.97E+02	2.97E+02
SSTL4	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	350.0	374.0	123.284	16.0		4.69E+02	4.69E+02
SSTL5	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	40.0	642.0	38.100	1.0		5.46E-03	5.46E-03
SSTL6	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL7	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		1.96E+00	1.96E+00
SSTL8	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL9	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		2.01E-02	2.01E-02
SSTL10	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL11	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		1.10E-02	1.10E-02
SSTL14	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	99.0	440.0	9.432	4.5	9.84E-01	1.42E+00	1.42E+00
SSTL15	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	99.0	440.0	9.432	4.5	1.06E-02	7.55E-05	7.55E-05
SSTL16	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	10.0	1100.0	23.333	0.5	5.03E+00	1.53E+00	0.00E+00
SSTL17	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	104.0	450.0	7.172	1.2	2.91E+00	4.19E+00	4.19E+00
SSTL18	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	104.0	450.0	7.172	1.2	9.59E-02	6.85E-04	6.85E-04
SSTL19	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	40.0	315.0	30.098	4.0		2.95E-05	2.95E-05
SSTL20	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	40.0	315.0	30.098	4.0		2.24E-02	2.24E-02
SSTL21	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	10.0	1100.0	23.333	0.5		1.06E+00	0.00E+00
SSTL22	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	10.0	1100.0	23.333	0.5		5.74E-04	0.00E+00
SSTL23	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		2.57E+01	2.57E+01
SSTL24	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		6.69E-03	6.69E-03
SSTL25	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		2.66E-02	2.66E-02
SSTL26	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	110.0	70.0	0.003	2.7		1.39E-02	1.39E-02
SSTL27	DEFAULT	ST. JOHNS MERCY MEDICAL CNTR/MAINTENANCE NEW BALLAS RD	722224.73	4280414.44	627.82	30.0	400.0	4.951	4.0		1.11E+01	1.11E+01
SSTL28	DEFAULT	ST. JOHNS MERCY MEDICAL CNTR/MAINTENANCE NEW BALLAS RD	722224.73	4280414.44	627.82	30.0	400.0	4.951	4.0		1.95E-02	1.95E-02
SSTL29	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	159.0	300.0	32.667	4.8		3.08E-05	3.08E-05
SSTL30	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	159.0	300.0	32.667	4.8		2.36E-02	2.36E-02
SSTL31	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		4.34E-01	0.00E+00
SSTL32	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		4.04E-03	0.00E+00
SSTL33	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		3.77E+00	0.00E+00
SSTL37	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	175.0	350.0	4.849	9.0	0.00E+00	0.00E+00	0.00E+00
SSTL38	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	175.0	350.0	4.849	9.0	2.24E+00	1.60E-02	1.60E-02
SSTL39	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	21.0	475.0	9.616	1.2	0.00E+00	0.00E+00	0.00E+00
SSTL40	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	21.0	475.0	9.616	1.2	6.04E-01	4.31E-03	4.31E-03
SSTL41	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	1.39E+01	2.34E-03	0.00E+00
SSTL42	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	2.12E+01	3.78E-02	0.00E+00
SSTL43	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	1.59E+01	4.87E+00	0.00E+00
SSTL44	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	9.13E-02	2.37E+01	2.37E+01
SSTL45	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	9.02E-02	4.11E+01	4.11E+01
SSTL46	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	1.05E-01	1.48E+01	1.48E+01
SSTL47	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	2.86E-01	2.62E+01	2.62E+01
SSTL48	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7		2.04E-03	2.04E-03
SSTL66	DEFAULT	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	20.0	230.5	31.309	5.1		3.27E-01	3.27E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTL70	DEFAULT	FRED WEBER, INC. ANTIRE	711291.07	4264547.49	448.49	30.0	250.0	58.950	4.0		1.27E+00	1.27E+00
SSTL76	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	45.0	400.0	44.167	2.5	5.58E+00	8.24E+00	8.24E+00
SSTL77	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	45.0	400.0	44.167	2.5	1.38E+00	9.87E-03	9.87E-03
SSTL78	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	38.0	400.0	25.968	2.0	3.02E+00	4.47E+00	4.47E+00
SSTL79	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	38.0	400.0	25.968	2.0	1.06E+00	7.57E-03	7.57E-03
SSTL80	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	50.0	461.0	14.616	3.0	2.95E+00	4.36E+00	4.36E+00
SSTL81	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	50.0	461.0	14.616	3.0	7.02E-01	5.01E-03	5.01E-03
SSTL82	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	1.0	100.0	12.733	0.1	1.66E+00	1.19E-02	1.19E-02
SSTL83	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	15.0	955.0	19.800	0.7	2.52E+01	4.49E-02	0.00E+00
SSTL84	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	7.0	960.0	113.182	0.8	2.50E+01	7.63E+00	0.00E+00
SSTL85	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	30.0	965.0	31.234	5.0	2.03E-01	1.04E-02	1.04E-02
SSTL86	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	17.0	72.0	29.882	2.8		5.58E-03	5.58E-03
SSTL88	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	28.0	1400.0	25.466	1.0		1.01E+00	1.01E+00
SSTL89	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	38.3	1400.0	21.568	12.0		7.77E-01	7.77E-01
SSTL90	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	38.0	1400.0	21.568	12.0		6.35E-01	6.35E-01
SSTL92	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	40.0	1200.0	61.381	1.1		1.86E-02	1.86E-02
SSTL93	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	40.0	1200.0	61.381	1.1		6.98E-02	6.98E-02
SSTL94	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	45.0	1200.0	50.226	1.3		1.70E+01	1.70E+01
SSTL95	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	45.0	1200.0	50.226	1.3		5.43E+01	5.43E+01
SSTL96	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	35.0	1200.0	53.051	1.0		1.22E-01	1.22E-01
SSTL97	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	584.0	1450.0	21.923	4.7		1.08E-03	1.08E-03
SSTL98	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	584.0	1450.0	21.923	4.7		1.07E-03	1.07E-03
SSTL100	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	17.2	500.0	25.000	3.0		9.06E+00	9.06E+00
SSTL101	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	17.2	500.0	25.000	3.0		7.14E-03	7.14E-03
SSTL102	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	130.0	1009.0	53.156	1.0		2.56E+00	0.00E+00
SSTL106	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		6.63E-02	6.63E-02
SSTL107	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		1.15E-02	1.15E-02
SSTL108	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	12.0	900.0	38.100	1.2		8.33E+00	0.00E+00
SSTL109	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		1.37E-03	1.37E-03
SSTL111	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	3.02E+00	4.35E+00	4.35E+00
SSTL112	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	4.17E-01	2.98E-03	2.98E-03
SSTL113	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	4.40E-03	6.49E-03	6.49E-03
SSTL114	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	6.81E-01	4.86E-03	4.86E-03
SSTL115	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	10.0	1100.0	23.333	0.5	1.02E+02	3.11E+01	0.00E+00
SSTL116	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	35.0	270.0	10.000	4.0	1.45E-01	6.26E-03	6.26E-03
SSTL117	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	35.0	270.0	10.000	4.0	9.17E-01	6.55E-03	6.55E-03
SSTL118	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	15.0	-459.7	0.003	1.0	3.28E+01	3.00E-01	0.00E+00
SSTL120	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	15.0	65.0	7.165	2.2		3.20E-03	3.20E-03
SSTL121	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	16.0	75.0	26.949	1.1		8.96E-03	8.96E-03
SSTL122	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	29.0	600.0	14.167	2.5		4.83E-01	4.83E-01
SSTL123	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	30.0	365.0	12.001	1.2		4.48E-01	4.48E-01
SSTL124	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	29.0	360.0	25.499	0.7		1.63E-01	1.63E-01
SSTL126	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	20.0	0.0	0.000	0.5		1.23E-02	1.23E-02
SSTL127	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	30.0	650.0	11.998	1.3		3.60E-03	3.60E-03
SSTL128	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	30.0	650.0	11.998	1.3		1.79E+01	1.79E+01
SSTL129	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	26.0	650.0	13.264	2.0		2.26E-03	2.26E-03
SSTL130	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	26.0	650.0	13.264	2.0		1.44E+01	1.44E+01
SSTL131	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	54.0	1800.0	17.218	2.3		1.21E-03	1.21E-03
SSTL132	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	10.0	1100.0	23.333	0.5		9.83E-01	9.83E-01
SSTL133	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	10.0	1100.0	23.333	0.5		9.83E-01	9.83E-01
SSTL141	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	25.0	495.0	4.068	2.5		3.40E+00	3.40E+00
SSTL142	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	25.0	495.0	4.068	2.5		8.76E-04	8.76E-04
SSTL143	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	30.0	450.0	0.003	1.5		5.59E-04	5.59E-04
SSTL144	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	10.0	1100.0	23.333	0.5		4.66E-02	0.00E+00
SSTL147	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	25.0	550.0	1.181	0.7	9.18E-01	8.00E-01	8.00E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTL148	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	25.0	550.0	1.181	0.7	1.58E+00	5.47E-03	5.47E-03
SSTL149	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	15.2	446.0	19.393	1.7	4.42E-01	2.28E-01	2.28E-01
SSTL150	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	15.2	446.0	19.393	1.7	9.14E-02	4.81E-03	4.81E-03
SSTL151	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	16.0	77.0	4.774	2.0	2.46E+00	4.74E-01	4.74E-01
SSTL152	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	42.0	300.0	38.494	4.2	2.49E+01	5.49E+00	5.49E+00
SSTL153	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	26.7	400.0	26.785	0.8	3.84E-03	1.20E-04	1.20E-04
SSTL154	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	26.7	400.0	26.785	0.8	4.60E-02	1.44E-03	1.44E-03
SSTL162	DEFAULT	MACLAN INDUSTRIES	742056.49	4291436.76	495.44	14.0	190.0	0.003	0.2		2.29E-01	2.29E-01
SSTL165	DEFAULT	MISSOURI AMERICAN WATER-CENTRAL PLANT CHESTERFIELD	715427.34	4284896.78	451.44	22.0	871.0	24.016	0.8		1.02E-01	1.02E-01
SSTL166	DEFAULT	MISSOURI AMERICAN WATER-CENTRAL PLANT CHESTERFIELD	715427.34	4284896.78	451.44	10.0	871.0	24.016	0.8		2.38E-01	2.38E-01
SSTL169	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	1.79E+01	1.28E-03	1.28E-03
SSTL170	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	25.0	-459.7	0.003	0.8	2.33E+01	3.69E-03	3.69E-03
SSTL171	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	18.0	-459.7	0.003	4.0	1.61E+00	6.69E-02	6.69E-02
SSTL172	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	15.0	-459.7	0.003	2.0	1.20E-02	8.60E-05	8.60E-05
SSTL173	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	16.0	-459.7	0.003	0.5	9.34E-01	2.85E-01	2.85E-01
SSTL174	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	4.62E-03	3.30E-05	3.30E-05
SSTL175	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	4.62E-03	3.30E-05	3.30E-05
SSTL196	DEFAULT	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	7.7	25.0	11.788	0.9	3.02E+00	1.28E-01	1.28E-01
SSTL199	DEFAULT	A.G. RECYCLING	734844.18	4284158.21	525.43	10.0	1100.0	23.333	0.5		1.59E-01	1.59E-01
SSTL200	DEFAULT	A.G. RECYCLING	734844.18	4284158.21	525.43	10.0	1100.0	23.333	0.5		7.25E-01	7.25E-01
SSTL209	DEFAULT	MISSOURI-AMERICAN WATER CO FLORISSANT	728394.88	4300010.04	461.78	15.0	896.0	0.000	14.0		9.51E+00	9.51E+00
SSTL214	DEFAULT	THE HARPER COMPANY	731184.93	4292013.86	588.35	10.0	1100.0	23.333	0.5		2.75E-01	0.00E+00
SCITY1	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	330.0	21.217	10.0		2.38E-02	2.38E-02
SCITY2	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	100.0	350.0	47.149	3.0		5.80E-02	5.80E-02
SCITY3	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		1.67E+01	1.67E+01
SCITY4	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		1.78E-02	1.78E-02
SCITY5	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		2.53E+01	2.53E+01
SCITY6	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		2.15E-02	2.15E-02
SCITY7	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	135.0	950.0	19.367	1.5		1.75E+01	1.75E+01
SCITY8	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	20.0	50.0	70.000	1.0		1.69E+00	1.69E+00
SCITY9	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	70.0	200.0	0.003	5.5	1.33E+00	9.51E-03	9.51E-03
SCITY10	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	70.0	200.0	0.003	5.5	2.13E+00	1.52E-02	1.52E-02
SCITY11	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	100.0	145.0	62.500	4.5	2.53E+00	1.81E-02	1.81E-02
SCITY12	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	100.0	145.0	62.500	4.5	3.20E-01	2.29E-03	2.29E-03
SCITY13	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	12.0	200.0	0.335	1.0	3.77E+00	1.15E+00	0.00E+00
SCITY14	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	50.400	2.0	3.55E-02	1.07E-03	1.07E-03
SCITY15	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	50.400	2.0	3.07E-02	9.22E-04	9.22E-04
SCITY16	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	69.751	1.7	3.07E-02	9.22E-04	9.22E-04
SCITY17	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	16.0	77.0	24.600	0.2		1.41E-03	1.41E-03
SCITY18	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	3.0	800.0	0.335	0.5	1.63E-01	4.98E-02	0.00E+00
SCITY22	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	20.0	0.0	0.000	0.5	5.72E-03	1.72E-04	1.72E-04
SCITY23	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	6.00E-02	1.83E-02	0.00E+00
SCITY24	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	785.0	42.283	0.3	2.11E+00	6.44E-01	0.00E+00
SCITY25	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	785.0	42.283	0.3	8.12E-03	4.79E-03	0.00E+00
SCITY26	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	1.73E-02	5.29E-03	0.00E+00
SCITY27	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	42.0	77.0	3.734	0.2	4.35E-02	1.33E-02	0.00E+00
SCITY28	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	20.0	200.0	0.335	1.0	1.98E-01	6.04E-02	0.00E+00
SCITY29	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.07E-01	3.27E-02	0.00E+00
SCITY30	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.09E-04	3.32E-05	0.00E+00
SCITY31	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	22.0	212.0	1.296	1.0	5.28E-01	1.61E-01	0.00E+00
SCITY32	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	90.0	77.0	33.215	2.2	1.09E-04	3.32E-05	0.00E+00
SCITY33	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	3.65E-02	1.12E-02	0.00E+00
SCITY34	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.98E-01	6.04E-02	0.00E+00
SCITY48	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		2.58E-01	2.58E-01
SCITY49	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		2.42E-02	2.42E-02

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY50	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		1.20E+00	1.20E+00
SCITY51	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		1.51E-01	1.51E-01
SCITY52	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		1.17E+00	1.17E+00
SCITY53	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		6.91E-03	6.91E-03
SCITY54	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		1.17E+00	1.17E+00
SCITY55	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		7.87E-03	7.87E-03
SCITY56	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	30.0	975.0	237.684	0.8		3.10E-02	0.00E+00
SCITY57	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		2.59E+01	2.59E+01
SCITY58	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		5.09E+00	5.09E+00
SCITY59	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		3.48E-02	3.48E-02
SCITY60	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.97E-01	3.97E-01	3.97E-01
SCITY61	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.97E-01	5.32E-02	5.32E-02
SCITY62	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.00E+00	4.43E+00	4.43E+00
SCITY63	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.30E+00	2.36E-02	2.36E-02
SCITY64	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.00E+00	4.43E+00	4.43E+00
SCITY65	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.20E+00	2.29E-02	2.29E-02
SCITY66	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	20.0	0.0	0.000	0.5	4.42E+01	1.33E+00	1.33E+00
SCITY67	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	69.0	318.0	63.035	3.0	4.19E+00	4.64E+00	4.64E+00
SCITY68	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	69.0	318.0	63.035	3.0	6.11E-01	5.15E-03	5.15E-03
SCITY69	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.04E+00	4.48E+00	4.48E+00
SCITY70	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	1.14E+00	8.17E-03	8.17E-03
SCITY71	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	10.0	1100.0	23.333	0.5	2.98E-03	4.70E-07	0.00E+00
SCITY72	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	10.0	1100.0	23.333	0.5	7.05E+00	2.15E+00	0.00E+00
SCITY83	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		1.14E-04	1.14E-04
SCITY84	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		4.07E-03	4.07E-03
SCITY85	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		8.40E-03	8.40E-03
SCITY86	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		1.14E+00	1.14E+00
SCITY87	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		4.07E-03	4.07E-03
SCITY88	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		1.14E+00	1.14E+00
SCITY89	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		4.07E-03	4.07E-03
SCITY90	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	10.0	1100.0	23.333	0.5		2.47E+00	0.00E+00
SCITY110	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	32.0	120.0	15.453	2.0		2.08E-02	2.08E-02
SCITY111	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	481.0	200.0	9.432	3.0		5.70E-03	5.70E-03
SCITY112	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	56.0	400.0	15.922	4.0		6.81E+01	6.81E+01
SCITY113	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	56.0	400.0	15.922	4.0		3.75E-02	3.75E-02
SCITY114	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	45.0	122.0	151.818	2.0		1.14E-02	1.14E-02
SCITY115	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	80.0	171.0	69.682	2.0		5.14E-03	5.14E-03
SCITY116	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	78.0	176.0	88.484	1.2		1.43E-03	1.43E-03
SCITY117	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	10.0	1100.0	23.333	0.5		1.91E-03	1.91E-03
SCITY121	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	42.0	340.0	37.776	4.0		9.43E+01	9.43E+01
SCITY122	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	42.0	340.0	37.776	4.0		5.31E-02	5.31E-02
SCITY123	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		6.41E+00	6.41E+00
SCITY124	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		7.35E-03	7.35E-03
SCITY125	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		1.86E-02	1.86E-02
SCITY126	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		5.89E-04	5.89E-04
SCITY127	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	30.0	140.0	0.125	2.0		1.44E-03	1.44E-03
SCITY128	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	15.4	752.2	32.451	1.0		7.85E-03	0.00E+00
SCITY129	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	4.665	2.0		3.72E-03	3.72E-03
SCITY132	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	6.916	3.3		1.72E-02	1.72E-02
SCITY133	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	36.601	2.0		3.72E-03	3.72E-03
SCITY136	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1800.0	8.301	3.7		8.58E-03	8.58E-03
SCITY137	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	42.0	1700.0	4.665	2.0		3.72E-03	3.72E-03
SCITY140	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	44.0	200.0	47.149	3.0		5.82E-03	5.82E-03
SCITY141	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	44.0	200.0	47.149	3.0		5.82E-03	5.82E-03
SCITY142	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	200.0	39.649	2.8		5.16E-03	5.16E-03

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY143	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY144	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY145	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY146	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY147	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	25.0	300.0	14.865	2.0		1.14E-02	1.14E-02
SCITY148	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	20.0	0.0	0.000	0.5		3.30E-03	3.30E-03
SCITY149	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	37.0	600.0	38.983	1.2		1.98E-03	1.98E-03
SCITY156	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.19E-02	1.19E-02
SCITY157	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.20E-02	1.20E-02
SCITY158	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.19E-02	1.19E-02
SCITY159	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	14.0	490.0	60.200	0.5		7.80E-01	0.00E+00
SCITY160	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	12.6	200.0	205.400	0.5		7.80E-01	0.00E+00
SCITY162	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	210.0	260.0	17.733	2.8	2.69E+00	1.16E-01	1.16E-01
SCITY163	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	210.0	260.0	17.733	2.8	6.20E+00	4.43E-02	4.43E-02
SCITY164	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.20E+00	9.30E-03	0.00E+00
SCITY165	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.18E+00	9.20E-03	0.00E+00
SCITY166	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.77E+00	8.30E-03	0.00E+00
SCITY167	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.12E+00	9.10E-03	0.00E+00
SCITY168	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.01E+00	1.23E+00	0.00E+00
SCITY169	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.15E+00	1.80E-02	0.00E+00
SCITY170	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.90E+00	1.08E-02	0.00E+00
SCITY171	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.52E+00	1.88E-02	0.00E+00
SCITY172	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	4.71E+00	2.04E-01	2.04E-01
SCITY173	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	1.09E+01	7.76E-02	7.76E-02
SCITY174	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	2.50E+00	1.08E-01	1.08E-01
SCITY175	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	6.01E+00	4.29E-02	4.29E-02
SCITY176	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	6.24E+00	1.38E-02	0.00E+00
SCITY177	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	5.17E+00	1.14E-02	0.00E+00
SCITY178	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	9.14E+00	2.02E-02	0.00E+00
SCITY179	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.31E+00	9.84E-01	0.00E+00
SCITY180	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.98E+00	8.40E-03	0.00E+00
SCITY181	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.29E-01	3.53E-03	3.53E-03
SCITY183	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.29E-01	2.41E-03	2.41E-03
SCITY185	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.24E-02	5.89E-04	5.89E-04
SCITY187	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.36E-01	1.69E-03	1.69E-03
SCITY189	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	1.37E+00	4.86E-01	0.00E+00
SCITY190	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	247.0	190.0	20.417	1.2	5.35E-02	2.31E-03	2.31E-03
SCITY191	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	247.0	190.0	20.417	1.2	5.00E-01	3.57E-03	3.57E-03
SCITY192	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.69E+01	6.78E-02	0.00E+00
SCITY193	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.48E+00	1.56E-02	0.00E+00
SCITY194	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.09E+01	4.41E-02	0.00E+00
SCITY227	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	250.0	18.068	1.0		2.54E-03	2.54E-03
SCITY228	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	150.0	22.218	1.0		1.20E+00	1.20E+00
SCITY229	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	25.0	0.0	0.000	1.0		2.19E-04	2.19E-04
SCITY242	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	60.0	250.0	71.667	1.7		2.39E-03	2.39E-03
SCITY243	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	60.0	400.0	19.833	1.5		4.37E-03	4.37E-03
SCITY244	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	20.0	0.0	0.000	0.5		1.37E-04	1.37E-04
SCITY245	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	55.0	750.0	11.168	4.2		8.16E-03	8.16E-03
SCITY246	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	43.0	500.0	7.467	2.5		7.33E-05	7.33E-05
SCITY247	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	20.0	0.0	0.000	0.5		3.46E-04	3.46E-04
SCITY248	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	36.0	375.0	1.716	2.0		2.48E-03	2.48E-03
SCITY266	DEFAULT	HUMANE SOCIETY OF MISSOURI ST. LOUIS - MACKLIND AVE	737162.32	4278817.40	474.08	24.0	1139.0	15.515	1.7		1.10E-02	1.10E-02
SCITY267	DEFAULT	HUMANE SOCIETY OF MISSOURI ST. LOUIS - MACKLIND AVE	737162.32	4278817.40	474.08	28.0	1800.0	15.584	2.0		6.76E-01	6.76E-01
SCITY275	DEFAULT	ALSCO, INC ST. LOUIS	743334.17	4275818.28	427.92	10.0	1100.0	23.333	0.5		2.33E+01	2.33E+01
SCITY276	DEFAULT	ALSCO, INC ST. LOUIS	743334.17	4275818.28	427.92	10.0	1100.0	23.333	0.5		4.99E-03	4.99E-03

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY277	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	23.5	800.0	0.003	0.5	7.11E-01	1.25E-05	0.00E+00
SCITY278	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	3.05E-01	1.28E-04	1.28E-04
SCITY279	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	6.87E-01	4.91E-03	4.91E-03
SCITY280	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	3.05E-02	1.28E-05	1.28E-05
SCITY281	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	6.89E-01	4.92E-03	4.92E-03
SCITY282	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.0	250.0	0.003	1.0	1.22E-01	5.27E-03	5.27E-03
SCITY283	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.0	250.0	0.003	1.0	2.73E-01	1.95E-03	1.95E-03
SCITY284	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.5	250.0	0.003	2.0	6.10E-01	2.56E-04	2.56E-04
SCITY285	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.5	250.0	0.003	2.0	1.38E+00	9.84E-03	9.84E-03
SCITY286	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	8.65E-01	1.53E-05	0.00E+00
SCITY287	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	7.84E+00	1.38E-04	0.00E+00
SCITY288	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	7.84E+00	1.38E-04	0.00E+00
SCITY289	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		2.26E-03	2.26E-03
SCITY290	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		2.91E+01	2.91E+01
SCITY291	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		1.63E-03	1.63E-03
SCITY292	DEFAULT	SOUTHERN METAL PROCESSING	739807.53	4271091.77	426.02	31.0	1590.0	19.255	2.5		1.28E+01	1.28E+01
SCITY293	DEFAULT	SOUTHERN METAL PROCESSING	739807.53	4271091.77	426.02	31.0	1590.0	19.255	2.5		3.47E+00	3.47E+00
SCITY295	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	2.14E+00	6.17E+01	6.17E+01
SCITY296	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.81E+00	1.29E-02	1.29E-02
SCITY297	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	8.93E-01	2.57E+01	2.57E+01
SCITY298	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	6.62E+00	4.73E-02	4.73E-02
SCITY299	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.89E+00	5.45E+01	5.45E+01
SCITY300	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	7.92E+00	5.66E-02	5.66E-02
SCITY301	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	2.14E+00	6.17E+01	6.17E+01
SCITY302	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.04E+00	7.40E-03	7.40E-03
SCITY303	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	10.0	1100.0	23.333	0.5	9.62E+00	5.13E+00	0.00E+00
SCITY304	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	10.0	1100.0	23.333	0.5	5.11E+00	6.08E+00	0.00E+00
SCITY315	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	10.0	1100.0	23.333	0.5	6.50E+00	1.98E+00	0.00E+00
SCITY316	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	7.40E-02	2.22E-03	2.22E-03
SCITY317	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	7.40E-02	2.22E-03	2.22E-03
SCITY318	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	10.0	1100.0	23.333	0.5	9.62E-01	3.00E-01	3.00E-01
SCITY319	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	2.00E-02	6.00E-04	6.00E-04
SCITY320	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	1.26E-02	3.70E-04	3.70E-04
SCITY321	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	380.0	33.766	2.0	8.99E-01	3.88E-02	3.88E-02
SCITY322	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	380.0	33.766	2.0	4.60E-01	3.28E-03	3.28E-03
SCITY323	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	1.40E-02	3.08E-05	0.00E+00
SCITY324	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	7.00E-04	1.54E-06	0.00E+00
SCITY325	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	5.78E-03	1.22E-05	0.00E+00
SCITY326	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	8.71E-02	3.76E-03	3.76E-03
SCITY327	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	8.30E-01	5.93E-03	5.93E-03
SCITY328	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	7.46E-01	3.22E-02	3.22E-02
SCITY329	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	9.04E-01	6.46E-03	6.46E-03
SCITY330	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	1007.0	51.050	0.7	4.68E-01	1.03E-03	0.00E+00
SCITY331	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	10.0	1100.0	23.333	0.5	4.06E+00	1.24E+00	0.00E+00
SCITY332	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	10.0	1100.0	23.333	0.5	2.02E-01	1.44E-03	1.44E-03
SCITY333	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	6.0	1157.0	35.000	0.3	8.24E+00	2.52E+00	0.00E+00
SCITY334	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	6.0	1076.0	151.667	0.3	2.56E+00	7.82E-01	0.00E+00
SCITY335	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	8.9	815.0	37.835	0.8	6.13E-01	1.35E-03	0.00E+00
SCITY344	DEFAULT	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	32.0	200.0	2.933	1.2		5.04E-03	5.04E-03
SCITY353	DEFAULT	CHRISTY REFRACTORIES CO L.L.C	738223.37	4278219.85	483.66	1.0	325.0	0.003	1.0		9.60E-02	9.60E-02
SCITY355	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	431.0	79.216	2.0		9.54E-01	9.54E-01
SCITY356	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	455.0	79.216	2.0		9.54E-01	9.54E-01
SCITY357	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	428.0	79.216	2.0		9.54E-01	9.54E-01
SCITY358	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01
SCITY359	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01

Off-Site Point Source Model Input (NADB3, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY360	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01
SCITY361	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	660.0	300.0	23.035	1.5		1.09E-03	1.09E-03
SCITY362	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	660.0	300.0	23.035	1.5		4.92E-03	4.92E-03
SCITY363	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	390.0	960.0	23.035	9.5		7.17E-01	7.17E-01
SCITY364	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	390.0	960.0	23.035	9.5		7.17E-01	7.17E-01
SCITY365	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		1.19E+00	1.19E+00
SCITY366	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		5.13E+00	5.13E+00
SCITY367	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		8.24E+00	8.24E+00
SCITY368	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		8.24E+00	8.24E+00
SCITY380	DEFAULT	BKEP MATERIALS, LLC ST. LOUIS TERMINAL CO	739332.17	4270413.67	420.93	25.0	450.0	20.000	2.5		2.46E-03	2.46E-03
SCITY381	DEFAULT	BKEP MATERIALS, LLC ST. LOUIS TERMINAL CO	739332.17	4270413.67	420.93	12.0	150.0	8.333	1.0		1.63E-01	1.63E-01
SCITY394	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	10.0	1100.0	23.333	0.5		2.06E+00	0.00E+00
SCITY395	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5		9.53E-03	9.53E-03
SCITY396	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5		1.71E-03	1.71E-03
SCITY401	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		9.30E-05	9.30E-05
SCITY402	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		4.97E-03	4.97E-03
SCITY403	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		5.07E-05	5.07E-05
SCITY404	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		2.48E-03	2.48E-03
SCITY405	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	10.0	1100.0	23.333	0.5		1.83E-02	0.00E+00
SCITY406	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	23.5	200.0	16.667	2.9		2.55E+00	2.55E+00
SCITY407	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	23.5	200.0	16.667	2.9		2.87E-02	2.87E-02
CJEFF34	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	36.6	77.0	20.600	1.8	2.68E-02		
CJEFF35	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	350.0	40.000	2.0	2.90E-01		
CJEFF36	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	41.667	2.5	2.07E-01		
CJEFF37	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	20.0	0.0	0.000	0.5	9.13E-03		
CJEFF43	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	56.0	370.0	33.333	2.5	1.01E-01		
CJEFF44	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	41.667	2.5	8.06E-01		
CJEFF45	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	112.999	2.5	9.97E-02		
CJEFF46	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	20.600	2.5	2.58E-01		
CSTLC55	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	34.0	375.0	26.555	2.3	1.68E-02		
CSTLC56	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	34.0	375.0	26.555	2.3	1.27E+00		
CSTLC57	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	33.0	428.0	15.669	3.8	1.66E-02		
CSTLC58	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	33.0	428.0	15.669	3.8	3.85E-01		
CSTLC59	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	20.0	250.0	2.083	1.0	7.72E-02		
CSTLC60	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	3.28E+00		
CSTLC61	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	1.29E-01		
CSTLC62	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	9.99E-05		
CSTLC63	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	19.0	425.0	7.047	1.7	6.01E-01		
CSTLC64	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	24.0	270.0	105.951	2.0	3.24E+00		
CSTLC152	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	43.0	-459.7	3.225	1.0	1.38E-01		
CSTLC155	DEFAULT	FRED WEBER INC. - SOUTH ASPHALT BATCH SOUTH ASPHALT	732929.25	4259955.19	424.64	37.0	230.0	51.250	4.2	2.57E+01		
CSTLC156	DEFAULT	FRED WEBER INC. - SOUTH ASPHALT BATCH SOUTH ASPHALT	732929.25	4259955.19	424.64	12.0	355.0	0.804	1.3	4.03E-01		
CSTLC157	DEFAULT	FRED WEBER INC. - NORTH ASPHALT H and B	720614.10	4290798.15	468.70	31.0	230.0	80.499	4.2	3.93E+01		
CSTLC158	DEFAULT	FRED WEBER INC. - NORTH ASPHALT H and B	720614.10	4290798.15	468.70	20.0	300.0	16.667	1.1	2.29E-01		
CSTLC207	DEFAULT	MISSOURI-AMERICAN WATER CO FLORISSANT	728394.88	4300010.04	461.78	15.0	896.0	0.000	14.0	1.61E+02		
CCITY65	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	100.0	350.0	29.984	1.3	3.08E-02		
CCITY203	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	250.0	18.068	1.0	3.56E-01		
CCITY204	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	150.0	22.218	1.0	1.68E+02		
CCITY344	DEFAULT	GP RECYCLING, LLC	743830.86	4284034.28	422.18	20.0	0.0	0.000	0.5	1.72E-02		
CCITY368	DEFAULT	GP RECYCLING, LLC	740384.08	4280241.69	507.64	10.0	1100.0	23.333	0.5	6.73E+00		
CCITY369	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5	1.33E+00		
CCITY370	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5	5.69E-02		

Off-Site Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	Potential Emissions (lb/hr)		
								CO	SOx	SO2 (1-hour)
SJEFF64	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	16.4	3.8	15.3	1.28E-02	9.13E-05	9.13E-05
SJEFF84	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	4.68E-03	4.68E-03
SJEFF85	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	7.06E-03	7.06E-03
SJEFF87	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	16.4	3.8	15.3	2.29E-01	1.44E-03	1.44E-03
SJEFF88	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	3.91E-03	3.91E-03
SJEFF89	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		1.47E-03	1.47E-03
SJEFF90	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		2.29E-01	2.29E-01
SJEFF91	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		6.88E-03	6.88E-03
SJEFF93	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		1.38E-03	1.38E-03
SJEFF101	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	4.81E-01	2.40E-02	2.40E-02
SJEFF102	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	6.41E-01	1.42E-02	1.42E-02
SJEFF103	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	5.24E-01	6.09E-03	6.09E-03
SJEFF104	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	1.51E-01	3.75E-03	3.75E-03
SJEFF105	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6		1.08E-03	1.08E-03
SJEFF106	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6		1.14E-03	1.14E-03
SJEFF107	AERO METAL FINISHING	718099.61	4263747.23	613.55	8.2	2.3	7.6		2.43E-01	2.43E-01
SJEFF126	FRED WEBER, INC. ANTONIA	720102.79	4248877.71	670.57	8.2	2.3	7.6		3.08E+00	3.08E+00
SSTCS6	BLASTCO INC	690213.84	4297755.23	543.44	8.2	2.3	7.6		1.47E-01	1.47E-01
SSTL67	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	16.4	3.8	15.3		5.88E-04	5.88E-04
SSTL68	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	16.4	3.8	15.3		1.02E+00	1.02E+00
SSTL125	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	8.2	2.3	7.6		7.18E-03	7.18E-03
SSTL197	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	8.2	2.3	7.6		1.80E-01	1.80E-01
SCITY19	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	8.24E-02	2.47E-02	2.47E-02
SCITY20	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	4.44E-03	7.73E-01	7.73E-01
SCITY21	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	2.59E+00	7.94E-01	7.94E-01
SCITY44	ADM GRAIN COMPANY ST. LOUIS	744141.30	4284932.90	425.39	15.0	0.2	14.0		6.22E-04	6.22E-04
SCITY45	ADM GRAIN COMPANY ST. LOUIS	744141.30	4284932.90	425.39	15.0	0.2	14.0		2.76E-02	2.76E-02
SCITY118	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		7.50E-05	7.50E-05
SCITY119	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		4.00E-01	4.00E-01
SCITY120	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		2.61E-01	2.61E-01
SCITY130	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY131	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY134	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY135	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY138	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY139	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY182	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	3.36E-02	2.40E-04	2.40E-04
SCITY184	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	6.59E-02	4.71E-04	4.71E-04
SCITY186	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	3.36E-02	2.40E-04	2.40E-04
SCITY188	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	4.95E-02	3.53E-04	3.53E-04
SCITY195	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	8.2	2.3	7.6	8.40E-02	6.00E-04	6.00E-04
SCITY241	PQ CORPORATION -THE	739053.43	4285317.19	495.80	8.2	2.3	7.6		2.66E-02	2.66E-02
SCITY340	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		3.60E-04	3.60E-04
SCITY341	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.13E-03	1.13E-03
SCITY342	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.20E-03	1.20E-03
SCITY343	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.20E-02	1.20E-02
CJEFF33	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.49E-01		
CJEFF38	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.71E-03		
CJEFF39	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	3.22E-03		

Off-Site Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	Potential Emissions (lb/hr)		
								CO	SOx	SO2 (1-hour)
CJEFF40	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	2.01E-01		
CJEFF41	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.10E-03		
CJEFF42	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.18E-04		
CJEFF47	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	6.55E-02		
CJEFF48	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	6.56E-06		
CJEFF49	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.09E-04		
CJEFF50	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.48E-04		
CJEFF51	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	5.28E-02		
CJEFF52	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	2.46E-03		
CJEFF53	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.53E-01		
CJEFF54	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.56E-02		
CJEFF55	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.16E-01		
CJEFF56	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.45E-03		
CJEFF57	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	3.42E-01		
CJEFF58	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.74E-03		
CJEFF59	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.92E-01		
CJEFF60	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.36E-02		
CSTLC92	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	8.2	2.3	7.6	2.25E-01		
CSTLC151	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	13.5	1.4	0.7	1.58E-01		
CSTLC195	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	13.5	1.4	0.7	5.97E-01		
CCITY343	GP RECYCLING, LLC	743830.86	4284034.28	422.18	8.2	2.3	7.6	5.57E-02		

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ATTACHMENT B
MODEL SUMMARY OUTPUT

10-5-22 US Steel CO Scale-up Significant Impacts Analysis Results

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag		Time	Met File	Sources	Groups	Receptors
AERMOD 22112	Granite City SIL_2019_CO.SUM	CO	1-HR	ALL	1ST	1157.328	746400	4286400	128.82	132.25		0	19020109	STL_LCN19	13	1	14098
AERMOD 22112	Granite City SIL_2016_CO.SUM	CO	1-HR	ALL	1ST	1094.348	750800	4288100	127.44	127.44		0	16121910	STL_LCN16	13	1	14098
AERMOD 22112	Granite City SIL_2018_CO.SUM	CO	1-HR	ALL	1ST	1036.463	745200	4287400	129.9	134.11		0	18112209	STL_LCN18	13	1	14098
AERMOD 22112	Granite City SIL_2020_CO.SUM	CO	1-HR	ALL	1ST	997.1573	746700	4287100	126.89	126.89		0	20010610	STL_LCN20	13	1	14098
AERMOD 22112	Granite City SIL_2017_CO.SUM	CO	1-HR	ALL	1ST	982.0781	748434.9	4287033	127.16	127.16		0	17051502	STL_LCN17	13	1	14098
AERMOD 22112	Granite City SIL_2019_CO.SUM	CO	8-HR	ALL	1ST	691.6775	748481.6	4286378	126.67	126.67		0	19041908	STL_LCN19	13	1	14098
AERMOD 22112	Granite City SIL_2018_CO.SUM	CO	8-HR	ALL	1ST	669.2078	748481.6	4286378	126.67	126.67		0	18111224	STL_LCN18	13	1	14098
AERMOD 22112	Granite City SIL_2017_CO.SUM	CO	8-HR	ALL	1ST	651.0973	750472	4287091	125.7	125.7		0	17090416	STL_LCN17	13	1	14098
AERMOD 22112	Granite City SIL_2016_CO.SUM	CO	8-HR	ALL	1ST	645.9934	748434.9	4287033	127.16	127.16		0	16110108	STL_LCN16	13	1	14098
AERMOD 22112	Granite City SIL_2020_CO.SUM	CO	8-HR	ALL	1ST	618.4866	748434.9	4287033	127.16	127.16		0	20041108	STL_LCN20	13	1	14098

10-5-22 US Steel CO Scale-up Significant Impacts Analysis Results

Pollutant	Average	Group	Rank	Model Conc. (ug/m3)	Significant Impact Level (ug/m3)	% SIL
CO	1-HR	ALL	1ST	1157.3	2,000	58%
CO	8-HR	ALL	1ST	691.7	500	138%

10-5-22 US Steel CO NAAQS Analysis Results

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag		Time	Met File	Sources	Groups	Receptors
AERMOD 22112	Granite City NAAQS_2016_CO.SUM	CO	8-HR	ALL	2ND	1856.677	748434.9	4287033	127.16	127.16		0	16032208	STL_LCN16	584	1	205
AERMOD 22112	Granite City NAAQS_2017_CO.SUM	CO	8-HR	ALL	2ND	1941.224	748434.9	4287033	127.16	127.16		0	17121624	STL_LCN17	584	1	205
AERMOD 22112	Granite City NAAQS_2018_CO.SUM	CO	8-HR	ALL	2ND	1726.885	748470.1	4287000	126.94	126.94		0	18092424	STL_LCN18	584	1	205
AERMOD 22112	Granite City NAAQS_2019_CO.SUM	CO	8-HR	ALL	2ND	2045.17	748434.9	4287033	127.16	127.16		0	19110908	STL_LCN19	584	1	205
AERMOD 22112	Granite City NAAQS_2020_CO.SUM	CO	8-HR	ALL	2ND	1966.717	748434.9	4287033	127.16	127.16		0	20092408	STL_LCN20	584	1	205

10-5-22 US Steel CO NAAQS Analysis Results

Pollutant	Average	Group	Rank	Model Conc. (ug/m3)	Background Conc. (ug/m3)	Total Conc. (ug/m3)	Standard (ug/m3)	% Standard
CO	8-HR	ALL	2ND	2045.2	1646	3691.2	10,000	37%

Background data from East St. Louis monitor (AQS No. 85-510-029), high second high value from 2016-2018.

R000938

REFERENCES

1. Guidelines on Air Quality Models, (Revised). Appendix W of 40 CFR Part 51, 82 FR 5182, January 17, 2017.

2 . Prevention of Significant Deterioration, The Art and Science of PSD Air Quality Analysis, The Modeling Perspective, Illinois Environmental Protection Agency, Modeling Unit, February 27, 2014..

3. AERSCREEN User's Guide. EPA-454/B-15-005, July 2015.

4. Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for Stack Height Regulations (Revised). EPA-450/4-80-023R, U.S. Environmental Protection Agency, June 1985.

5. *Sierra Club v. EPA*, No. 10-1413, 2013 WL 216018 (Jan. 22, 2013).

6. Ambient Monitor Guidelines for Prevention of Significant Deterioration, EPA-450/4-87-007, USEPA, May 1987.

7. Ambient Monitor Guidelines for Prevention of Significant Deterioration, EPA-450/4-87-007, USEPA, May 1987.

Appendix D – Copies of Construction Permits

· ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19506, SPRINGFIELD, ILLINOIS 62794-9506 · (217) 782-2113

PAT QUINN, GOVERNOR JOHN J. KIM, INTERIM DIRECTOR

217/785-1705

CONSTRUCTION PERMIT/PSD APPROVAL
REVISED

PERMITTEE

U.S. Steel Granite City
Attn: Bryan Kresak, Environmental Director
Route 203 and 20th Street
Granite City, Illinois 62040

Application/Permit No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Orig. Issued: January 25, 1996
Subject: Production Increase
Date Revision Request: May 30, 2012
Date Revision Issued: December 17, 2012 (See Finding 1(c))
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

FINDINGS

1a. Various changes have been made to the provisions of this permit for the Basic Oxygen Furnaces (BOF's), at the request of the Permittee, so that the permit will accommodate an emission reduction project that is planned for particulate emissions from the BOFs. In particular, the revised permit does not include requirements for the operation of these BOF's and the existing electrostatic precipitator (ESP) control system that would be inconsistent with the use of a separate control system with a baghouse for secondary emissions of the BOFs, as is now planned (see Construction Permit Application 11050006).

b. Prior to issuance of this revised permit, a draft of the revised permit underwent a public comment period, including a public hearing.

c. This revised permit will become effective 33 days after the date of issuance unless a petition for review is filed, in accordance with 40 CFR Part 124, with the USEPA's Environmental Appeals Board (Board), in which case, this revised permit will only take effect when and if the Board declines the petition for review or the Board issues a decision on the merits of the appeal that does not include a remand of the proceeding.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month; and

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hour and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Opacity of emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis, pursuant to 35 IAC 212.446(c).

9. The Permittee shall operate and maintain the BOF's and associated capture and control systems in accordance with applicable requirements of the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, including requirements for operational monitoring, performance testing for opacity and emissions of particulate matter,* operation of capture and control systems within established limits for operating parameters, implementation of specified operation and maintenance practices, recordkeeping and reporting.

* As related to testing of emissions, if the Permittee is not willing to consider all particulate matter measured by testing to be PM_{10}, as provided for by 35 IAC 212.108(a)(3), performance tests for emissions

of particulate matter shall also include measurements for emissions of PM_{10} in accordance with 35 IAC 212.108(a)(1) or (2).

Note: This condition requires the Permittee to comply with the operating and maintenance requirements of 40 CFR 63 Subpart FFFFF as the means to verify ongoing compliance with the requirements of Conditions 7 and 8 and to address implementation of good air pollution control practice for the BOF's.

(Former Condition 10 has been removed in this revised permit.)

11a. Flame suppression shall be used and maintained during the entire tapping process.

b. The above requirement for flame suppression and the various requirements for the BOF's in Condition 12 and 13 shall end after the Permittee begins operation of a capture and control system for secondary emissions from the BOF's that makes these requirements infeasible or unnecessary, as explicitly recognized by Construction Permit 11050006 or other construction permit issued by the Illinois EPA for a capture and control system for secondary emissions.

12a. Except for purposes of emissions testing as related to the set points for the capture system for the BOF's, this capture system shall be operated at the following minimum set points for gas flow rate in the ESP stack until and unless the Illinois EPA approves lower minimum set point(s) based on a demonstration that a better level of particulate matter capture efficiency would now be achieved by the charging hoods and primary hoods.

b. Set points requirements while only a single BOF vessel is in operation:

i. Minimum set point during charging process: 550,000 cfm.

ii. Minimum set point during refining process: 650,000 cfm.

iii. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition).

c. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation), the minimum set point shall be 700,000 cfm.

ii. In addition, overlapping operation of the BOF vessels is subject to the following requirements. These requirements shall be part of the Standard Operating Procedure for the BOFs.

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

13a. i. The Permittee shall operate, maintain and calibrate a continuous operational monitor to ESP stack gas flow rate.

ii. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

b. i. The Permittee shall operate and maintain a continuous operational monitor for waste gas suction, i.e., the static pressure in the main downcomer duct of the ESP.

ii. The Permittee shall record the waste gas suction for each process (i.e., for each charge, each refine, each tap) of each steel production cycle.

c. These monitoring systems shall be calibrated on at least a quarterly basis.

d. These monitoring systems shall be operated at all times that a BOF is in operation and shall be used as mechanisms to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts.

(Former Conditions 14 through 17 have been removed in this revised permit.)

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

(The note that previously accompanied Condition 18 has been removed in this revised permit.)

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 225 million ft^3 per month and 1,346 million ft^3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the requïred on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

    i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

    ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

    iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

    iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

    a. The date (and time for the gate areas) each road or area was treated;

    b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

    c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

    d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

    e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

    f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

    a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

    b. At least weekly, segment of 20th street between Lee and Quincy roads;

    c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM_{10} CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM_{10} contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

(Former Condition 33 has been removed from this revised permit.)

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$\text{mmft}^3 \text{ BFG per month} = \frac{(4.585277 \text{ NTHM/day} + 498.191)}{80} \times \begin{pmatrix} \text{Number of} \\ \text{days in} \\ \text{that month.} \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source as of January 15, 1996 and supersede such conditions in cases where a conflict exists.

38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.

i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall describe the specific procedures for testing, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- any other pertinent information

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

(Condition 38 required emission testing following the initial operation of the source with the expansion that has already been conducted by the Permittee. This revised permit does not require that this testing be repeated.)

REPORTING

39. Unless otherwise provided for by the provisions for reporting of deviations in the Clean Air Act Permit Program (CAAPP) permit for the source, if there is a deviation from the requirements of this permit, the Permittee shall submit a report to the Illinois EPA within 30 days after the deviation. The report shall include a description of the deviation, the probable cause of the deviation, the corrective actions that were taken and any preventative measures taken to prevent similar deviations in the future.

40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

    a. Iron and steel production (tons/month and tons/year, each);

    b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/year, each);

    c. Fuel oil usage (thousand gallons/month and thousand gallons/year, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM_{10}	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Kevin Smith at 217/782-7048.

Edwin C. Bakowski

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

Date Signed: December 17, 2012

DES:KLS:psj

cc: IEPA, FOS Region 3

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping) - captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0703	111.19
PM_{10}	0.0703	111.19
SO_2	0.2006	422.00
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.031	49.06
PM_{10}	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0024	5.17
PM_{10}	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00417	6.60
PM_{10}	0.00417	6.60
SO_2	0.0100	15.83

TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.02548	40.32
PM_{10}	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00279	6.01
PM_{10}	0.00279	6.01

TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.16	262.80
PM_{10}	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.01934 lbs/hour	1.26 tons/year

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0987	176.71
PM_{10}	0.06614	118.40
Lead	0.0129 lbs/hour	0.08 tons/year

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.03721	58.88
PM_{10}	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hour	0.09 tons/year

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00032	0.57
PM_{10}	0.00032	0.57

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0016	2.86
PM_{10}	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0050	7.94
PM_{10}	0.0050	7.94

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00715	12.80
PM_{10}	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00355	6.35
PM_{10}	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.006	10.74
PM_{10}	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00852	15.25
PM_{10}	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0071	12.71
PM_{10}	0.0071	12.71

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00722	12.92
PM_{10}	0.00722	12.92

TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage (mmft³/Year)
Natural Gas (Total)	1,346
BFG	185,030
Fuel Oil	365 thousand gallons/year

1. Natural Gas

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	5.1	3.43
PM_{10}	5.1	3.43
SO_2	0.6	0.40
NO_x	306.0	205.94
VOM	2.8	1.88
CO	40.0	26.92

2. BFG

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	2.9	268.29
PM_{10}	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	9.72	1.77
PM_{10}	9.72	1.77
SO_2	141.3	25.79
NO_x	55.0	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM_{10}	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	---	---
BOF Shop	510	451	---	70	12	16,097	1.43
Continuous Casting Operations	71	71	---	90	---	---	---
Certain Fuel Combustion Units[A]	274	274	641	706	2	1,295	0.06
Roadways	27	27	---	---	---	---	---
Material Handling	2	2	---	---	---	---	---
Total	1,102	1,019	1,115	890	171	17.392	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

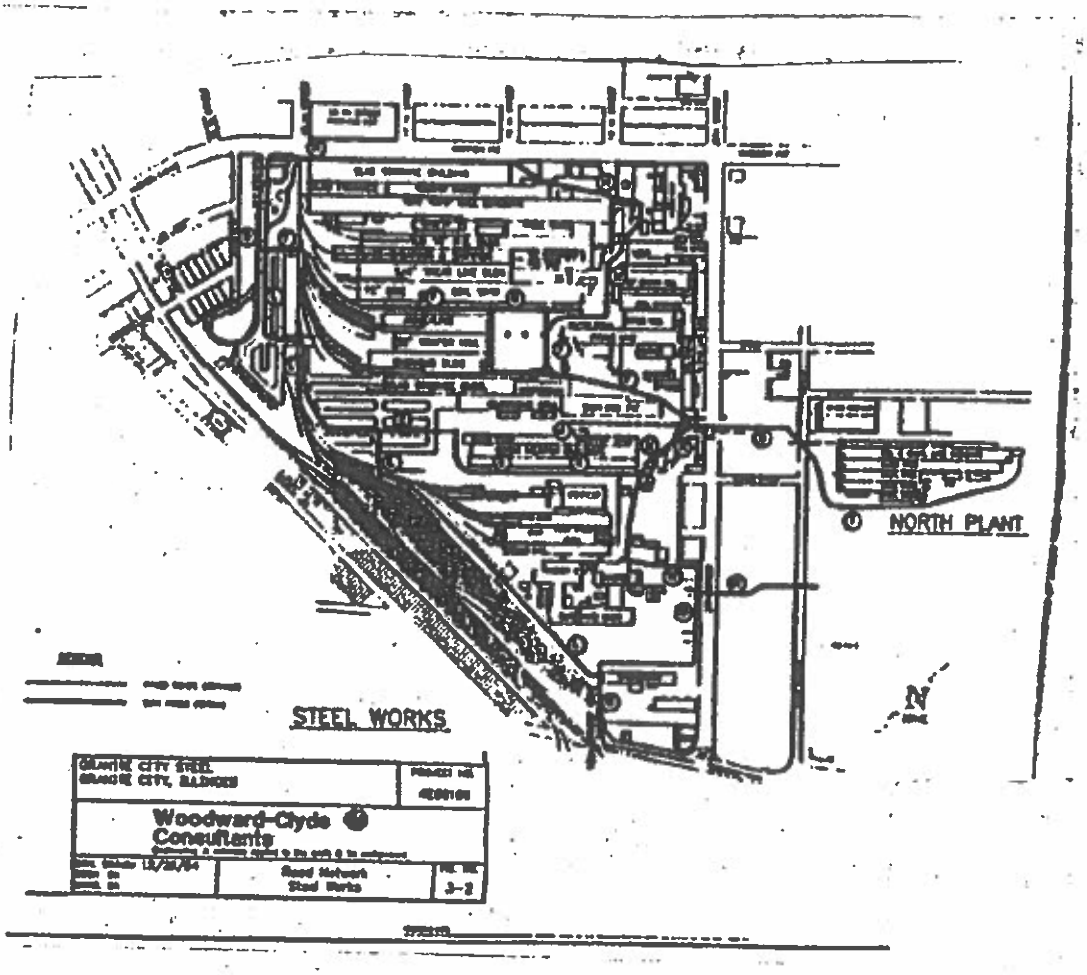
PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

ATTACHMENT A

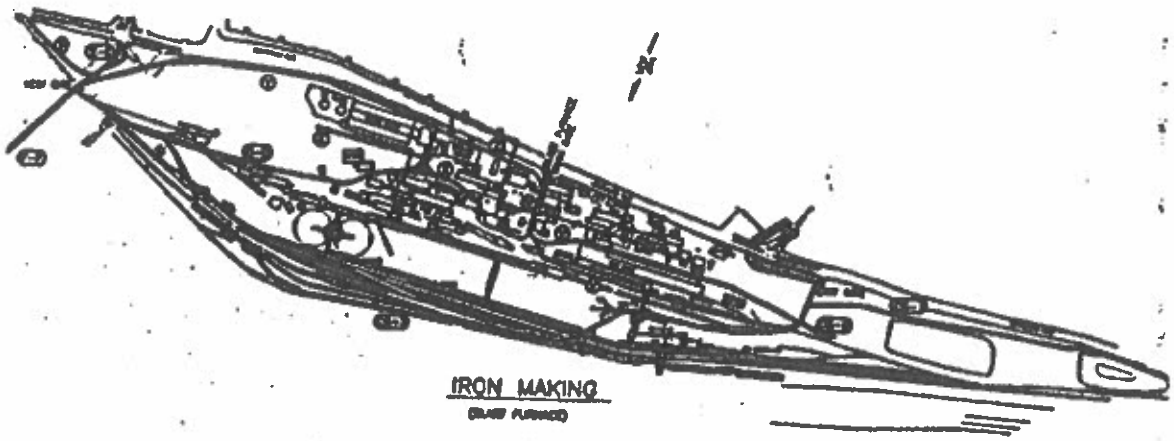
(Former Attachment A has been removed in this revised permit.)

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS

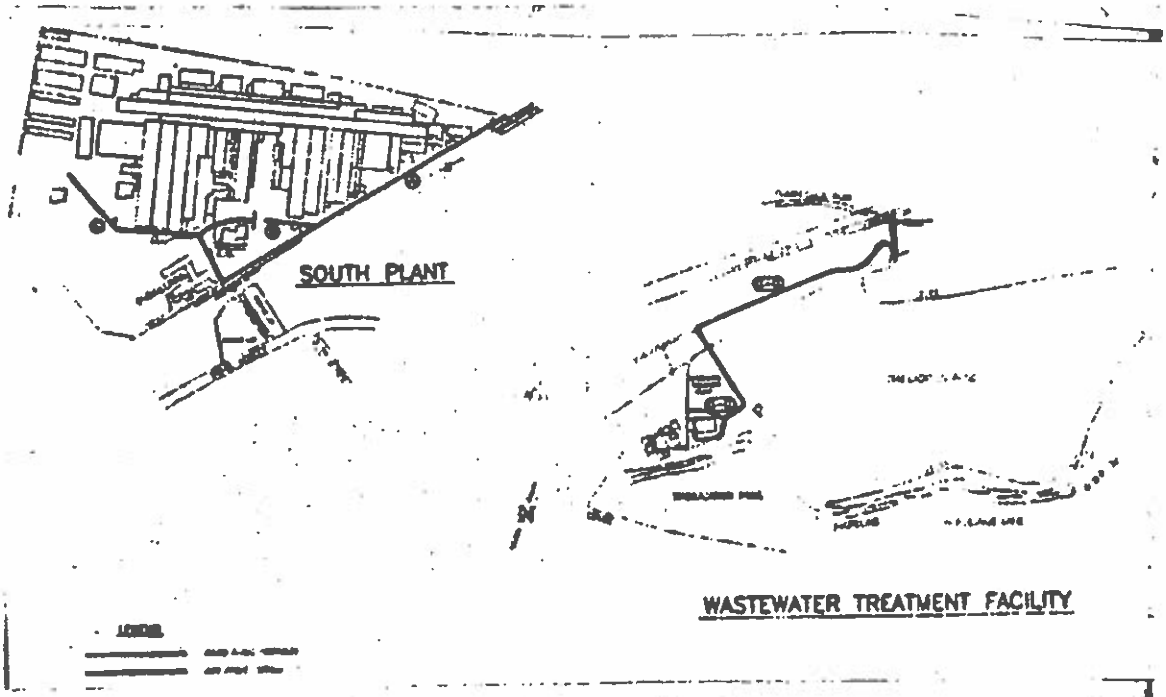


ATTACHMENT B (cont.)



GRANITE CITY STEEL GRANITE CITY, ILLINOIS	PROJECT NO.
Woodward-Clyde Consultants	
Date: 12/22/94 Drawn By: Check By:	Flood Network Iron Making Area
	FIG. NO. 3-3

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Flood Network
South Plant & WWTP

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE EMISSIONS OF PM_{10}

- Historic roadway emissions of 428 tons/year, minus future potential roadway emissions of 27 tons/year, equals a resulting reduction in roadway emissions of 401 tons/year

- Historic material handling emissions of 17 tons/year minus future potential material handling emissions of 2 tons/year, equals a resulting reduction in material handling emissions of 15 tons/year.

- Emission reductions resulting from the sweeping of city streets = 52 tons/year*

- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/year*

Total reductions in the emissions of PM_{10} as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/year

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

KLS:psj

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-2113

P. O. Box 19506, Springfield, IL 62794-9506

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

COLLINSVILLE OFFICE

Application No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Received: January 3, 1995
Subject: Production Increase
Date Issued: January 25, 1996
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

ii. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the set point shall be set to establish the total draft necessary to control the corresponding portion of the process which is occurring on each vessel during the overlap. For example, minimum set point while charging at one vessel and tapping at the other would be equal to that necessary to establish a flow of 700,000 cfm (i.e., 550,000 + 150,000).

iii. Overlapping operations of the BOF vessels is allowed only as specified in operating permit application number 72080043.

iv. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

b. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

c. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

d. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. Within 270 days of the date issued of this permit, the Permittee shall install, calibrate, operate, and maintain a monitoring device that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the various exhaust ventilation rates or levels of exhaust ventilation through the main downcommer duct of the ESP emissions capture and transport system.

b. The monitoring system shall be designed to be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated, tested and maintained to ensure accurate and useful data.

d. The Agency may allow an equivalent system or method instead of the above monitoring system provided the Permittee demonstrates, and the Agency approves, that such system or method will ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks in an equivalent manner, and that such system or method can be installed and operated within the time period required for the monitoring system as stated in this permit.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

a. Operating time of the BOF;

b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft3 per month and 185,030 million ft3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

    i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days

after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on 0.05846 mmft^3 BFG generated per net ton of hot metal produced.

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and

printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

STARTUP AND TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38. Operation at the increased production rates specified in this permit is allowed for 270 days from the date issued under this construction permit.

39a. The following tests shall be performed to demonstrate compliance with the conditions of this permit within 270 days from the date issued of this permit:

i. Blast Furnace testing: The emissions of particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and the opacity from the blast furnace casthouse stack shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.445 and the requirements of this permit;

ii. Hot Metal Desulfurization testing: The emissions of particulate matter from the desulfurization baghouse shall be measured. These tests shall be designed to verify compliance with the requirements of this permit and 35 Ill. Adm. Code 212.446(b)(2);

iii. BOF testing: The emissions of particulate matter, carbon monoxide, and lead from the BOF ESP stack, and the opacity from both the BOF ESP stack and BOF Shop shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.446, 212.458 and the requirements of this permit;

iv. Fuel Combustion Units testing: The emissions of particulate matter from a representative boiler while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

v. BFG generation testing: The amount of blast furnace gas generated ($mmft^3$) per ton of hot metal produced shall be determined. The Agency may waive this requirement for testing providing the Permittee submit a sufficient explanation of how BFG generation is determined with justification that such determination is appropriate for purposes of compliance determinations with this permit.

b. These tests shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close

to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6
Nitrogen Oxides	USEPA Method 7
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Lead	USEPA Method 12

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 60 days prior to the actual date of testing of the BOF, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing the BOF, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion

accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- other pertinent information (e.g., for the BOF, pulpit set point for each process of the BOF cycle - charging, refining, and tapping);

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

40. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Unit (#39)
P.O. Box 19276
Springfield, Illinois 62794-9276

41. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage (mmft3/month and mmft3/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

42a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is

not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD).. Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Jim Ross at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:jar

cc: IEPA, FOS Region 3

COPY
Original Signed by
Donald E. Sutton, P.E.

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

Permit Application #95010001

TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

Permit Application #95010001

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

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TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

Permit Application #95010001

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3/Yr$)
NATURAL Gas (Total)	1,145
BFG	185,030

Fuel Oil 365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

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TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

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TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--
	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

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TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

Permit Application #95010001

ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

   a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

   b. Check on a regular basis the draft rate set points;

   c. Check on a regular basis primary and secondary damper settings;

   d. Check on a regular basis ESP operation, including the following:

      i. Fields down;

      ii. Fields indicating shorts and unable to reset;

      iii. Hopper screw doors are closed;

   e. Check on a regular basis blow rates;

   f. Check on a regular basis spray water system operation;

   g. Check on a regular basis steam injection rate;

   h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

   i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

   j. Notify the emissions control operator and melter when isolation work begins;

   k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

   a. Use controlled pouring of the hot metal into the BOF vessel;

   b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

   c. Use the most beneficial furnace tilt angle;

   d. These procedures shall be posted in the crane operator booth.

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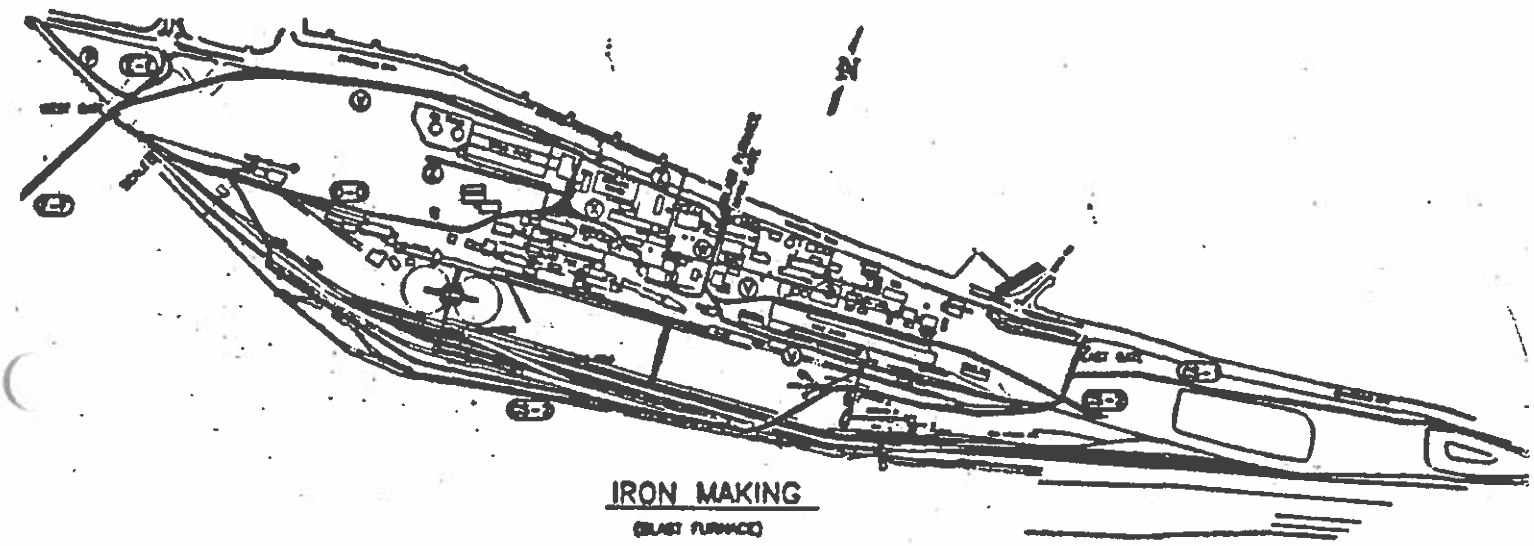
ATTACHMENT B

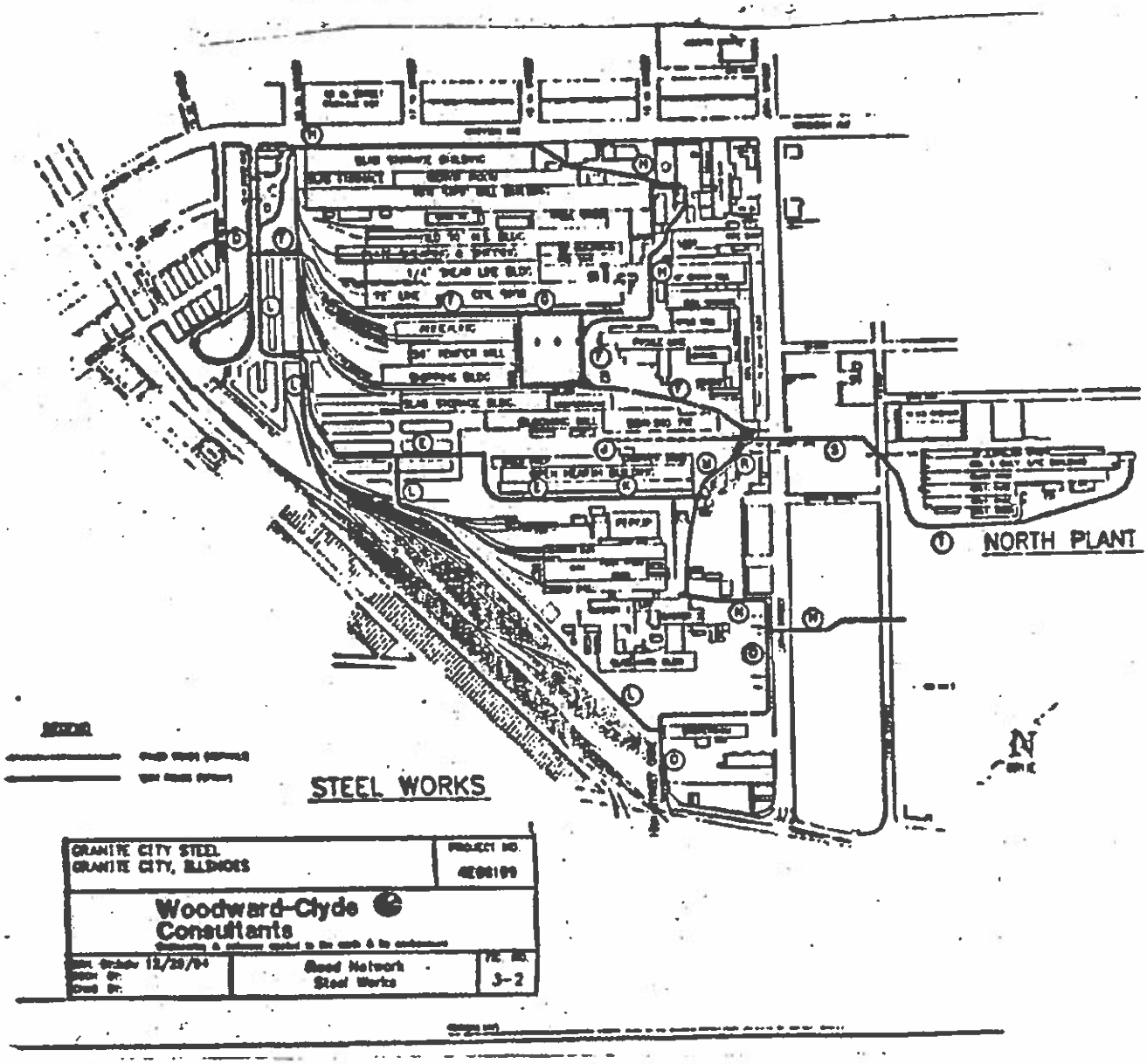
ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL GRANITE CITY, ILLINOIS	PROJECT NO. 4E96189
Woodward-Clyde Consultants	
DRWN. BY: bdw 12/29/94 MODEL BY: CHKD. BY:	Road Network Iron Making Area
	FIG. NO. 3-3

Permit Application #95010001

ATTACHMENT B (cont.)



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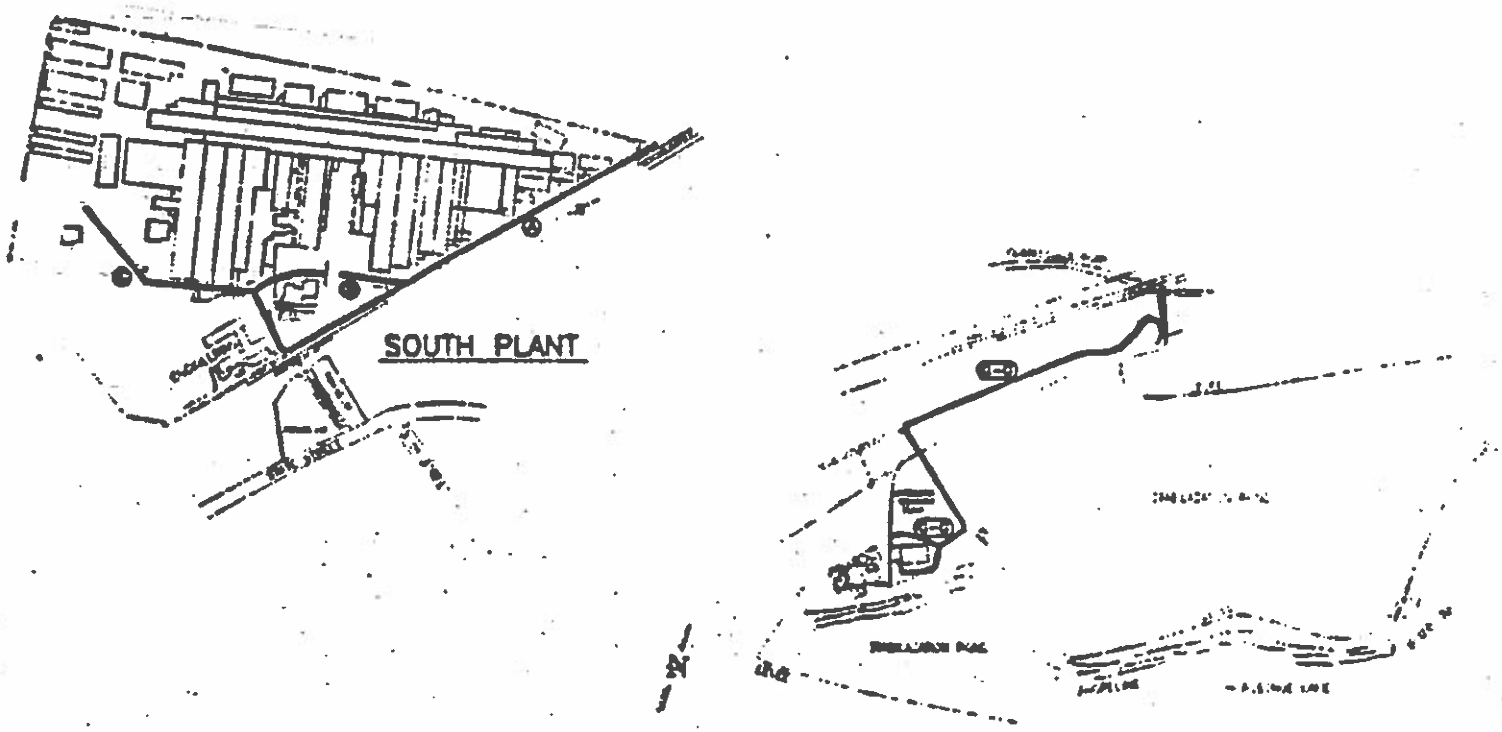
ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

PROJECT NO. 4E88199

Woodward-Clyde Consultants

Road Network
South Plant & WWTP

FIG. NO. 3-4

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

JRR:jar

Appendix E – Copies of EPA Determinations

R001002

IN RE SHELL OFFSHORE, INC.

OCS Appeal Nos. 11-05, 11-06 & 11-07

ORDER DENYING PETITIONS FOR REVIEW

Decided March 30, 2012

Syllabus

This decision addresses petitions for review that challenge an Outer Continental Shelf ("OCS") Permit to Construct and Title V Air Quality Operating Permit ("Permit") Region 10 ("Region") of the U.S. Environmental Protection Agency ("EPA" or "Agency") issued to Shell Offshore, Inc. ("Shell"). The Region issued the Permit on October 21, 2011, pursuant to Clean Air Act ("CAA or "Act") section 328, 42 U.S.C. § 7627, and applicable regulations governing air emissions from OCS sources at 40 C.F.R. part 55, and pursuant to Title V of the CAA, 42 U.S.C. § 7661, and implementing regulations at 40 C.F.R. part 71, as well as applicable Alaska code and regulatory provisions. The Permit authorizes Shell to "construct and operate the Conical Drilling Unit *Kulluk* and associated air emission units and to conduct other air pollutant emitting activities" within Shell's lease blocks in the Beaufort Sea off the North Slope of Alaska. The Permit also provides for the use of an associated fleet of support ships, including icebreakers, supply ships, and oil spill response vessels in addition to the *Kulluk*.

The Board received three petitions for review of the Permit. One petition was filed by Resisting Environmental Destruction of Indigenous Lands ("REDOIL"), Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council, Northern Alaska Environmental Center, Oceana, Pacific Environment, Sierra Club, and the Wilderness Society (collectively, "REDOIL Petitioners"). A second petition was filed by the Inupiat Community of the Arctic Slope ("ICAS"). The third petition was filed by Mr. Daniel Lum.

The three petitions collectively raise seven issues for review: (1) Have Petitioners demonstrated that the Region clearly erred in establishing limitations to restrict the *Kulluk* drilling unit's potential to emit? (2) Have REDOIL Petitioners demonstrated that the Region clearly erred in declining to require prevention of significant deterioration ("PSD") increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process? (3) Did REDOIL Petitioners raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance? (4) Have REDOIL Petitioners demonstrated that the Region clearly erred in its ambient air exemption determination? (5) Have Petitioners demonstrated that the Region failed to satisfy its obligation to consider environmental justice under Executive Order 12898 and comply with applicable Board precedent? (6) Has ICAS demonstrated that the Region clearly erred or abused its discretion in providing forty-six days to comment on the draft permit and in denying ICAS's request for non-overlapping comment periods? (7) Has ICAS demonstrated that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review?

R001003

Held: The Board denies review of the Permit. Petitioners have not met their burden of demonstrating that review is warranted on any of the grounds presented.

(1) Limitations on Potential to Emit. The Board concludes that Petitioners have failed to demonstrate that the Region erred in establishing limitations to restrict the potential to emit nitrogen dioxide ("NO_2"), carbon monoxide ("CO"), sulfur dioxide ("SO_2"), and greenhouse gases ("GHGs") for emission units located on the *Kulluk* and on the Associated Fleet when operating within twenty-five miles of the *Kulluk* while it is an OCS source. The Region exercised its discretion and applied its technical expertise to establish practically enforceable source-wide emission limits that accommodate the substantial and unpredictable variations in emissions based on the atypical nature of Shell's operations. The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or emission factors derived from source test data Shell submitted to the Region in support of two separate, previously issued OCS PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discoverer* drillship.

(2) PSD Increment Consumption Analyses. The Board concludes that REDOIL Petitioners failed to demonstrate clear error in the Region's decision not to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process. The Board holds that the Region provided a reasonable interpretation of CAA section 504(e), which imposes permitting requirements on "temporary" stationary sources, in its Response to Comments document. The Region determined that "PSD major sources are subject to NAAQS and increment in the permitting process, whereas non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the [PSD] increment[s]." The Region concluded that the State of Alaska's minor source preconstruction program does not require permanent minor sources to demonstrate compliance with PSD increments as a condition of construction, so neither would it require such compliance of temporary minor sources. The Board finds REDOIL Petitioners' series of challenges to this basic analysis to be deficient in a variety of ways and therefore upholds the Region's decision.

(3) Ambient Air Quality Analysis. REDOIL Petitioners contend that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance. Upon examination of the administrative record, the Board concludes that REDOIL Petitioners failed to raise this issue during the comment period. This issue, therefore, was not preserved for review.

(4) Ambient Air Exemption Determination. The Board concludes that REDOIL Petitioners have not shown that the Region clearly erred in its decision to exempt the area within a 500 meter radius from the *Kulluk* – the area within the U.S. Coast Guard safety zone – from the definition of "ambient air." The Region, in its Response to Comments, provided a reasonable interpretation of the ambient air regulation and the Agency's longstanding interpretation of that regulation as applied in the OCS context.

(5) Environmental Justice Analysis. The Board concludes that ICAS and Mr. Lum have not demonstrated that the Region failed to satisfy its obligations to comply with Executive Order 12898 and applicable Board precedent. The Region conducted an environmental justice analysis that demonstrated compliance with the NAAQS and endeavored to include and analyze data that is germane to the environmental justice issues raised during the comment period. The Region appropriately determined that it was not required to analyze the mobile source emissions from vessels that operate outside of twenty-five miles from the *Kulluk* while it is an OCS source where, as here, the Title V permit did not address these

R001004

mobile source emissions, and the record lacked sufficient data for such an analysis. In addition, in the remaining arguments they put forth in their petitions, ICAS and Mr. Lum do not demonstrate how the Region's responses to comments are inadequate, overcome the particularly heavy burden a petitioner must meet to demonstrate that review of the Region's technical decisions is warranted, or raise issues within the Board's jurisdiction.

(6) Public Comment Period. The Board concludes that ICAS has failed to show that the Region clearly erred or abused its discretion in either selecting a 46-day comment period or in denying ICAS's request for nonconcurrent comment periods. The length of time the Region provided for comment on this permit was 16 days more than the 30-day regulatory minimum and 1 day more than the amount of time ICAS had specifically requested. ICAS's attempt to recalculate the length of the comment period based on an unexplained mathematical formula involving the number and lengths of other comment periods is unconvincing. Furthermore, ICAS has not pointed to any regulations that prohibit the Agency from issuing concurrent permits or that require – or even specify – a different comment period length when the Agency does issue concurrent permits. Finally, it is clear from the administrative record that the Region appropriately balanced conflicting considerations in deciding on the length of the comment period for this permit and in denying the request for nonoverlapping periods, and ICAS has failed to demonstrate otherwise.

(7) Public Hearing. The Board concludes that ICAS has failed to demonstrate that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review. ICAS has not shown that the Region violated any part 71 or 124 procedural regulation. Moreover, the alleged problems ICAS has identified do not, even if the Board were to find them to constitute a deficiency in some way, warrant Board review.

Before Environmental Appeals Judges Charles J. Sheehan, Kathie A. Stein, and Anna L. Wolgast.

Opinion of the Board by Judge Stein:

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I. *STATEMENT OF THE CASE*

A group of conservation petitioners ("REDOIL Petitioners"),[1] the Inupiat Community of the Arctic Slope ("ICAS"), and Mr. Daniel Lum each petitioned[2] the Environmental Appeals Board ("Board") to review an Outer Continental Shelf ("OCS") Permit to Construct and Title V Air Quality Operating Permit ("Permit") that U.S. Environmental Protection Agency ("EPA" or "Agency") Region 10 ("Region") had issued to Shell Offshore, Inc. ("Shell"). *See generally* OCS Permit to Construct and Title V Air Quality Operating Permit, Permit No. R10 OCS030000 (Oct. 21, 2011) (Administrative Record ("A.R.") J-2). The Region issued the Permit pursuant to Clean Air Act ("CAA" or "Act") section 328, 42 U.S.C. § 7627, and applicable regulations governing air emissions from OCS sources at 40 C.F.R. part 55, and pursuant to Title V of the CAA, 42 U.S.C. § 7661, and implementing regulations at 40 C.F.R. part 71, as well as applicable Alaska code and regulatory provisions.[3] *See* Permit at 6 (citing all relevant provisions).

The Permit authorizes Shell to construct and operate the *Kulluk* drilling unit and associated air emission drilling units in certain lease blocks within the Beaufort Sea. *Id.* at 1. The Region and Shell each filed a response to the petitions. Thereafter, both REDOIL Petitioners and ICAS filed motions requesting leave to file reply briefs. These motions are currently pending before the Board and are addressed below in Part V. The Board did not hold oral argument in this case. For the reasons discussed below, the Board denies review of the Permit.

---

[1] REDOIL Petitioners include Resisting Environmental Destruction of Indigenous Lands ("REDOIL"), Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council, Northern Alaska Environmental Center, Oceana, Pacific Environment, Sierra Club, and The Wilderness Society.

[2] Mr. Lum's petition was designated as OCS Appeal No. 11-05, REDOIL Petitioners' petition was designated as OCS Appeal No. 11-06, and ICAS's petition was designated as OCS Appeal No. 11-07.

[3] The Permit was issued under multiple CAA and Alaska air pollution provisions because it is a consolidation of three air permits. According to the Region, it consolidated "an OCS/Title V permit under 40 CFR Parts 55 and 71 for operations beyond 25 miles of Alaska's seaward boundary; an OCS/minor permit for air quality protection under 40 CFR Part 55 and 18 Alaska Administrative Code (AAC) 50.502 and for owner requested limitations under 40 CFR Part 55 and 18 AAC 50.508 for operations within 25 miles of Alaska's seaward boundary; and an OCS/Title V permit under 40 CFR Part 55 and 18 AAC 50.326 for operations within 25 miles of Alaska's seaward boundary." Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk at 1 (A.R. J-3).

R001007

II. *ISSUES*

The Board has determined that the three petitions filed in this case, collectively, present the following seven issues for review:

A. Have Petitioners demonstrated that the Region clearly erred in establishing limitations to restrict the *Kulluk* drilling unit's potential to emit?

B. Have REDOIL Petitioners demonstrated that the Region clearly erred in declining to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process?

C. Did REDOIL Petitioners raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance?

D. Have REDOIL Petitioners demonstrated that the Region clearly erred in its ambient air exemption determination?

E. Have Petitioners demonstrated that the Region failed to satisfy its obligation to consider environmental justice under Executive Order 12898 and comply with applicable Board precedent?

F. Has ICAS demonstrated that the Region clearly erred or abused its discretion in providing 46 days to comment on the draft permit and in denying ICAS's request for nonoverlapping comment periods?

G. Has ICAS demonstrated that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review?

III. *STANDARD OF REVIEW*

Under the part 124 procedural regulations, which apply to OCS permits,[4] the Board will not ordinarily review a permit unless it is based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review. 40 C.F.R. § 124.19(a); Consolidated Per-

[4] The OCS regulations direct the Agency to follow the applicable part 124 permit regulations in processing OCS permits. 40 C.F.R. § 55.6(a)(3). Accordingly, the part 124 permit appeal provision, 40 C.F.R. § 124.19, applies here. *See In re Shell Gulf of Mex., Inc.*, 15 E.A.D. 470, 476 (EAD 2012) [hereinafter *Shell Discoverer 2012*].

R001008

mit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980). The Board also applies this standard in reviewing Title V permits issued under part 71.[5] *See* 40 C.F.R. § 71.11(*l*)(1); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 32-33 (EAB 2005). When analyzing permits, the Board is cognizant of the preamble to section 124.19, in which the Agency states that the Board's power of review "should be only sparingly exercised" and that "most permit conditions should be finally determined at the [permit issuer's] level." Consolidated Permit Regulations, 45 Fed. Reg. at 33,412; *accord In re Cardinal FG Co.*, 12 E.A.D. 153, 160 (EAB 2005); *see also Peabody*, 12 E.A.D. at 33 (applying these same principles in the context of a part 71 permit appeal).

The petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19; *id.* § 71.11(l)(1). To meet this burden, the petitioner must satisfy threshold pleading requirements including timeliness, standing, and issue preservation. *See* 40 C.F.R. § 124.19; *id.* § 71.11(l)(1); *In re Russell City Energy Ctr., LLC* ("*Russell City II*"), 15 E.A.D. 1, 10 (EAB 2010), *appeal docketed sub nom. Chabot-Las Positas Cmty. Coll. Dist. v. EPA*, No. 10-73870 (9th Cir. Dec. 20, 2010); *In re BP Cherry Point*, 12 E.A.D. 209, 216 (EAB 2005). For example, a petitioner seeking review must file an appeal of the permit decision within 30 days of service of the decision, and must have filed comments on the draft permit or participated in the public hearing. 40 C.F.R. § 124.19(a); *accord Russell City II*, 15 E.A.D. at 10. In addition, a petitioner must not only specify objections to the permit, but also explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. *See* 40 C.F.R. § 124.13 (requiring that all persons who believe a condition of a draft permit is inappropriate "must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period"); *id.* § 124.19(a) (stating that a petition for review to the Board "shall include * * * a demonstration that any issues being raised were raised during the public comment period"); *see also In re Avenal Power Ctr., LLC*, 15 E.A.D. 384, 387 (EAB 2011), *appeals docketed sub nom. Sierra Club v. EPA*, No. 11-73342 (9th Cir. Nov. 3, 2011), *El Pueblo Para el Aire y Agua Limpio v. EPA*, No. 11-73356 (9th Cir. Nov. 4, 2011); *BP Cherry Point*, 12 E.A.D. at 216-17. The petitioner's burden is particularly heavy in cases where a petitioner seeks review of an issue that is fundamentally technical or scientific in nature, as the Board will typically defer to a permit issuer's technical expertise and experience on such matters if the permit issuer adequately explains its rationale and supports its reasoning in the administrative record. *See, e.g.*, *In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 510 (EAB 2006); *Peabody*, 12 E.A.D. at 33-34; *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB

[5] The part 71 regulatory language governing Title V permit appeals is nearly identical to the part 124 regulatory language governing review of other types of permits. *Compare* 40 C.F.R. § 71.11(l)(1) *with* 40 C.F.R. § 124.19; *see also Peabody*, 12 E.A.D. at 33 n.26.

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1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3rd Cir. 1999); *see also In re Ash Grove Cement Co.*, 7 E.A.D. 387, 404 (EAB 1997).

When evaluating a permit appeal, the Board examines the administrative record prepared in support of the permit to determine whether the permit issuer exercised his or her "considered judgment." *Ash Grove Cement*, 7 E.A.D. at 417-18; *accord In re Cape Wind Assocs., LLC*, 15 E.A.D. 327, 330 (EAB 2011); *In re GSX Servs. of S.C., Inc.*, 4 E.A.D. 451, 454 (EAB 1992). The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion. *E.g.*, *In re Shell Offshore, Inc. ("Shell 2007")*, 13 E.A.D. 357, 386 (EAB 2007) (citing *In re Carolina Light & Power Co.*, 1 E.A.D. 448, 451 (Act'g Adm'r 1978)); *Ash Grove Cement*, 7 E.A.D. at 417 (same). As a whole, the record must demonstrate that the permit issuer "duly considered the issues raised in the comments and [that] the approach ultimately adopted by the [permit issuer] is rational in light of all information in the record." *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2005); *accord In re City of Moscow*, 10 E.A.D. 135, 142 (EAB 2001); *NE Hub*, 7 E.A.D. at 568.

Finally, the Board endeavors to construe liberally objections raised by parties unrepresented by counsel (i.e., those proceeding pro se), so as to fairly identify the substance of the arguments being raised. *In re Sutter Power Plant*, 8 E.A.D. 680, 687 & n.9 (EAB 1999); *accord In re Shell Gulf of Mex., Inc. ("Shell Discoverer 2012")*, 15 E.A.D. 470, 478 (EAB 2012); *Russell City II*, 15 E.A.D. at 12. While the Board does not expect such petitions to contain sophisticated legal arguments or to utilize precise technical or legal terms, the Board nonetheless expects such petitions "to articulate some supportable reason or reasons as to why the permitting authority erred or why review is otherwise warranted." *Sutter*, 8 E.A.D. at 687-88 (citing *In re Beckman Prod. Servs.*, 5 E.A.D. 10, 19 (EAB 1994)).

IV. *SUMMARY OF DECISION*

For all of the reasons stated below, the Board concludes that: (a) Petitioners failed to demonstrate that the Region clearly erred in establishing limits to restrict the *Kulluk's* potential to emit; (b) REDOIL Petitioners failed to demonstrate that the Region clearly erred in declining to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process; (c) REDOIL Petitioners failed to raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance; (d) REDOIL Petitioners failed to demonstrate that the Region clearly erred in its ambient air exemption determination; (e) Petitioners have not demonstrated that the Region's environmental justice analysis and related conclusions

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failed to satisfy its obligation to comply with Executive Order 12898 and applicable Board precedent; (f) ICAS failed to demonstrate that the Region clearly erred or abused its discretion in providing 46 days to comment on the draft permit and in denying ICAS's request for nonoverlapping comment periods; and (g) ICAS failed to demonstrate that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review. Accordingly, the Board denies review of the Permit.

V. *RELEVANT PROCEDURAL AND FACTUAL HISTORY*

On July 22, 2011, the Region issued a draft permit consolidating three permits that regulated air pollution from Shell's proposed exploratory drilling operations on OCS lease blocks in the Beaufort Sea off the North Slope of Alaska, as authorized by the United States Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE").[6] The Region solicited public comment on the draft permit from July 22, 2011, through September 6, 2011. *See* Statement of Basis for Draft OCS Permit to Construct and Title V Air Quality Operating Permit ("Statement of Basis") at 10 (A.R. H-4). In addition, the Region held an informational meeting and public hearing on the draft permit on August 23, 2011, in Barrow, Alaska, and a separate public hearing on August 26, 2011, in Anchorage, Alaska. *Id.* at 11. All of the petitioners submitted comments on the draft permit. *See* E-mail from Daniel Lum to EPA Region 10 (Aug. 10, 2011) (A.R. I-31) [hereinafter Lum Comments]; E-mail from Alaska Wilderness League, Audubon Alaska, Center for Biological Diversity, Defenders of Wildlife, Earthjustice, Eyak Preservation Council, Greenpeace, National Wildlife Federation, Natural Resources Defense Council, Northern Alaska Environmental Center, Ocean Conservancy, Oceana, Pacific Environment, REDOIL, Sierra Club, The Wilderness Society, and World Wildlife Fund to EPA Region 10 (Sept. 6, 2011) (A.R. I-53) [hereinafter REDOIL Comments]; Letter from North Slope Borough, AEWC, and ICAS to Doug Hardesty, Air Permits Project Manager, EPA Region 10 (Sept. 6, 2011) (A.R. I-54) [hereinafter ICAS Comments]; *see also* Lum Petition at 1 (noting that he also provided comments at the public hearing).

On October 21, 2011, the Region issued the Permit. *See* Permit at 1. At the same time, the Region issued a response to both the written comments it had received on the draft permit and the oral comments that had been presented at the public hearings. *See generally* Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk ("RTC") (A.R. J-3); *see id.* at 2 (describing comments to which the document responded). The Permit authorizes Shell to conduct air pollutant emitting activities for the purpose of oil exploration with the conical drilling unit *Kulluk* on lease

[6] For a description of the three permits, *see supra* note 3.

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blocks in the Beaufort Sea. The Permit provides for the use of an associated fleet of support vessels ("Associated Fleet"), such as icebreakers, oil spill response vessels ("OSRVs"), and a supply ship, in addition to the *Kulluk*.

The Board received three timely petitions for review of the Permit: one from Mr. Lum, one from REDOIL Petitioners, and one from ICAS. The Region and Shell each filed a single response to those petitions. ICAS and REDOIL Petitioners each filed motions requesting leave to file reply briefs and attached their proposed reply briefs. Shell filed an opposition to the motions for leave to file replies. Before addressing the issues raised by the petitions, the Board first considers whether it is appropriate to grant Petitioners' motions.

A petitioner seeking leave to file a reply brief in an appeal of a new source review ("NSR") permit issued pursuant to the CAA, such as the OCS Permit at issue here, must state "with particularity the arguments to which the Petitioner seeks to respond and the reasons the Petitioner believes it is both necessary to file a reply to those arguments * * * and how those reasons overcome the presumption in the Standing Order."[7] *Shell Discoverer 2012*, 15 E.A.D. at 481 (citing Order Governing Petitions for Review of Clean Air Act New Source Review Permits 3 (Apr. 19, 2011) ("Standing Order"), *available at* http://www.epa.gov/eab (click on Standing Orders)).

Upon consideration of Petitioners' motions to file reply briefs and proposed reply briefs, the Board finds that only two select issues within REDOIL Petitioners' and ICAS's reply briefs meet the high threshold required to overcome the presumption against reply briefs that the Board applies in NSR appeals. *See* Standing Order at 3. In particular, in its reply brief, ICAS responds to arguments concerning ICAS's challenge to the public hearing procedures that the Region advances for the first time in the response brief. ICAS could not have responded to these particular arguments prior to the Region's response because a portion of the Region's rationale in its response brief does not appear in the administrative record. In addition, both ICAS and REDOIL Petitioners assert that the Region referenced for the first time in its response a decision by the Administrator as support for the Region's rationale that the Agency has previously concluded that rolling emission limits accompanied by prescribed emission factors and appropriate monitoring and recordkeeping sufficiently restrict a source's potential to emit. *See* Region Response at 17 (citing *In re Pope & Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007) (A.R. B-24)). ICAS and REDOIL Petitioners did not have an op-

[7] In April 2011, the Board issued a standing order in which it adopted certain procedures intended to facilitate expeditious resolution of petitions requesting review of permits issued under the CAA NSR program, including OCS permits. *See* Standing Order at 1 n.2; *see also* 40 C.F.R. § 124.19. Among other things, the Board will apply a presumption against the filing of reply briefs and sur-replies in NSR appeals. *See* Standing Order at 3. However, the Board maintains discretion to modify these procedures as appropriate on a case-specific basis. *Id.* at 6.

portunity to review the Administrator's decision in the context of this appeal or to analyze its relevance to the Region's stated rationale until the Region cited it for support in its response brief. Accordingly, the Board grants, in part, ICAS's and REDOIL Petitioners' motions for leave to file a reply brief. Thus the Board, in reaching its conclusions set forth in this order, has considered the portions of ICAS's reply brief and REDOIL Petitioners' reply brief that address the public process for the permit and the Region's inclusion of the *Pope & Talbot* decision as support for the Region's PTE decisions. *See* ICAS Reply at 3, 6-7; REDOIL Petition at 9-10. The Board denies REDOIL Petitioners' and ICAS's motions for leave to file a reply brief with respect to all other issues.[8]

The Board analyzes the parties' arguments and sets forth its determinations below.

VI. *ANALYSIS*

A. *ICAS and REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Establishing Limitations to Restrict the Kulluk Drilling Unit's PTE*

ICAS and REDOIL Petitioners both challenge the Region's determination of the *Kulluk's* potential to emit ("PTE") and argue that the Region should require Shell to obtain a preconstruction prevention of significant deterioration ("PSD") permit. They complain that the PTE restrictions Shell requested and the Region included in the permit to ensure that the *Kulluk* remains a synthetic minor source for nitrogen oxides ("NO_x"), carbon monoxide ("CO"), greenhouse gases ("GHGs"), and sulfur dioxide ("SO_2") are practically unenforceable.[9] The Region counters that the restrictions it imposed in the permit that reduce Shell's emissions below the PSD threshold levels for all criteria pollutants are practically enforceable and constitute fundamentally technical decisions that are consistent with CAA statutory and regulatory authority as well as Agency guidance and past practice. This PTE question is central to the Board's analysis because the Region uses the potential to emit to determine which provisions of the CAA, including both the Title V permit requirements and the PSD preconstruction permit requirements, apply to the *Kulluk*. The question the Board must resolve, then, is whether the restrictions the Region included in the permit to limit the *Kulluk's* PTE are both

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[8] The Board notes that Mr. Lum attempted to file by e-mail a request to file a reply brief and a request for oral argument. *See* E-mail from Daniel Lum to Eurika Durr, Clerk of the Board, Environmental Appeals Board, U.S. EPA (Nov. 4, 2011 6:18 pm EDT). The Board denies Mr. Lum's requests.

[9] While ICAS challenges the Region's PTE limitations for all of these pollutants, REDOIL Petitioners only challenge the Region's PTE limitations with respect to NO_x and CO. *See* ICAS Petition at 10-28; REDOIL Petition at 9-14.

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practically enforceable and reasonable in light of the applicable statutory and regulatory authorities as well as Agency guidance and practice, and whether the Region provided adequate support for its decisions in the administrative record.

Before addressing the parties' arguments, a brief review of the relevant statutory and regulatory authorities is warranted.

1. *Statutory and Regulatory Context*

a. *CAA Section 328 and OCS Air Regulations*

Section 328 of the CAA, 42 U.S.C. § 7627, establishes air pollution controls for OCS sources[10] and requires OCS sources to "attain and maintain Federal and State ambient air quality standards" and to comply with the PSD provisions contained in CAA Title I, part C. EPA promulgated the Outer Continental Shelf Air Regulations, 40 C.F.R. part 55, to implement CAA section 328 and established within part 55 "the air pollution control requirements for OCS sources and the procedures for implementation and enforcement of the requirements." 40 C.F.R. § 55.1.

Section 328(a)(1), 42 U.S.C. § 7627(a)(1), also requires that, for OCS sources located within 25 miles of a state's seaward boundary, the requirements shall be the same as would apply if the source were located in the corresponding onshore area ("COA"), including, but not limited to, state and local requirements for emission controls, emission limitations, offsets, permitting, monitoring, testing, and reporting. As the Board has explained before, "OCS sources must obtain

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[10] Section 328 defines an OCS source as follows:

> The terms "Outer Continental Shelf source" and "OCS source" include any equipment, activity, or facility which –
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> (i) emits or has the potential to emit any air pollutant,
>
> (ii) is regulated or authorized under the Outer Continental Shelf Lands Act [43 U.S.C. § 1331 et seq.], and
>
> (iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf.
>
> Such activities include, but are not limited to, platform and drill ship exploration, construction, development, production, processing, and transportation. For purposes of this subsection, emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source.

CAA § 328(a)(4)(C), 42 U.S.C. § 7627(a)(4)(c).

a preconstruction permit from either EPA or an EPA-delegated agency if the OCS source is located within twenty-five miles of a state's seaward boundary and is subject to either federal or state requirements listed in 40 C.F.R. §§ 55.13 or 55.14."[11] *Shell 2007*, 13 E.A.D. at 365 (citing 40 C.F.R. §§ 55.6(b)(1), 55.11 and CAA § 328(a)(3), 42 U.S.C. § 7627(a)(3)). The Agency has retained the authority to implement and enforce section 328 in the OCS off the coast of Alaska as opposed to delegating that authority to the state. Accordingly, as mentioned above, Shell submitted its permit applications to the Region, and the procedural rules contained at 40 C.F.R. part 124 apply. 40 C.F.R. § 55.6(a)(3).

Because requirements for these OCS sources are based on onshore requirements, which may change, section 328(a)(1) and the corresponding regulations in part 55 require EPA to update the OCS requirements as necessary to maintain consistency with onshore requirements. *See* CAA § 328(a)(1), 42 U.S.C. § 7627(a)(1); 40 C.F.R. §§ 55.6(b)(2), 55.12; *see also Shell 2007*, 13 E.A.D. at 364 & n.6. In response to Shell's December 10, 2010, notice of intent submitted to the Agency pursuant to 40 C.F.R. § 55.4, the Agency first proposed in the Federal Register a consistency update on February 10, 2011, and later published the final consistency update on June 27, 2011, subsequent to a public notice and comment period. *See* Outer Continental Shelf Air Regulations Consistency Update for Alaska, 76 Fed. Reg. 37,274 (June 27, 2011) (codified at 40 C.F.R. § 55.14(e) & appx. A); Statement of Basis at 17. This most recent consistency update incorporated, except where specifically noted, Alaska Administrative Code title 18, articles 1 through 5 and article 9, into part 55. 76 Fed. Reg. at 37,279-80; Statement of Basis at 17. In particular, articles 3 and 5 establish the minor source and major source permitting requirements with which the *Kulluk* must comply. *See Shell 2007*, 13 E.A.D. at 364 & n.6.

In addition, because the permit authorizes the *Kulluk* to operate on a group of lease blocks located both within 25 miles and beyond 25 miles of the state's seaward boundary, the permit conditions that refer to lease blocks wholly or partially located beyond 25 miles of the seaward boundary are designated as "outer

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[11] Section 55.13 states, among other things, that the PSD program applies to OCS sources located within 25 miles of a state's seaward boundary whenever the OCS source requires construction of a new major stationary source or a modification at an existing major source and the COA is classified under the PSD program as in attainment or unclassifiable. 40 C.F.R. § 55.13(d)(1) ("40 C.F.R. [§] 52.21 shall apply to OCS sources [l]ocated within 25 miles of a state's seaward boundary if the requirements of 40 C.F.R. [§] 52.21 are in effect in the COA."); *see also Shell 2007*, 13 E.A.D. at 364.

Section 55.14 incorporates by reference regulatory requirements that states which border the OCS in the Pacific, Atlantic, and Arctic Oceans and the Gulf of Mexico have promulgated to meet the national ambient air quality standards ("NAAQS"). 40 C.F.R. § 55.14(d); CAA § 328(a)(1), 42 U.S.C. § 7627(a)(1) (defining the geographic scope of EPA authority to regulate air pollution from OCS sources). These state regulations are known as state implementation plans ("SIPs") and are created pursuant to CAA § 110, 42 U.S.C. § 7410.

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OCS," and conditions that refer to lease blocks wholly or partially located within 25 miles of the seaward boundary are designated as "COA." Permit at 9 (noting that conditions identified with "COA" are those that apply on the "inner OCS," within 25 miles of the state's seaward boundary, and that all other conditions not identified as "COA" or "outer OCS" apply to lease blocks on both the inner and outer OCS); *see also* Statement of Basis at 7.

b. *The PSD Program and PTE*

The PSD program is a preconstruction NSR program that applies to areas designated as either in attainment with the national ambient air quality standards ("NAAQS")[12] or unclassifiable and requires new major stationary sources[13] to limit their impact on ambient air quality by obtaining a PSD permit before construction begins. CAA §§ 160-169, 42 U.S.C. §§ 7470-7479; 40 C.F.R. § 52.21(a)(2).

A source's PTE relates to its inherent ability to emit air pollutants. *Shell 2007*, 13 E.A.D. at 365; *Peabody*, 12 E.A.D. at 30. Under the PSD program, a permitting authority must determine a source's PTE to identify which sources are "major sources" subject to regulation under the applicable PSD requirements, making PTE a technical determination that "is jurisdictional in nature." *Ala. Power Co. v. Costle*, 636 F.3d 323, 352 (D.C. Cir. 1979), *quoted in Peabody*, 12 E.A.D. at 30; *see also* CAA § 165(a), 42 U.S.C. § 7475(a) (requiring a PSD permit for any "major emitting facility"); *Shell Discoverer 2012*, 15 E.A.D. at 515 n.58. The regulations that implement the PSD program define PTE as:

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[12] The NAAQS are maximum ambient air concentrations for specific pollutants that EPA has determined are necessary to protect public health and welfare. *See* CAA §§ 108(a)(1)(A), 109, 42 U.S.C. §§ 7408(a)(1)(A), 7409; 40 C.F.R. § 50.4-.12.

[13] EPA regulations define a major stationary source as any of certain specifically listed stationary sources that emit or have a potential to emit 100 tons per year ("tpy") or more of any regulated NSR pollutant, *see* 40 C.F.R. § 52.21(b)(50), or any other stationary source that emits, or has the potential to emit, 250 tpy or more of a regulated NSR pollutant. 40 C.F.R. § 52.21(b)(1)(i)(a)-(b); *accord* CAA § 169(1), 42 U.S.C. § 7479(1) (defining a "major emitting facility" in the same way).

Alaska regulations, which incorporate large parts of the federal PSD regulations into title 18 of the Alaska Administrative Code, provide that a new PSD permit is required prior to actual construction of a new major stationary source. Alaska Admin. Code tit. 18, § 50.040 (adopting federal standards by reference); *id.* §§ 50.302(a)(1), 50.306. The Alaska regulations also define a major stationary source as any of certain specifically listed stationary sources that emit or have a potential to emit 100 tpy or more of any regulated NSR pollutant, or any other stationary source that emits, or has the potential to emit, 250 tpy or more of a regulated NSR pollutant. *Id.* § 50.990(52) (incorporating by reference definition of major stationary source from 40 C.F.R. § 51.166(b)(1)); *accord* Alaska Stat. § 46.14.990 (same).

> [T]he maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

40 C.F.R. § 52.21(b)(4).[14] In sum, PTE reflects a source's maximum emissions capacity considering the application of any emission control equipment, or other capacity-limiting restrictions, that effectively and enforceably limit emissions capacity. *Shell 2007*, 13 E.A.D. at 366; *Peabody*, 12 E.A.D. at 31 (citing Part 71 Rulemaking, 61 Fed.Reg. 34,202, 34,212 (July 1, 1996)).

Alaska regulations require that, under certain circumstances, a stationary source with a PTE of less than 250 tons per year ("tpy") obtain a minor source permit. Alaska Admin. Code tit. 18, § 50.502. Specifically in terms of the *Kulluk's* operations, Alaska regulations require a minor source permit prior to the construction of a new stationary source with the potential to emit more than 40 tpy of NO_x. *Id.* § 50.502(c)(1)(B). Thus, as the Board noted in *Shell 2007*, under the Alaska PSD program, a new stationary source that has a PTE between 40 and 250 tpy of NO_x must obtain a minor source permit before commencing construction, and a stationary source with a PTE greater than 250 tpy of NO_x must obtain a major source permit. 13 E.A.D. at 366.

A source that would otherwise exceed the applicable PSD major source threshold of 250 tpy of any regulated NSR pollutant may, as in this instance, seek to avoid regulation as a major source under the PSD program by requesting that the permitting authority impose enforceable permit restrictions on the source's PTE. *Shell* 2007, 13 E.A.D. at 366, *cited in* RTC at 20; *see also Peabody*, 12 E.A.D. at 26 & n.11, 31. A Title V permit may function as a vehicle for a permitting authority to establish enforceable permit limits that restrict the source's potential to emit air pollutants to a level below the PSD major source threshold, in this instance 250 tpy, allowing the source to qualify instead as a "synthetic minor" source.[15] *Peabody*, 12 E.A.D. at 31 & n.21.

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[14] The OCS regulations define the term "potential emissions" almost identically to the PTE definition in part 52, with the exception of first sentence, which instead states that "[p]otential emissions means the maximum emissions of a pollutant from an OCS source." 40 C.F.R. § 55.2.

[15] EPA guidance defines the term "synthetic minor" as "air pollution sources whose maximum capacity to emit air pollution under their physical and operational design is large enough to exceed the
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If a source accepts limitations that restrict its potential to emit air pollutants to a level below the PSD threshold, that source will be a synthetic minor source for purposes of the PSD program and will therefore not be subject to PSD permitting requirements "unless future facility modifications increase emission capacity enough to exceed the PSD major source threshold." *Id.* at 31-32. As the Board noted in *Peabody*, in order for a capacity restriction to be cognizable as a PTE limit, it must be practically enforceable, which Agency guidance has interpreted to mean that:

> [T]he permit's provisions must specify: (1) a technically accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, and annual limits such as rolling annual limits); and (3) the method to determine compliance including appropriate monitoring, recordkeeping, and reporting.

12 E.A.D. at 32 (quoting Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, to EPA Reg'l Air Div. Dirs., *Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act* 5-6 (Jan. 25, 1995) [hereinafter *Options for Limiting PTE*] (A.R. B-9)).

In this instance, the pre-permit PTE for units located on the *Kulluk*, and on the Associated Fleet when operating within 25 miles of the *Kulluk* while it is an OCS source,[16] exceeded applicable PSD thresholds for NO_x, CO, SO_2, and GHGs. Statement of Basis at 24-25 & tbl. 2-1.[17] To avoid exceeding the PSD major

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major source threshold but [is] limited by an enforceable emissions restriction that prevents this physical potential from being realized." Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, & Eric Schaeffer, Dir., Office of Regulatory Enforcement, U.S. EPA, *Potential to Emit Transition Policy for Part 71 Implementation in Indian Country* 2 n.2 (Mar. 7, 1999), *quoted in Shell Discoverer 2012*, 15 E.A.D. at 515-16 n.59, and *Peabody*, 12 E.A.D. at 31 n.21.

Alaska regulations refer to such a limitation as an owner requested limit ("ORL"), which can be used to "avoid one or more permit classifications * * * at a stationary source that will still be subject to at least one permit classification; a limitation approved under an ORL is an enforceable limitation for the purpose of determining * * * a stationary source's potential to emit." Alaska Admin. Code tit. 18, § 50.508(5).

[16] The permit states that the *Kulluk* will be an OCS source at any time it is attached to the seabed at a drill site by at least one anchor. Permit at 8; Statement of Basis at 17, 19-20 (A.R. H-4).

[17] The primary emission sources on the *Kulluk* and the Associated Fleet are internal combustion engines that consume diesel fuel. Statement of Basis at 9, 12-14. Incinerators, heaters, boilers, and seldom used sources on the *Kulluk* and the Associated Fleet also emit pollution but to a far lesser extent. *Id.*

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source thresholds, Shell requested that the Region include in the permit practically enforceable restrictions that will reduce the *Kulluk's* PTE below PSD threshold levels for each of the four pollutants. *See* Letter from Susan Childs, Alaska Venture Support Integrator Manager, Shell Offshore Inc., to Doug Hardesty, EPA Region 10, attach. 2 (Apr. 29, 2011) (describing Shell's proposed restrictions and how they would affect emissions) (A.R. E-17). The final permit authorizing the *Kulluk* to operate within the Beaufort Sea contains source-wide emission limits, operational restrictions, and monitoring, recordkeeping and reporting requirements intended to ensure that the *Kulluk* can operate as a synthetic minor source. Permit Conditions D.1-D.4.

With this framework in mind, the Board now turns its attention to Petitioners' arguments presented in these appeals.

2. *The Region Did Not Clearly Err in Establishing Source-Wide Emission Limits to Restrict PTE for NO_x and CO*

The Permit restricts emissions from the *Kulluk* and the Associated Fleet to no more than 240 tpy of NO_x and no more than 200 tpy of CO.[18] Permit Conditions D.4.1, D.4.2. For both pollutants, the PTE limits are determined on a rolling 365-day basis by calculating emissions for each day and adding the emissions calculated for the previous 364 days. *Id.* For both NO_x and CO, daily emissions from each emission unit or group of emission units "shall be determined by multiplying the appropriate emission factor (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Permit Condition E.2) by the recorded daily operation rate (units/day) and dividing by 2000 lb/ton." *Id.* The Region further explained that "[c]ompliance with the emissions limits for NO_x and CO is determined by applying the relevant emission factor to the amount of fuel combusted by each emission unit (or hours of operation for incinerators)." RTC at 29. The Permit also includes conditions that require source-wide recordkeeping and monitoring to ensure that Shell complies with the source-wide limits. Permit at 56-61 (including operations and fuel monitoring in Permit Condition F.2 as well as selective catalytic reduction ("SCR") and oxida-

[18] ICAS asserts that the Region should include a 5-10% buffer zone between the PSD threshold emissions level of 250 tpy and the *Kulluk's* restricted PTE, and that the NO_x emission limit of 240 tpy does not provide this. ICAS Petition at 15 (citing a comment letter from Region 9 to the Nevada Division of Environmental Protection in which Region 9 "encourage[d] a 5-10% buffer between the permitted emission limits and the federal threshold" for a permit that established a CO synthetic minor limit of 249 tpy). However, the 240 tpy emission limit for NO_x contained in the current Permit represents a 4% buffer between the synthetic minor limit and the PSD threshold emission level of 250 tpy, which is ten times larger than the 0.4% buffer between a 249 tpy emission limit and the PSD threshold of 250 tpy contained in the Nevada permit. The Board agrees with the Region that Congress established specific thresholds to determine when a source would be considered major for purposes of PSD review. *See* RTC at 30. The buffer that ICAS requests is neither a legal requirement nor an established Agency policy, and thus the Region appropriately declined ICAS's request.

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tion catalyst ("OxyCat") control device monitoring in Permit Conditions F.3 – F.4).

REDOIL Petitioners and ICAS make several challenges to the Region's decision to restrict the *Kulluk's* PTE for NO_x and CO using source-wide emission limits. Both petitioners assert that the Region's decision to limit CO and NO_x emissions using source-wide limits in effect applies blanket emission limits, which Agency guidance expressly prohibits because they are practically unenforceable, and that the limited exception in the Agency guidance that allows for source-wide limits is inapplicable to the *Kulluk's* operations. REDOIL Petition at 10-11; ICAS Petition at 11. Both petitioners also object to the Region's use of generic emission factors[19] to calculate source-wide emission limits. In particular, both petitioners assert that (1) the Region should have developed source-specific emission factors for all units of the OCS source; (2) the AP-42 emission factors applied to the emergency generator, the OSRVs, and heaters and boilers lead to inaccurate and underestimated emissions for those sources; and (3) the Region did not require Shell to conduct enough stack tests to accurately calculate source-specific emission factors. ICAS Petition at 15-20; REDOIL Petition at 11-14.

The Region responds that Agency guidance documents generally "illustrate that the Clean Air Act and the implementing regulations allow for a flexible, case-by-case evaluation of appropriate methods for ensuring practical enforceability of PTE limits." Region Response at 14-15 (quoting *In re Orange Recycling & Ethanol Prod. Facility*, Pet. No. II-2001-05, at 5 (Adm'r Apr. 8, 2002) (A.R. B-17)). Specifically, the Region asserts that source-wide emission limits for NO_x and CO are indeed practically enforceable and are most appropriate given the uncertainty of a number of factors that otherwise preclude the Region from establishing PTE restrictions based on operational limits. *Id.* at 18; RTC at 26-27, 29-30. In addition, the Region asserts that the emission factors used to calculate NO_x and CO emissions provide reliable emission calculations. Region Response at 19-23. In particular, the Region asserts that it made an appropriate technical determination to apply AP-42 emission factors or emission factors derived from *Discoverer*[20] data rather than source-specific emission factors for certain emission units. *Id.* The Region adds that the permit conditions that apply to source-specific

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[19] *See infra* Part VI.A.2.b.

[20] The Region issued Shell two OCS PSD permits to conduct exploratory drilling activities in the Chukchi and Beaufort Seas utilizing the drillship *Discoverer* that were twice appealed to the Board, first in 2010, and then again in 2011 subsequent to a Board remand of the permits to the Region. *See Shell Discoverer 2012*, 15 E.A.D. at 474-75 (describing history of *Discoverer* permit proceedings). In preparing the permit applications for the *Discoverer*'s operations, Shell conducted source-specific emission tests for various emission units on the *Discoverer* and an associated fleet of support ships, including icebreakers, supply ships, and oil spill response vessels. *See id.*, 15 E.A.D. at 479-80 (describing associated fleet).

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emission factors require source tests that are inadequate in frequency and unrepresentative of the variation in Shell's proposed operations to allow the Region to derive accurate emission factors. *Id.*

a. *Blanket Emission Limits and Practical Enforceability*

ICAS and REDOIL Petitioners correctly assert that the use of blanket emission limits alone, essentially statements that actual emissions of a pollutant will not exceed a particular quantity, is generally prohibited to restrict PTE because such limits are not enforceable as a practical matter. *See United States v. La.-Pac. Corp.*, 682 F. Supp. 1122, 1133 (D. Colo. 1987) ("[C]ompliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce."), *quoted in* REDOIL Petition at 11; *see also* Office of Air Quality Planning & Standards, U.S. EPA, *New Source Review Workshop Manual* at C.4 (draft Oct. 1990) [hereinafter *NSR Manual*] ("Blanket emissions limits alone (e.g., tons/[year], lb/[hour]) are virtually impossible to verify or enforce, and are therefore not enforceable as a practical matter."), *quoted in* ICAS Petition at 13; Memorandum from Terrell Hunt, Assoc. Enforcement Counsel, U.S. EPA, & John Seitz, Dir., Stationary Source Compliance Div., U.S. EPA, *Guidance on Limiting Potential to Emit in New Source Permitting* 7 (June 13, 1989) (A.R. B-4) [hereinafter *1989 Guidance on Limiting PTE*].[21] However, the Petitioners' characterization of the source-wide emission limits for NO_x and CO contained in the Permit as blanket emission limits must fail. ICAS and REDOIL Petitioners do not acknowledge the Region's explanation in the Response to Comments for why it chose to apply source-wide emission limits in the Permit, nor do they establish that the Region's fundamentally technical determinations contravene Agency guidance.

The Region made clear in the Response to Comments that its decision to employ source-wide emission limits calculated as rolling 365-day limits to restrict NO_x and CO was based in large part on the substantial and unpredictable variations in emissions based on the atypical nature of Shell's operations. RTC at 26-27; Region Response at 18. Variability in Shell's exploratory operations, multiple engines and generators located on both the *Kulluk* and numerous vessels in the Associated Fleet, the state of the weather and the sea, ice thickness, and the changing nature of the activities that Shell may need to conduct all influenced the Region's conclusion that the need for operational flexibility made it impractical to establish unit-specific limits or operating parameters for some pollutants, such as NO_x and CO, that might typically be applied to limit a stationary source's PTE. RTC at 27; *see* Statement of Basis at 38. The Region continued that, in its judgment, the choice to restrict the *Kulluk*'s PTE for NO_x and CO using source-wide emissions limits "accounts for variability in operations and emissions, yet still

[21] Appendix C of the NSR Manual is based largely on the 1989 Guidance on Limiting PTE. *NSR Manual* at C.1 n.1.

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provides assurance that limits on potential to emit can be enforced as a practical matter." RTC at 28.

Although the restrictions to limit the PTE of emission units located on the *Kulluk* and the Associated Fleet utilize a rolling 365-day limit, a longer time period than generally recommended in Agency guidance,[22] as the Region points out, the continuous monitoring and recording of fuel usage and the application of source-test derived or specified emission factors have the practical effect of constraining Shell's fuel use, thus ensuring compliance with the PTE limits. Region Response at 15, 17 (citing *In re Pope & Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007) (A.R. B-24), in which rolling emission limits in addition to prescribed emission factors and appropriate monitoring and recordkeeping were sufficient to restrict PTE).[23] In essence, although the Region could not incorporate more traditional operational limits into the Permit based on the atypical nature of the permitted activities, the daily calculation of NO_x and CO emissions in conjunction with continuous monitoring and recording of fuel usage ensure that the NO_x and CO PTE restrictions can be practically enforced.

Despite the Region's explanation in the Response to Comments regarding the need to consider the facts unique to this Permit, neither ICAS nor REDOIL Petitioners explain why, especially in light of the *Kulluk*'s atypical operations as

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[22] The 1989 Guidance on Limiting PTE recommends that the time limit over which production or operational limits extend should be "as short term as possible" in order for such limitations to be enforceable as a practical matter, and generally not exceeding one month, but the Guidance also recognizes that in rare circumstances a limit spanning a longer time may be appropriate. *1989 Guidance on Limiting PTE* at 9. The Guidance specifies that a limit spanning a longer time is appropriate if it is rolling and that it should not exceed an annual limit rolled on a monthly basis. *Id.* The Guidance also notes that:

> [P]ermits where longer rolling limits are used to restrict production should be issued only to sources with substantial and unpredictable annual variation in production[.] * * * Rolling limits could be used as well for sources which shut down or curtail operation during part of a year on a regular seasonal cycle, but the permitting authority should first explore the possibility of imposing a month-by-month limit.

Id. at 9-10. In this instance, although the Guidance was written prior to Congress authorizing EPA to regulate air emissions from sources located on certain areas of the OCS, *see* Region Response at 17, including the Arctic, the circumstances the Guidance anticipates that would make a longer time limit appropriate apply in this instance to the *Kulluk* permit, where the operations are seasonal and thus variation in production would be substantial. *See 1989 Guidance on Limiting PTE* at 9-10.

[23] Although the Board agrees with Petitioners that the Region did not cite this decision until it submitted its response to the petitions for review, and thus accepts their reply briefs with respect to this point, *see supra* Part V, the Board nonetheless disagrees that this publicly available decision of the Administrator is inapposite to the current appeal. The *Pope & Talbot* decision underscores the Agency's ability to exercise its discretion and its technical expertise in order to craft practically enforceable synthetic minor limits.

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compared to other stationary sources, the Permit's PTE limits are not practically enforceable. *See* Region Response at 17. Rather, Petitioners hew closely to the language in the 1989 Guidance on Limiting PTE prohibiting blanket emissions, asserting instead that because the Permit does not contain production or operational limits to restrict PTE, the NO_x and CO emission limits constitute blanket emission limits that contravene Agency guidance. ICAS Petition at 11-14; REDOIL Petition at 9-11. The 1989 Guidance on Limiting PTE sets forth the types of limitations that will restrict a source's PTE and states in relevant part:

> To appropriately limit potential to emit * * * permits * * * must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment. Restrictions on production or operation that will limit potential to emit include limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level.

1989 Guidance on Limiting PTE at 5-6.[24] In addition, neither ICAS nor REDOIL Petitioners address the operational limits included in the Permit and discussed in

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[24] The Guidance also acknowledges that the "particular circumstances of some individual sources make it difficult to state operating parameters for control equipment limits in a manner that is easily enforceable as a practical matter" and lists two exceptions. *1989 Guidance on Limiting PTE* at 7. Although the Guidance preceded EPA's authority to regulate air emissions on parts of the OCS, *see* Region Response at 17, and thus could not have anticipated the circumstances of the permit at issue in these appeals, the Region nonetheless asserts that the circumstances surrounding the current permit are sufficiently analogous to the second exception for volatile organic compound ("VOC") surface coating operations, which contemplates no add-on controls but allows for the restriction of PTE by limiting the VOC contents and quantities of coatings used. *Id.* at 17-19 (referring to *1989 Guidance on Limiting PTE* at 8).

The VOC exception focuses on circumstances where operating and production parameters could not be readily set due to the wide variety of coatings and products and due to the unpredictable nature of the operations. *1989 Guidance on Limiting PTE* at 8. The Region asserted that the rationale informing the VOC surface coating operation exception is sufficiently similar to the present circumstances and analogized that an effective way to restrict NO_x and CO was through source-wide emissions limits supported by test-derived or specified emission factors, similar to the VOC content of coatings, continuous monitoring and recording of operational parameters, and tracking the quantity of VOC coating used. RTC at 30; Region Response at 18. REDOIL Petitioners and ICAS assert that the VOC exception should be construed quite narrowly and that the VOC surface coating operation exception within the 1989 Guidance on Limiting PTE could not apply to the *Kulluk* and the Associated Fleet. *See* ICAS Petition at 20; REDOIL Petition at 13-14. Petitioners do not state more than a differ-

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the Response to Comments. *See* RTC at 29 (discussing hourly operational limits on mudline cellar drilling and overall drilling activity and the installation of SCR and OcyCat controls to limit NO_x emissions).

Finally, ICAS challenges the Region's inclusion of requirements in the Permit to calculate daily emissions for NO_x and CO on a weekly basis, arguing that it is a "critical flaw to enforceability of the permit because it means that Shell will only know where it stands vis-a-vie [sic] its NO_x and CO permit limits once a week." ICAS Petition at 14 (citing Permit Conditions D.1.1, D.1.2). The Board finds ICAS's argument here unavailing in light of the Region's thorough explanation in the Response to Comments. *See* RTC at 44; Region Response at 19, 23. The Region explained that although the calculations of emission limits will be conducted weekly, data is continuously collected and recorded and will eventually be generated in the same terms as the emission limits. *See* RTC at 44; Region Response at 23. Moreover, the Region points out that Shell is required to process data from numerous emission units across multiple vessels for 168 individual hours (24 hours x 7 days). RTC at 44. The permit requirements to continuously monitor and record data necessary to conduct daily emissions calculations ensures, as ICAS raises, the ability to assess and verify compliance immediately should an inspector, the Region, or Shell require it. RTC at 44; Region Response at 23. In this instance, ICAS does not acknowledge the Region's response or address why that response is inadequate and thus warrants review. As this Board has previously stated, "[p]etitions for review may not simply repeat objections made during the comment period; instead they must demonstrate why the permitting authority's response to those objections warrants review." *Peabody*, 12 E.A.D. at 46 n.58; *accord In re Knauf Fiber Glass GmbH, ("Knauf II")*, 9 E.A.D. 1, 5 (EAB 2000); *see also* standard of review discussion *supra* Part III.

In addition, as the Board noted above in Part VI.A.1.b, the determination of a source's PTE is inherently an exercise that requires technical expertise. Neither REDOIL Petitioners nor ICAS have met the particularly heavy burden of demonstrating that review of the Region's decisions to employ source-wide emission limits to restrict the *Kulluk*'s PTE is warranted. *See, e.g.*, *Peabody*, 12 E.A.D. at 33; *NE Hub*, 7 E.A.D. at 567 ("When issues raised on appeal challenge a Region's technical judgments, clear error or a reviewable exercise of discretion is not

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ence of opinion or alternative view on a technical issue. *See NE Hub*, 7 E.A.D. at 567. Without more, petitioners cannot sustain the burden of demonstrating that review of the Region's exercise of its technical judgment is warranted. *See Peabody*, 12 E.A.D. at 33; *In re Teck Cominco Alaska Inc.*, 11 E.A.D. 457, 473 (EAB 2004).

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established simply because petitioners document a difference in opinion or an alternative theory regarding a technical matter.").

b. *Emission Factors*

An emission factor is a representative value used to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. U.S. EPA, AP-42, *Compilation of Air Pollutant Emission Factors*, Volume 1: Stationary Point and Area Sources 1 (Jan. 1995) (5th ed.) ("AP-42 Guidance"). Emission factors essentially represent an average of a range of emission rates of the subject sources. *Id.* at 2. As stated above in Part VI.A.2, in this instance compliance with the PTE restrictions for NO_x and CO are determined by calculating daily emissions of each pollutant, which requires multiplying the appropriate emission factor by the recorded daily operation rate and dividing by 2000 lb/ton. Permit Conditions D.4.1, D.4.2.

REDOIL Petitioners and ICAS challenge several aspects of the Region's use of emission factors to assist in calculating compliance with the restricted PTE for both NO_x and CO. Both petitioners challenge the Region's decision to forgo source-specific emission testing to establish emission factors for all emission units on the *Kulluk* and the Associated Fleet and further assert that this will cause the Region and Shell to underestimate the quantities of NO_x and CO emitted by the OCS source. ICAS Petition at 15-19; REDOIL Petition at 11-13. REDOIL Petitioners and ICAS assert that the use of AP-42 emission factors and emission factors derived from *Discoverer* test results for those emission units that will not undergo source-specific testing constitutes clear error because these more generic emission factors will likely lead to an underestimation of emissions from the units to which they are applied. ICAS Petition at 16-18; REDOIL Petition at 11-12 (referring to AP-42 emission factors as "notoriously inaccurate default factors"). Finally, ICAS challenges the frequency and number of stack tests used to develop source-specific emission factors for emission units and further asserts that by Shell's own admission there is a 15% variability in stack test data that results in a less conservative emission factor than the Region claims. ICAS Petition at 16-17.

The Board notes at the outset that the development of emission factors for use in calculating daily emissions to determine compliance with PTE restrictions requires the sort of quintessential technical expertise the permit issuer possesses, here the Region, to which the Board will defer if "the record demonstrates that the Region duly considered the issues raised in the comments and if the approach ultimately selected by the Region is rational in light all of the information in the record." *NE Hub*, 7 E.A.D. at 567-68, *quoted in Peabody*, 12 E.A.D. at 34; *see also Avenal Energy Ctr.*, 15 E.A.D. at 387. As explained more fully below, for each challenge regarding the derivation and use of emission factors set forth in the Permit, REDOIL Petitioners and ICAS have failed to sustain the particularly heavy burden petitioners must overcome to demonstrate that review of a funda-

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mentally technical decision is warranted. *See, e.g.*, *Peabody*, 12 E.A.D. at 33; *NE Hub*, 7 E.A.D. at 567-68.

The Region fully explained in the Response to Comments its rationale for supplementing source-specific emission factors derived for most of the emission units or groups of emission units located on the *Kulluk* or the Associated Fleet with either AP-42 emission factors[25] or emission factors derived from *Discoverer* source test data for a minority of units. RTC at 32-33; *see also* Region Response at 20-21. In support of its decision to utilize a mix of source-specific testing for emission factors in addition to using AP-42 and *Discoverer* test data emission factors, the Region stated that it "believes the permit strikes an appropriate balance between the need for accurate emission factors to reliably calculate emis-

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[25] ICAS's attempt to analogize the situation the Board confronted in *Peabody* to the current permit appeal falls short. Although *Peabody* discusses the use of AP-42 emission factors in a PTE calculation where the source was seeking synthetic minor status, ICAS fails to acknowledge critical factual elements that distinguish *Peabody* from the current appeal.

In *Peabody*, the permittee was a large coal-processing plant built prior to the effective date of the PSD program that requested a PTE limit for particulate matter with a diameter of 10 microns or less ("PM_{10}") in the permittee's Title V permit so that the facility could remain a synthetic minor source for PM_{10} emissions should it conduct any major modifications in the future. *See Peabody*, 12 E.A.D. at 24-34. Of critical importance, the facility's emissions were primarily fugitive, and thus, emission testing to directly measure PM_{10} emissions was not feasible. *Id.* at 34. The permittee consequently submitted a request for a PTE limit based on a quantitative estimate of the facility's capacity to emit PM_{10}, which in turn relied on estimates of uncontrolled emissions from each unit based on the application of AP-42 emission factors that were then used to estimate net emissions by applying assumed emission control efficiencies for the emission control equipment in use. *Id.* at 34-35 & n.31. Peabody's proposed compliance regimen did not include direct measurement of PM_{10} emissions. As the Board stated, "[b]ecause Peabody's approach would rely entirely on the application of emission factors and assumed control efficiencies, for purposes of both estimating maximum emissions capacity and monitoring ongoing compliance, the accuracy and appropriateness of the emission factors and the control efficiency assumptions were the focal point of Region IX's analysis of Peabody's proposal." *Id.* at 35-36.

Contrary to the facility in *Peabody*, in this instance the use of AP-42 factors to calculate compliance with restricted PTE for NO_x and CO was essentially a last resort method for calculating compliance, whereas the emission units that accounted for at least 90% of the NO_x and CO emissions were subject to source-specific emission testing. *See id.* at 32-33. The Region made clear that in the relatively small number of instances where an AP-42 emission factor was employed to calculate compliance with PTE, the Region chose conservatively higher emission factors. In *Peabody*, the Region made a technical determination and "concluded that Peabody had not sufficiently demonstrated that it met the central criteria for establishing [PTE] – technical accuracy and a reliable method of determining compliance." *Id.* at 39. In this instance, the Region made a technical determination that Shell has sufficiently demonstrated that the *Kulluk* could demonstrate compliance with the NO_x and CO PTE limits included in the permit in a manner that is technically accurate, and that the compliance of the emission units can be verified based on source-specific testing. The Region's exercise of its technical expertise to conclude that in limited circumstances AP-42 emission factors were appropriate to demonstrate compliance with the restricted PTE is rational in light of all of the information in the record. Thus, ICAS's contention that *Peabody* governs the appeal currently before the Board is unpersuasive.

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sions for comparison to permit limits and the complexity of testing numerous emission units in a short period of time." RTC at 33. The Region also noted that, in response to comments received, it decided to require source-specific emission testing for incinerators and that, after that change, the permit will require source testing of emission units that constitute 91% of NO_x and 97% of CO emissions. *Id.* at 32. Of the remaining units that were not required to undergo source testing to develop an emission factor, the Region set forth in detail why it had chosen emission factors derived from *Discoverer* source test data or the AP-42 emission factors, in many instances raising the value of an emission factor to provide a more conservative estimate of emissions.[26] *Id.* at 32-33; *see also* Region Response at 20; Statement of Basis at 38 (noting that testing for source-specific emission factors (Permit Condition E.2) uses a protocol that results in conservatively high unit-specific emission factors that in turn help to ensure compliance with PTE).

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[26] The Region explained in the Statement of Basis that an important element of Permit Condition E.2, which catalogues the procedures for conducting tests to determine equipment-specific emission factors, "is the selection of worst[-]case emission factors for each emission unit or group of emission units tested." Statement of Basis at 43; *see also* Permit at 52-56. The record demonstrates that the Region thoughtfully and judiciously employed emission factors derived from *Discoverer* test data and AP-42 emission factors, and consistently chose higher, more conservative emission factors when there was any question or discrepancy. For example, for those NO_x emission units for which the Permit does not require source testing and that rely on emission factors based on *Discoverer* test data, the Region adjusted the emission factor to reflect the conservative 90th percentile (or higher) values from the test data. RTC at 32. The Region further explained that for heaters and boilers – the only remaining group of NO_x emission units that rely on AP-42 for emission factors – the Region expects the AP-42 emission factor to be a conservative representation of actual emissions. *Id.* (noting that while AP-42 predicted an NO_x emission factor for heaters and boilers of 0.02 lb/gal, Shell testing of *Discoverer* boilers shows a range of values between 0.011 lb/gal and 0.015 lb/gal); *see also* RTC at 46 (noting that the boiler and heater NO_x emission factor used in the *Kulluk* permit is "lower than the *Discoverer* BACT limit for similar equipment, but is higher than available test data for a similar source"). ICAS challenged the Region's use of an NO_x emission factor in the Permit that is lower than the one in the *Discoverer* permits, *see* ICAS Petition at 18-19, but ICAS failed in its petition to even acknowledge the Region's response to its comment regarding the NO_x emission factor for heaters and boilers, let alone "substantively confront the permit issuer's subsequent explanation." *Peabody*, 12 E.A.D. at 33 (citing *In re Zion Energy, LLC*, 9 E.A.D. 701, 705 (EAB 2011)).

With respect to emission units that will not undergo source testing to verify CO emission factors, the Region similarly explained that it believed emission factors are reasonable for use in the permit given that AP-42 emission factors will represent only 3% of the total CO emissions. RTC at 32. In addition, the Region notes that the CO emissions from tests conducted for two boilers on the *Discoverer* were nearly identical to the AP-42 emission factor. *Id.* at 33 (explaining that the Region chose the highest, most conservative emission factor of the three). Finally, the Region notes that one of the potential oil spill and response boats has an actual CO emission factor for its propulsion engine that is based on the manufacturer's data and is one tenth of what the AP-42 factor predicts. *Id.*; *see also* Permit Table D.2.2 (demonstrating that the Region chose to include the much higher AP-42 emission factor for the OSRV propulsion engine).

While REDOIL Petitioners[27] and ICAS may disagree with the Region's approach, Petitioners do not demonstrate that the Region's choices in deriving emission factors for emission units will result in an underestimation of pollutants emitted by the *Kulluk* and the Associated Fleet. The Region has demonstrated that it balanced its primary task of accurately calculating NO_x and CO emission factors to ensure that the *Kulluk* and the Associated Fleet will not exceed the restricted PTE with the practical need to calculate emission factors for numerous and varied emission units aboard both the *Kulluk* and the Associated Fleet. The Board has frequently stated that it will not grant review where, as here, the record demonstrates a bona fide difference of opinion or alternative theory regarding a technical matter but the approach the Region ultimately selected is rational in light of all the information in the record. *Peabody*, 12 E.A.D. at 34 (quoting *NE Hub*, 7 E.A.D. at 567).

Finally, ICAS asserts that the *Discoverer* source test data is not sufficient to accurately generate worst-case scenario emission factors for *Kulluk* emission units because similar sources tested on the *Discoverer* were subject to BACT, and further, that in using stack test results from the *Discoverer* to develop emission factors for the *Kulluk* permit, the Region never accounted for "15% variability in Shell's stack tests," resulting in inadequate emission factors. ICAS Petition at 17-19. The Region points out, however, that the *Discoverer* stack tests on which the Region relied to calculate the 90th percentile value and assess the appropriateness of AP-42 factors were not subject to post-combustion controls limiting NO_x or CO and thus provided an appropriate comparison for purposes of deriving emission factors for the *Kulluk*. Region Response at 21 (citing *Discoverer* stack test results and communications discussing them in the administrative record, specifically A.R. B-55, B-63, C-406, and C-489). With respect to the 15% variability in stack test results[28] that ICAS alleges, the Region points to the technical litera-

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[27] REDOIL Petitioners contend that the Region's recognition that Shell's approach involves "inherent uncertainty" regarding what equipment will be aboard the *Kulluk* and the Associated Fleet, which in turn requires "thorough source testing," coupled with the Region's refusal to require source testing for all equipment, is "internally inconsistent and thus arbitrary and unlawful." REDOIL Petition at 12. However, the Region responded that it used its technical expertise to determine that in this instance, a mix of both source-specific testing to derive emission factors, in addition to using AP-42 factors and emission factors derived from *Discoverer* test data where appropriate, was reasonable and not inconsistent. Region Response at 20-21. The Board agrees with the Region that the decision to use source-specific testing to derive emission factors, in conjunction with the emission factors developed from *Discoverer* data and from AP-42, is inherently technical. In order to effectively exercise its expertise, the Region should not, as REDOIL Petitioners suggest, be cabined by a rigid interpretation of how emission factors should be determined. REDOIL Petitioners have failed to meet the particularly high threshold for demonstrating that Board review of the Region's fundamentally technical decision is warranted. *Peabody*, 12 E.A.D. at 33-34.

[28] ICAS also asserts that stack tests are "conducted once a year for one or two years depending on the source," at three different loads, and even when the worst-case emissions are used, the stack tests fail to account for Shell's varying emissions. ICAS Petition at 16. The Region explained in re-
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ture Shell referenced in Shell's comments, which addresses "uncertainty in determining front-half PM [particulate matter] emission rates" and does not directly address procedures for deriving NO_X and CO emission factors. *Id.* at 22-23; *see also* Permit Conditions E.1.2, E.1.7, E.1.14 (requiring Shell to submit a testing plan and follow EPA-approved test methods, and establishing Region's authority to require additional stack tests if necessary). As the Region correctly points out, ICAS has not demonstrated that the worst-case stack test results, which embody the Region's fundamentally technical determinations, will be biased low and underreport emissions. Region Response at 22-23; *see, e.g., Teck Cominco*, 11 E.A.D. at 473 (discussing heavy burden assigned to petitioners seeking review of issues that are essentially technical in nature).

3. *ICAS Has Failed to Demonstrate That the Region Clearly Erred in Restricting the Kulluk and the Associated Fleet's Potential to Emit GHGs*

ICAS also challenges the Permit's GHG emission limit, which restricts Shell's annual GHG emissions to 80,000 tpy of carbon dioxide equivalent ("CO_2e").[29] *See* ICAS Petition at 21-26; *see also* Permit Condition D.4.4; RTC at 28. EPA promulgated regulations, commonly referred to as the "Tailoring Rule," that set forth applicability criteria to determine which GHG emission sources become subject to the PSD and Title V programs under the Act.[30] Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31,516 (June 3, 2010). In this instance, despite the fact that

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sponse that Permit Condition E.2.1 requires each source-tested unit to be tested prior to each of the first two drilling seasons and subsequently every two or five years depending on any variability observed in the results of the two initial tests. Region Response at 22; *see also* Statement of Basis at 44 (frequency of source-specific emission factor testing after first two years based on variability of results). Further, each test requires three 1-hour runs at each of the three tested operating loads, which results in nine results total for each aggregate source test. Region Response at 22. Without more than its bare assertion that the current source tests do not adequately address Shell's varying emissions when the data is used to derive emission factors, ICAS cannot demonstrate that the permit conditions that dictate the frequency and parameters of source tests warrant Board review.

[29] GHGs are defined as "the aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydroflourocarbons, perflourocarbons, and sulfur hexaflouride." 40 C.F.R. § 52.21(b)(49)(i). CO_2e represents the amount of GHGs emitted and is computed by "[m]ultiplying the mass amount of emissions (tpy), for each of the six greenhouse gases in the pollutant GHGs, by the gas's associated global warming potential published at Table A-1 subpart A of [40 C.F.R.] part 98 of this chapter – Global Warming Potentials." *Id.* § 52.21(b)(49)(ii)(a).

[30] The regulations provide that any source that is considered a new major source for a regulated NSR pollutant other than GHGs will also be subject to regulation for GHGs if it emits or has the potential to emit 75,000 tpy or more of CO_2e. 40 C.F.R. § 52.21(b)(49)(iv). New stationary sources that emit or have the potential to emit more than 100,000 tpy or more of CO_2e are also subject to regulation for GHGs. *Id.* § 52.21(b)(49)(v).

the OCS source's pre-permitted potential to emit exceeded 100,000 tpy of CO_2e, *see* Statement of Basis at 24, the Permit restricts the potential to emit GHGs to 80,000 tpy of CO_2e and thus prevents Shell from being subject to regulation for GHGs under the PSD program. *See* RTC at 24.

As noted previously, the vast majority of emissions, including GHG emissions, from both the *Kulluk* and the Associated Fleet result from internal combustion sources such as engines and boilers, along with incinerators. Statement of Basis at 12, 14, 39; RTC at 35. The Permit contains operational restrictions on the amount of time a source can operate, the amount of fuel and waste combusted, and the type of fuel combusted to ensure compliance with the Permit's GHG emission limit.[31] *See* Statement of Basis at 37-39; RTC at 33-36; *id.* at 34-35 (noting that in response to comments the Region adjusted the methane emission factor upward by a factor of four to represent a reasonable upper-bound estimate of the number of wells that could be drilled in a single season, which in turn required a small reduction to the total amount of fuel that may be combusted in engines and boilers during any rolling 12-month period). In addition to the combustion sources and the incinerators, a relatively small amount of GHG emissions in the form of methane results from the drilling mud system ("DMS").[32] *See* RTC at 35. GHG emissions from the DMS, calculated at 85 tpy of CO_2e, represent only 0.11% of the total GHG emissions allowed under the permit, 80,000 tpy of CO_2e. *Id.* The Region calculated an unrestricted PTE for methane emissions of 1,596 lbs/month,

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[31] The Permit imposes annual limits of 120 days of operation as an OCS source during a drilling season, which spans from July 1 through November 30, and 1,632 hours of total drilling activity in a drilling season, of which only 480 hours may be used to conduct mudline cellar drilling activity, which is expected to generate the most air pollution. *See* Permit Conditions D.3.1-D.3.5. The Permit also limits the total aggregate combustion of fuel over a 12-month rolling period, the type of fuel combusted, and the total aggregate daily waste-combusting capacity of incinerators. *See* Permit Conditions D.4.6-.7, .9; *see also* RTC at 34-35. In addition, the Permit includes various monitoring and recordkeeping requirements to document when emissions should be counted toward emission limits, testing requirements for the derivation of source-specific emission factors, tracking and documentation requirements for the fuel and waste combusted, and maintenance requirements to ensure that emission units are properly operated and maintained. *See* Permit Conditions D.1-.4, D.8, F.2.1-.7; *see also* RTC at 36-37, 43.

[32] The Region explained methane emissions from the DMS as follows:

> When wells are drilled through porous, hydrocarbon[-]bearing rock, drilling fluids (mud) circulated through the drill bit can carry gaseous hydrocarbons from the well back to [the] Kulluk. These gases are typically released as fugitive emissions when the mud is processed for reuse on the Kulluk or stored and shipped away; however, some of the emissions pass through a vent.

Statement of Basis at 38.

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the equivalent of 17 tons per month ("tpm") of CO_2e.[33] *Id.* The Permit accounts in Condition 4.4.2 for methane emissions encompassing the source's full unrestricted PTE of 17 tpm of CO_2e, which are added to GHG emissions from combustion sources when calculating total GHG emissions. *See* Statement of Basis at 39; *Shell Discoverer 2012*, 15 E.A.D. at 516.

ICAS raises several challenges to the Permit's GHG emission limit. Similar to its challenges of the Permit's synthetic minor limits for NO_x, CO, and SO_2, ICAS contends that the Permit contains a blanket emission limit for GHGs that is practically unenforceable and further asserts that the requirement that GHG emissions only be calculated monthly to determine compliance with the established rolling 12-month limit is inadequate to verify compliance "in a given moment." ICAS Petition at 21-22 (citing *NSR Manual* at C.3, C.5, H.5); *see* Permit Conditions D.1.3-.4. In addition, ICAS asserts that the Region clearly erred by accepting an owner-requested limit for methane attributable to mud off-gassing from the DMS that is not only unenforceable, but also less than the "maximum expected capacity" or "upper-bound projection" ConocoPhillips submitted in another Arctic OCS permit proceeding. *Id.* at 22-26.

Based on the foregoing information, ICAS's general assertion that the GHG emission limit is practically unenforceable must fail. The Region has demonstrated in both the Permit and the documentation in the record supporting the Permit that it crafted a synthetic minor limit that would not only prevent Shell from being subject to regulation under the PSD program for GHG emissions, but also

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[33] In calculating the unrestricted PTE for DMS methane emissions, the Region included several conservative assumptions to ensure a wide margin of safety for total methane emissions over Shell's five-month period of operation. *See* RTC at 34; *Options for Limiting PTE* at 8 (noting that for sources with inherent physical limitations that restrict the potential emissions of an emissions unit, if such limitations can be documented and confirmed, the permitting authority may factor them into estimates of a stationary source's PTE). For example, the Region assumed that the total unrestricted PTE for DMS methane emissions for the entire five months of drilling operations would be emitted during each of the five months. RTC at 35.

In addition, despite much of the methane emissions being fugitive emissions that are not counted towards PSD applicability for exploratory drill rigs, *see* 40 C.F.R. § 52.21(b)(1)(iii), Shell agreed to consider all of the methane emissions from the DMS as point source emissions that would count towards Shell's potential to emit GHGs. *See* RTC at 35; *see also* Statement of Basis at 38-39. In its petition, ICAS disputes the Region's claim that counting such fugitive emissions towards PTE represents a conservative approach that lends a "measure of safety" and asserts that the part 71 regulations governing Title V permits require such fugitive emissions to be included. ICAS Petition at 24 (citing 40 C.F.R. § 71.3(d), which states that fugitive emissions from a part 71 source "shall be included in the permit application and the part 71 permit in the same manner as stack emissions"). However, as the Region correctly points out in its response, the definitions of major source in both 40 C.F.R. § 52.21(b)(1)(iii) and 40 C.F.R. § 71.2 make clear that fugitive emissions are not considered when determining whether a source is a major source. Region's Response at 26 n.21 (citing the Tailoring Rule and noting that it retained this approach of determining whether a source becomes subject to regulation for GHGs).

would be practically enforceable as a result of the numerous operational restrictions in combination with monitoring, recordkeeping, and reporting requirements contained in the Permit. While ICAS acknowledges the operational limits contained in the Permit, ICAS simultaneously disputes their efficacy without explaining why such operational limits will not have their intended effect of restricting Shell's potential to emit GHGs.[34] *See* ICAS Petition at 21-22. Without stating more than mere disagreement, ICAS cannot meet the especially high threshold of demonstrating that the Region's inherently technical decisions regarding the GHG emission limit warrant Board review. *See, e.g.*, *NE Hub Partners*, 7 E.A.D. at 567; *Shell Discoverer 2012*, 15 E.A.D. at 501.

ICAS's more specific contention that the Region clearly erred by accepting an owner requested restriction for methane from mud off-gassing that is practically unenforceable is unavailing. *See* ICAS Petition at 22-26. ICAS raised this same argument in previous appeals of two OCS PSD permits the Region issued to Shell for operations in the Chukchi Sea of the Arctic OCS. *See Shell Discoverer 2012*, 15 E.A.D. at 514-19; *see also supra* note 20. In brief, the monthly calculation of methane to be released in mud off-gassing in both *Shell Discoverer 2012* and the current appeal are not only the same amount, 17 tpm, they also both reflect the unrestricted PTE for methane emissions from DMS operations. *See* RTC at 34-35; *Shell Discoverer 2012*, 15 E.A.D. at 517-18. The Board rejects ICAS's assertion in this instance, relying on the same reasons it gave in *Shell Discoverer 2012*:

> [T]he Permit[] in this case do[es] not include owner requested limits on PTE for methane emissions. Rather, * * * methane emissions were assumed to occur at the source['s] full PTE for the five-month drilling season

[34] Similarly, ICAS's contention that the Region clearly erred by not requiring more frequent calculations of GHG emissions than the monthly calculations the Permit requires, *see* Conditions D.1.3-.4, falls short. The Region explained that its decision to calculate emissions on a monthly basis stemmed from "good confidence in the overall [GHG emission] compliance technique and therefore 'yearly' emissions are required to be summed only monthly." Statement of Basis at 38. Although GHG emission calculations will be calculated once a month based on the Region's stated confidence in its compliance method, the data required to make such calculations is collected continuously through fuel usage monitoring. RTC at 43-44 ("Shell is generally required to continuously measure and record, on an hourly basis, the fuel consumed by each emission unit or group of emission units."); *see also* Region Response at 24 (citing *1989 Guidance on Limiting PTE* and noting that "in light of annual variations in operations and the fact that the source operates during only part of the year" the Region determined that a 12-month rolling limit for CO_2e was appropriate as stated). Again, ICAS has failed to meet its burden of demonstrating that review is warranted, where, as here, it has not addressed the Region's stated rationale for requiring only monthly calculation of GHG emissions and has not demonstrated that monthly calculation of GHG emission would inhibit verification of compliance with the GHG emission limit. *See supra* Part III.

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> (0.798 tons per month),[35] and the Permit[] count[s] these emissions towards the total GHG limitation * * * . The Region determined that because these unrestricted emissions of methane (when combined with GHG emissions from combustion sources) would not result in an exceedance of the Permit['s] total GHG emissions limit, additional permitting restriction limits were not required.
>
> Under these circumstances, ICAS's reliance on the requirement that permits include conditions ensuring the enforceability of limitations on a source's PTE is misplaced, as the Permits do not contain owner requested limits on methane emissions or otherwise limit the source['s] PTE from DMS operations.

Shell Discoverer 2012, 15 E.A.D. at 517-18 (citations omitted).

In addition, ICAS has not demonstrated that the Region's calculation of methane emissions from the DMS underestimated the "upper-limit" projection that is in turn used to identify the "maximum capacity" of a source based on an "inherent physical limitation." RTC at 34 (citing *Options for Limiting PTE* at 8 and Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, to Reg'l Air Dirs., U.S. EPA, *Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities* at 4-5 (Nov. 14, 1995) (A.R. B-10) [hereinafter *Grain Handling Guidance*]). ICAS's assertion is premised on ConocoPhillips' higher estimate of DMS methane emissions submitted to the Region in another permit proceeding concerning exploratory drilling in the Arctic OCS. ICAS Petition at 23-26. However, ICAS simply states that the discrepancy between Shell's and ConocoPhillips' calculations of DMS methane emissions means that the Region clearly erred in accepting Shell's methane calculations, but it does not acknowledge or evaluate the record information Shell submitted that explains in depth the causes for the divergent methane calculations.[36] Upon considering this

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[35] This is the same unrestricted PTE for methane emissions as in the *Kulluk* permit (1596 lb / 2000 lb = 0.798 tons).

[36] In *Shell Discoverer 2012*, ICAS asserted that it was unable to evaluate the basis for Shell's estimates of DMS methane emissions that the Region had relied on to calculate PTE because Shell did not release its estimates until after the close of the comment period. 15 E.A.D. at 517 n.63. In that instance, the Board concluded that the Region was authorized to supplement the record with previously unavailable information confirming that Shell's estimate of methane PTE was a reasonable upper-bound estimation, and "[t]hus, ICAS had the opportunity to evaluate the basis for Shell's PTE estimates and the Region's assessment of those estimates in preparing its appeal to this Board." *Id.* (citing *In re Cape Wind Assoc., LLC*, 15 E.A.D. 327, 332-33, 335 (EAB 2011), and 40 C.F.R. §§ 124.17(a)-(b), .18(b)).

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information, the Region exercised its technical expertise in concluding that Shell's estimates of methane emissions from the DMS were permissible, especially given the conservative assumptions the Region incorporated when calculating PTE. ICAS does not address either the record information that supports the Region's decision to accept Shell's methane estimate or the Region's stated rationale for concluding that methane monitoring is not required. *See* RTC at 35-36 (explaining that, based on the inherent limitations that exist and the relatively small contribution of the DMS to overall GHG emissions, the Region does not believe monitoring of DMS emissions or operations is necessary in addition to the monitoring already required in the permit). As this Board has often stated, a petitioner cannot demonstrate that review is warranted if the petitioner fails to substantively confront a permit issuer's response. *Peabody*, 12 E.A.D. at 33 (noting that to obtain review a petitioner must "explain why, in light of the permit issuer's rationale, the permit is clearly erroneous or otherwise deserving of review"); *see also In re BP Cherry Point*, 12 E.A.D. 209, 217 (EAB 2005). Moreover, as stated above, the Region's decision regarding the GHG emission limit is inherently technical in nature, and ICAS has fallen short of the particularly high threshold it must meet to demonstrate that review of the Region's technical determination is warranted. *See Peabody*, 12 E.A.D. at 33-34; *see also NE Hub*, 7 E.A.D. at 567-68.

4. *The Region Did Not Clearly Err in Restricting OCS Source's Potential to Emit SO_2*

The Permit restricts SO_2 emissions from the *Kulluk* and the Associated Fleet to no more than 10 tpy, well below the 250 tpy PSD threshold level. *See* Permit Condition D.4.3. Compliance with this limit is determined on a rolling 12-month basis and is achieved by requiring that Shell not combust any liquid fuel with sulfur content greater than 0.01 percent by weight in any emission unit on the *Kulluk* or the Associated Fleet and that all fuel purchased for use in emission units on the *Kulluk* and Associated Fleet have a maximum sulfur content of 0.0015 percent by weight. Permit Conditions D.4.5, D.4.9. Shell is required to keep diesel

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(continued)

The material in question is not only in the record submitted with the *Discoverer* appeals, it also appears in the record for the instant appeal. *See* E-mail from Susan Childs, Shell, to Doug Hardesty, EPA Region 10 (Sept. 16, 2011 14:31 pm PDT) (A.R. CCC-438 in *Shell Discoverer 2012* and A.R. C-575 in the current appeal). Thus in the current appeal there is no question that the information from Shell clarifying and explaining its estimate of DMS methane emissions, including the highly conservative assumptions Shell included in its estimate, was at ICAS's disposal. In addition, Shell submitted further clarification of its DMS methane estimates as compared to ConocoPhillips' in order to "explain how different assumptions led to different results, and why Shell believes that ConocoPhillips' estimate is unrealistically high." E-mail from Susan Childs, Shell, to EPA Region 10 (Sept. 20, 2011 17:57 pm PDT) (A.R. C-577). ICAS's petition does not address either of these record submissions or the Region's reliance on this information to determine that the Region's calculation of methane emissions from the DMS represents "a reasonable upper-bound projection for Shell's operations [that] is not expected to be exceeded under any reasonably anticipated operating scenario." RTC at 35.

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fuel purchase records documenting sulfur content for each batch of fuel purchased. Permit Condition D.4.9.2. In addition, the total amount of fuel combusted in engines and boilers must not exceed 7,004,428 gallons during any rolling 12-month period. Permit Condition D.4.6; *see also* Permit Condition F.2.4 (requiring Shell to (1) obtain representative fuel samples and determine fuel sulfur content in parts per million from fuel storage tanks on the *Kulluk* and the Associated Fleet prior to their mobilization, (2) determine the sulfur content of each delivery of fuel to the *Kulluk* and the Associated Fleet once the vessels are mobilized, and (3) maintain records of all sampling and analysis).

ICAS asserts that the Region justifies its blanket SO_2 emissions limits by including "purported 'operational limits'" that restrict fuel content and usage and concludes that compliance with the restricted PTE for SO_2 is practically unenforceable because these operational limits are not unit-specific and because the overall limit is based on a 12-month rolling limit. ICAS Petition at 26-27. ICAS offers no explanation as to why the operational limits and averaging time the Region chose to include in the Permit, both of which are clearly considered legitimate in Agency guidance, nonetheless constitute clear error. *See* Region Response at 28; *Options on Limiting PTE* attach. 1 at 5 ("[L]imitations on sulfur dioxide emissions could be based on specified sulfur content of fuel and the source's obligation to limit usage to certain maximum amounts."); *1989 Guidance on Limiting PTE* at 9-10 (noting that in certain situations a rolling limit of up to a year may be appropriate for sources with "substantial and unpredictable annual variation in production," including "source which shut down or curtail operation during part of the year on a regular seasonal cycle").

ICAS also challenges the monitoring provisions for small and/or infrequently used emission units that are not required to have fuel flow monitors. ICAS Petition at 27. As the Region correctly points out, however, ICAS makes no attempt to explain why the specified fuel measurement alternatives, together with the requirement to measure and record fuel usage before and after operation, do not allow for a reliable and accurate assessment of fuel usage. Region Response at 28 (citing Permit Condition F.2.2.2). Here again, ICAS offers nothing more than a bald assertion of clear error without any analysis of why the Region erred. Where, as here, the Region's decision was technical in nature, ICAS has failed to meet the particularly high threshold for establishing that review of the Region's technical determination is warranted.

5. *Shell's Minor Source Permit Is Not a "Sham" Permit*

ICAS asserts that in order to ensure the *Kulluk*'s status as a minor source, Shell has agreed to operational limitations in its OCS/Title V permit that are not represented in other authorizations and permit applications for Shell's exploratory activities in the Beaufort Sea. ICAS Petition at 28. ICAS alleges that Shell's incidental hazard assessment, required under the Marine Mammal Protection Act,

16 U.S.C. § 1371(a)(5)(A), (D), authorizes 78 days of drilling whereas the OCS/Title V permit only authorizes 68 days of drilling. *Id.* Based on this single discrepancy, ICAS categorically concludes that "Shell is submitting permit applications and seeking authorization from other agencies with different plans than are provided for in its air permit." ICAS Petition at 28-29. ICAS also asserts that the Region did not adequately respond to its concern that Shell's application for a minor source permit is a sham.[37] *Id.*

At the outset, the Board notes that ICAS's assertion that Shell has secured a sham minor source permit with the intention to avoid preconstruction review as a major source under the PSD program is wholly unsupported in the record.[38] As the Region noted in the Response to Comments, there is nothing to indicate that Shell intends to later apply to the Region to remove the synthetic limits contained in the Permit. RTC at 22. The Region continued that, regardless of what the incidental hazard assessment says regarding the number of days Shell may drill, Shell nonetheless "must comply with all requirements of the Kulluk Permit and failure to do so is a violation of the CAA." *Id.* (citing Permit Condition A.3). Finally, the Region made clear that whether an original request for a minor source permit is a "sham" may be evaluated when the Region receives a request to remove the synthetic limits. *Id.*

ICAS rejects the Region's statement that there is nothing to suggest that Shell intends to obtain a minor source permit now and then apply for a major source permit down the road, and baldly asserts that "this is not the proper test." ICAS Petition at 28. ICAS ignores the element of intent to obtain a minor source

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[37] The NSR Manual defines a sham permit as follows:

> A sham permit is a federally enforceable permit with operating restrictions limiting a source's potential to emit such that potential emissions do not exceed the major or de minimis levels for the purpose of allowing construction to commence prior to applying for a major source permit. Permits with conditions that do not reflect a source's *planned* mode of operation may be considered void and cannot shield the source from the requirement to undergo major source preconstruction review. In other words, if a source accepts operational limits to obtain a minor source construction permit but intends to operate the source in excess of those limitations once the unit is built, the permit is considered a sham.

NSR Manual at C.6.

[38] ICAS asserts that its concern with the potential for Shell to obtain a minor source sham permit arose because "Region 10 has provided no assurance that reporting mechanisms in the permit will provide sufficient time for Shell to halt drilling with enough of an emissions buffer remaining to secure a partially drilled well for the entire winter season * * *." ICAS Petition at 29. ICAS also acknowledges that any exceedance of an emission limit would allow the Agency to exercise its enforcement powers. *Id.* Without more, ICAS cannot demonstrate that the Region clearly erred in determining that Shell's minor source permit is not a sham.

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sham permit that both the Region in the Response to Comments and the 1989 Guidance on Limiting PTE discuss and instead quotes the NSR Manual language for the proposition that the "proper test" is a permit that does not reflect a source's "*planned* mode of operation." ICAS Petition at 28 (citing *NSR Manual* at C.6) (emphasis in original); *see also 1989 Guidance on Limiting PTE* at 12. However, the 1989 Guidance on Limiting PTE contains guidelines for determining, based on an evaluation of specific facts and evidence in each individual case, when minor source construction permits are shams and includes two of four criteria that discuss the intent of the source to circumvent the PSD preconstruction review process. *1989 Guidance on Limiting PTE* at 14-15.[39]

ICAS has not identified any information in the record that supports its assertion that Shell is seeking to avoid preconstruction review. Moreover, minor source sham permits are generally discovered when a source seeks another air emissions permit that requests the permit issuer to relax the synthetic limits in the minor permit, *see 1989 Guidance on Limiting PTE* at 12-14, rather than when the source seeks another authorization under a different statute such as the Marine Mammals Protection Act. Finally, ICAS has not demonstrated any deficiency in the Region's response to its comment regarding sham permits. *See, e.g., Russell City II*, 15 E.A.D. at 24 (noting that the part 124 regulations require a response to comments document to "demonstrate that all significant comments were considered but does not require a permit issuer to respond to each comment in an individualized manner or require the permit issuer's response to be of the same length or level of detail as comment") (citation omitted).

For all of the reasons stated above, the Board denies review of this issue.

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[39] Specifically, the guidelines for determining when minor source construction permits are shams state in relevant part:

> 1. Filing a PSD or nonattainment NSR permit application
>
> If a major source or major modification permit application is filed simultaneously with or at the same time as the minor source construction permit, this is strong evidence of *an intent to circumvent the requirements of preconstruction review*.
>
> * * *
>
> 4. Statement of authorized representatives of the source regarding plans for operation
>
> Statements by representatives of the source to EPA or to state or local permitting agencies about the source's plans for operation can be evidence *to show intent to circumvent preconstruction review requirements*.

1989 Guidance on Limiting PTE at 14-15 (emphasis added).

B. *REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Declining to Require PSD Increment Consumption Analyses for the Kulluk's Proposed Emissions as Part of the Title V Permitting Process*

1. *Section 504(e) of CAA Title V Imposes Permitting Requirements on "Temporary" Stationary Sources*

The CAA's PSD program requires permit applicants to demonstrate compliance with ambient air quality "increments" (also called "PSD increments") for specific air pollutants. *See* CAA §§ 161, 163, 165(a)(3)(A), 42 U.S.C. §§ 7471, 7473, 7475(a)(3)(A); 40 C.F.R. § 52.21(c), (k). Such increments are maximum allowable increases in pollutant concentrations that may occur in particular areas.[40] They are designed to "prevent significant deterioration" of air quality in locations that already have relatively clean air by ensuring that contaminants contributed by proposed new sources, combined with levels of contamination already present in the ambient air as of a specific baseline date, fall within bounds established by the Agency. *See generally NSR Manual* ch. C.

As noted in Part VI.A.1.b above, Congress designed the PSD program to regulate "major" sources of air pollution, which have potential to emit certain specific pollutants in amounts exceeding major source threshold levels. "Minor" sources, which have projected emissions that fall below the PSD major source thresholds, generally are not regulated under the PSD program. The Board determined above that the *Kulluk* qualifies as a minor source for PSD purposes, and so it is not required to obtain a PSD permit. The *Kulluk* nonetheless is still subject to permitting under the CAA's Title V program. The question presented is whether section 504(e) of Title V imposes PSD increment requirements in this circumstance.

In section 504(e) of Title V Congress set out permitting requirements for "temporary" stationary sources of air pollution as follows:

> The permitting authority may issue a single [Title V] permit authorizing emissions from similar operations at multiple temporary locations. No such permit shall be issued unless it includes conditions that will assure compliance with all the requirements of this chapter [i.e., the CAA] at

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[40] To date, EPA has established PSD increments for four pollutants – SO_2, NO_2, PM_{10}, and $PM_{2.5}$. The increments consist of numeric concentrations, measured in micrograms of pollutant per cubic meter of air, that vary according to averaging period (3-hour, 24-hour, or annual averages) and geographic location (areas designated as "Class I," "Class II," or "Class III"). *See* 40 C.F.R. § 52.21(c) (table of increment levels).

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> all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under part C of subchapter I of this chapter [i.e., the PSD program].

CAA § 504(e), 42 U.S.C. § 7661c(e). In allowing for a streamlined permitting process in which a single permit could authorize emissions at multiple temporary locations, Congress explained:

> Some sources requiring [Title V] permits do not operate at fixed locations. These might include asbestos demolition contractors and certain asphalt plants. Subsection (e) allows the permittee to receive a permit allowing operations, after notification to the permitting authority, at numerous fixed locations without requiring a new permit at each site. Any such permit must assure compliance at all locations of operation with all applicable requirements of the Act, including visibility protection and PSD requirements and ambient standards.

H.R. Rep. No. 101-490, pt. 1, at 350 (1990).

The parties' dispute centers on competing interpretations of section 504(e) and whether, in providing for a streamlined permitting process for temporary sources, Congress intended temporary minor sources to have increment provisions in their Title V permits where the state implementation plans do not otherwise impose increment provisions on such sources.

Section 504(e) is an unusual provision, not only because it addresses temporary rather than permanent stationary sources of air pollution (which comprise the majority of Title V sources), but also because it imposes substantive air requirements on temporary sources. As a general matter, Title V is a procedural rather than a substantive statute. It serves as a vehicle for collecting diverse CAA requirements otherwise applicable to a source into one all-encompassing air permit for that source. *See, e.g., Ohio Pub. Interest Research Grp., Inc. v. Whitman*, 386 F.3d 792, 794 (6th Cir. 2004) ("Title V does not impose new obligations; rather, it consolidates pre-existing requirements into a single, comprehensive document for each source"); Operating Permit Program, 57 Fed. Reg. 32,250, 32,251 (July 21, 1992) (explaining that Title V "generally does not impose substantive new requirements" on sources but instead attempts to "clarify, in a single document, which requirements apply to a source," thereby enabling all parties to better understand and track that source's CAA compliance). For the most part, requirements that are "applicable" to a source's emissions units under a Title V permit are directly imposed not by Title V itself but, rather, by state or federal implementation plans, preconstruction permits, the air toxics or acid rain programs, and other

substantive CAA provisions. *See* 40 C.F.R. §§ 70.2, 71.2 (definitions of "applicable requirements" under state and federal operating permit program regulations, respectively).

To ensure adequate regulation of temporary sources, Congress directed that Title V permits for such sources must include, as noted above, "conditions that will assure compliance with all the requirements of [the CAA] at all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under [the PSD program]." CAA § 504(e), 42 U.S.C. § 7661c(e). The parties do not dispute that this language serves to impose, through Title V itself, substantive CAA requirements on temporary sources. *See* REDOIL Petition at 19-25; Region Response at 5-6. Indeed, they agree that, because of section 504(e), the *Kulluk*'s Title V permit "must contain terms and conditions that ensure compliance with the NAAQS at all relevant locations." Statement of Basis at 26, *quoted in* Region Response at 5; *see* REDOIL Petition at 21. The parties strongly dispute, however, whether PSD increments should also be included in the complement of substantive requirements for the *Kulluk*.

2. *Under the Region's Interpretation, PSD Increment Compliance Demonstrations Are Not Mandatory for Temporary Minor Sources but May Be Required by States*

The Region's basic position is that section 504(e) uniformly imposes ambient standards (i.e., NAAQS) compliance requirements on all temporary sources, but that it does not uniformly so impose PSD increment requirements. The Region initially based this distinction on the language of section 504(e) and the implementing regulations, as well as on a prior Agency interpretation of these authorities. *See* Statement of Basis at 25-27. The distinction hinged primarily on Congress' insertion of the adjective "applicable" in section 504(e) to modify not "ambient standards" but only "increment or visibility requirements under [the PSD program]." *Id.* at 26; *see* CAA § 504(e), 42 U.S.C. § 7661c(e). PSD increments are only "applicable" to a temporary source, the Region reasoned, if the source also qualifies as a PSD major source, obligated to obtain a PSD permit. Statement of Basis at 26 ("applicable" increment requirements are those applicable "under [the PSD program]" (i.e., part C of subchapter I of the CAA), which covers only PSD major sources). By this logic, the *Kulluk*, a PSD minor source, would not have to demonstrate compliance with PSD increments at any of its authorized locations. *Id.*

Commentors on the *Kulluk*'s draft permit pressed the Region on this point, which prompted it to take a closer look at the entire issue. The Region prepared a lengthy, detailed Response to Comments document, in which it repeated the above points, but also added a far more robust discussion of the preconstruction permitting programs for major and minor sources. The Region explained that,

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under the statute and implementing regulations, states have discretion to impose PSD increment requirements on PSD minor sources as part of their minor source construction permitting programs, if the states deem such requirements necessary to prevent significant deterioration of air quality. *See* RTC at 102-09 (citing and discussing, e.g., CAA §§ 110(a)(2)(C), 161, 163, 165(a)(3)(A), 504(e), 42 U.S.C. §§ 7410(a)(2)(C), 7471, 7473, 7475(a)(3)(A), 7661c(e); 40 C.F.R. §§ 51.160(a)(2), (b)(2), .166(a)(1), (3), 70.2, 71.2, 71.6(e)). The Region emphasized that states are not *obliged* to do this but have discretionary authority to pursue this course if they deem it necessary to fulfill their obligations under CAA sections 161 and 163(a). *See id.* at 103-06.

These clarifications led the Region to encapsulate its understanding of section 504(e) and the preconstruction programs in the following way: "PSD major sources are subject to NAAQS and increment in the permitting process, whereas non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the [PSD] increment[s]." *Id.* at 107. The Region concluded that the State of Alaska's minor source preconstruction program does not require permanent minor sources to demonstrate compliance with PSD increments as a condition of construction, so neither would it require such compliance of temporary minor sources. *See id.* at 103-04, 107-08; *see also* Region Response at 12, 11 n.7. For this reason, the Region declined to require that Shell conduct PSD increment compliance analyses for *Kulluk* emissions at any of its authorized locations in the Beaufort Sea.

The Region's statutory and regulatory interpretation of the Title V temporary source program finds support in Board case law that recognizes the states' primary role in using PSD increments to manage economic growth. In *In re West Suburban Recycling & Energy Center, LP*, 8 E.A.D. 192 (EAB 1999), the Board observed the following:

> From the beginning of the PSD program, EPA has acknowledged that decisions about how increment should be used or allocated are primarily within the province of the states. For example, in the preamble to the original PSD regulations, EPA noted that allocation of PSD increment could affect economic development and that EPA should endeavor to preserve the states' authority on issues of economic development and growth:
>
> > "EPA should not make decisions [that] would have a significant impact upon future growth options of the [s]tates."

8 E.A.D. at 196 (quoting Approval and Promulgation of State Implementation Plans, 43 Fed. Reg. 26,388, 26,401 (June 19, 1978)); *accord In re Commonwealth*

Chesapeake Corp., 6 E.A.D. 764, 768 (EAB 1997) ("'The PSD requirements provide for a system of area classifications [that] affords [s]tates an opportunity to identify local land use goals. * * * Each classification differs in terms of the amount of [industrial or other] growth it will permit before significant air quality deterioration would be deemed to occur.'" (quoting *NSR Manual* at C.4-.5)).

3. *REDOIL Petitioners Have Not Demonstrated That the Region's Interpretation Is Clearly Erroneous*

On appeal, REDOIL Petitioners claim on a number of grounds that the Region's interpretation is clearly erroneous and thus a basis for remand of this permit. REDOIL Petition at 19-37. REDOIL Petitioners' central contention is that the plain language, structure, and purpose of section 504(e) reveal Congress' "unambiguously expressed intent" to tie increment requirement applicability to the increment status of the geographic area or areas in which a temporary source will emit pollutants. *See id.* at 20-32. REDOIL Petitioners also contend that the Agency's implementing regulations confirm the plain meaning of the statutory language and, additionally, contain provisions that "at least imply" independent obligations to ensure PSD increment compliance. *Id.* at 33-35.

REDOIL Petitioners observe that section 504(e) distinguishes between ambient standards (i.e., NAAQS), which apply to all temporary sources "at all times and in all locations," *id.* at 21, and PSD increment standards, which do not apply at all times and in all locations because they "are not universally applicable to all areas." *Id.* Rather, as designed by Congress, PSD increments "apply" only in areas where they specifically have been triggered, by means of the submission of an initial, complete PSD permit application to emit in a particular area. *Id.*; *see* CAA §§ 163, 169(4), 42 U.S.C. §§ 7473, 7479(4); 40 C.F.R. § 52.21(b)(14)(ii), (15)(i). The concentration of pollutants in such an area's ambient air is measured at the time the initial application is submitted (the "baseline date") and then fixed as the "baseline concentration" for that area. *See NSR Manual* at C.6-.8, .12-.15. From that point forward, PSD increments serve as the maximum allowable increases that pollutant concentrations may rise above the established baseline levels. CAA § 163, 42 U.S.C. § 7473; 40 C.F.R. § 52.21(c).

REDOIL Petitioners reason from this basic design that Congress intended "applicable increment * * * requirements" in section 504(e) to be area-dependent rather than source-dependent. *See* REDOIL Petition at 21-22, 25-27, 29. By this logic, any new source, including any new temporary minor source, that proposes to emit in geographic areas where increments previously have been triggered would be obligated to demonstrate compliance with such increments as "applicable" requirements under section 504(e). Only in areas where increments have not yet been triggered would PSD increments be inapplicable to temporary minor sources. *See id.* REDOIL Petitioners claim the Agency's implementing regula-

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tions are fully in accord with this interpretation and thus do not bar increment compliance demonstrations prior to issuance of Title V permits. *Id.* at 33-35.

As described below, the Region did not clearly err in its own interpretation of these authorities. The Board agrees with the Region that its interpretation more fully comports with the structure and language of the CAA and the implementing regulations, and rejects REDOIL Petitioners' assertion that the statutory language is so plain that there is no ambiguity about whether Congress intended to impose increment provisions on temporary minor sources where the state implementation plan does not otherwise impose increment requirements on such sources. REDOIL Petitioners misapprehend or fail to grapple with several key points that formed the basis for the Region's interpretation in its final permitting decision and Response to Comments.

a. *REDOIL Petitioners Misunderstand Portions of the Region's Response to Comments*

In several of its points of advocacy before this Board, REDOIL Petitioners reveal a misunderstanding of the explanations the Region set forth in the Response to Comments. In the most significant example, REDOIL Petitioners argue that the Region erroneously construes "any applicable increment * * * requirements under Part C" in section 504(e) to mean that only those temporary sources that are also PSD major sources must demonstrate PSD increment compliance. REDOIL Petition at 29, 33-34. While this description reflects the position the Region advanced in the Statement of Basis,[41] it fails to acknowledge the very substantial further interpretive exegesis the Region developed and presented in its Response to Comments on the draft permitting record (which included the Statement of Basis). In that later and more comprehensive analysis, the Region made clear that, in its view, states have discretionary authority in their minor source preconstruction programs to impose PSD increment requirements on temporary minor sources, either as implementation plan requirements or on a case-by-case basis, as they deem necessary to protect the NAAQS. *See* RTC at 103-06. REDOIL Petitioners fail to address or demonstrate why the Region's position, as more fully articulated in the Response to Comments, is clearly erroneous. Because REDOIL Petitioners have failed to substantively confront the Region's Response to Comments, they cannot prevail on this ground. *See, e.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 450 (EAB 2011) (petitioners "must substantively confront the permit issuer's explanations in its response to comments document"); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005) (same).

[41] The Region acknowledges that statements in the Statement of Basis could be read to suggest such an approach. Region Response at 8.

REDOIL Petitioners also misunderstand the interplay of sections 161, 165, and 504(e) of the Act, as those provisions are discussed by the Region in the Response to Comments. *See* RTC at 103-06. REDOIL Petitioners point out that section 163, not section 165, is the source of increment requirements within the PSD program and contends that the Region "ignore[d]" this provision in interpreting section 504(e). REDOIL Petition at 30. In so arguing, REDOIL Petitioners take the position that section 504(e) makes the section 163 increments directly applicable to temporary sources. *See id.* at 30-31. The plain language of section 163, however, is to the contrary. It provides that "each applicable implementation plan shall contain measures assuring that maximum allowable increases over baseline concentrations [i.e., increments] * * * shall not be exceeded." CAA § 163(a), 42 U.S.C. § 7473(a). Moreover, the text of section 161, which establishes implementation plan requirements, provides that such plans "shall contain emission limitations and such other measures as may be necessary * * * to prevent significant deterioration of air quality." CAA § 161, 42 U.S.C. § 7471.

Increments, in other words, are not directly imposed by section 504(e). Instead, they must be implemented (i.e., applied to a source) through either of two means: (1) a state implementation plan, per section 161 and 40 C.F.R. § 51.166(a)(1); or (2) the PSD major source permitting program, per section 165(a)(3)(A) and 40 C.F.R. § 52.21. *See* RTC at 103-04. Thus, while section 504(e) can serve as the direct source of NAAQS compliance requirements and other CAA requirements for temporary sources (*see infra* note 44 and accompanying text), it only imposes PSD increment requirements to the extent such requirements are "applicable" to the source.

Finally, REDOIL Petitioners also suggest that the State of Alaska's operating permit regulations are "more lenient" than the federal regulations because they do not require PSD minor sources to demonstrate compliance with PSD increments as a preconstruction condition. REDOIL Petition at 27-28. Noting that the Alaska rules apply to sources on the inner OCS only, and not on the outer OCS, REDOIL Petitioners suggest that the purportedly more stringent federal operating permit rules in effect on the outer OCS require temporary sources situated on the outer OCS to demonstrate compliance with PSD increments. *Id.* at 28 (citing 40 C.F.R. §§ 71.2, 71.6(e)). REDOIL Petitioners claim, therefore, that Shell must conduct, at the very least, a PSD increment analysis for the *Kulluk*'s authorized locations on the outer OCS. *Id.*

This argument reveals a misunderstanding of the Region's discussion of relevant legal requirements on the inner versus outer OCS. In the Response to Comments, the Region explained:

> In this case, the requirements for Title V temporary sources in the inner OCS and outer OCS off of Alaska are the same because Alaska has adopted EPA's Part 71 rules

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> with respect to Title V temporary sources by reference for application onshore and Region 10 has in turn adopted these requirements into the [Corresponding Onshore Area] regulations for application in the inner OCS.

RTC at 109. As the Region explained, PSD increments are not applicable to any temporary minor sources, wherever they might be located on the OCS, *unless* a state exercises its discretion to require minor source compliance with such increments. A state, of course, has limited jurisdiction, and its authority does not extend beyond its borders. *E.g.*, CAA § 107(a), 42 U.S.C. § 7407(a) ("[e]ach [s]tate shall have the primary responsibility for assuring air quality within the entire geographic area comprising such [s]tate"). That would mean, therefore, that in the outer OCS or other places where only federal operating permit rules apply, PSD increments would not be applicable to temporary minor sources, *unless* federal OCS regulations required it or EPA chose to add increment compliance obligations under 40 C.F.R. § 55.13(h)[42] once the source becomes operational. *See* RTC at 109. REDOIL Petitioners fail to squarely confront this legal landscape, which results in a failure to demonstrate how the Region's interpretation is clearly erroneous. *See, e.g., In re Teck Cominco Alaska, Inc.*, 11 E.A.D. 457, 494-95 (EAB 2004) (burden of demonstrating review is warranted rests with the petitioner, who must raise objections to the permit and explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review); *In re Westborough*, 10 E.A.D. 297, 305, 311-12 (EAB 2002) (same).

b. *REDOIL Petitioners Mischaracterize the Title V Regulatory Scheme*

REDOIL Petitioners' notion that "applicable increment requirements" in section 504(e) mean "applicable to the *area*" rather than "applicable to the *source*" is not supported by the Title V regulatory model as a whole. A Title V permit for a temporary source to operate at multiple locations must include, among other things, "[c]onditions that will assure compliance with all applicable requirements at all authorized locations." 40 C.F.R. §§ 70.6(e)(1), 71.6(e)(1). Broadly speaking, the Board has recognized that "'[a]pplicable requirement' is a term of art in the Title V program that, in general, refers to any substantive requirement that applies to an *emissions source* under any CAA regulatory provisions." *Peabody*,

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[42] This OCS-specific regulation provides:

> If the Administrator determines that additional requirements are necessary to protect [f]ederal and [s]tate ambient air quality standards or to comply with part C of title I, such requirements will be incorporated in this part.

40 C.F.R. § 55.13(h).

12 E.A.D. at 28 n.14 (emphasis added) (citing 40 C.F.R. § 71.2). Further, the regulations implementing the federal Title V program provide that "[a]pplicable requirement means all of the following as they apply to *emissions units in a part 71 source*." 40 C.F.R. § 71.2 (emphasis added). In turn, the term "emissions unit" means "any part or activity of a *stationary source* that emits or has the potential to emit any regulated air pollutant." *Id.* (emphasis added).

Accordingly, the Region's interpretation of the term "applicable" in section 504(e) as meaning "applicable to the source" is consistent with the Agency's Title V regulations, in which applicability is determined by reference to the *source*, not the *area*. REDOIL Petitioners fail to present legal authorities supporting their own novel view of applicability in a way sufficient to demonstrate that the Region's different approach is clearly erroneous.

c. *REDOIL Petitioners Confuse Air Quality Management Obligations with Permitting Obligations*

REDOIL Petitioners argue that the Region's interpretation of section 504(e) should be rejected because it is inherently inconsistent. REDOIL Petition at 31-32. On the one hand, REDOIL Petitioners note, the Region explicitly recognized that the *Kulluk* will consume a portion of the available PSD increments in its authorized drilling areas, but the Region nonetheless refused to impose preconstruction increment compliance requirements in the Title V permit, finding them "inapplicable." RTC at 102, 105-06. On the other hand, the Region acknowledged that after the *Kulluk* becomes operational, it might be necessary to impose increment-related restrictions; i.e., increments would be "applicable." In the Response to Comments, the Region stated:

> If, at any time after the *Kulluk* begins operation under its Title V/OCS permit, Region 10 determines that the actual emissions increases from the permitted OCS source cause or contribute to an increment violation, Region 10 has authority to adopt additional requirements to ensure that increments are not violated.

Id. at 106 (footnote omitted). REDOIL Petitioners argue that the Region cannot have it both ways, contending on this basis that the Region's interpretation should not be sustained. REDOIL Petition at 32.

The Board perceives no conflict between the Region's purportedly "inconsistent" positions on increment applicability. As the Region noted in its Response to Comments, EPA has authority, separate and apart from section 504(e) and the preconstruction programs, to address violations of increment standards that might arise once sources become operational. *See* RTC at 106 (citing CAA §§ 301, 328, 42 U.S.C. §§ 7601, 7627; 40 C.F.R. § 55.13(h)). Moreover, states have authority

to revise their implementation plans to adopt emission limits and other remedial control measures in cases where existing controls are not adequately protecting air quality increments. 40 C.F.R. § 51.166(a)(3), *cited in* RTC at 106.[43] REDOIL Petitioners confuse permitting obligations with ongoing air quality management obligations, but the two are distinct. *See* RTC at 105-06. Simply positing that the Region's view of "applicable" increments is inconsistent is not sufficient to overcome the specific statutory and regulatory authority the Region references in support of its position. The Board therefore finds no showing of clear error justifying a remand on this ground.

d. *REDOIL Petitioners Misconstrue the Regulations*

The Agency's Title V implementing regulations for state and federal operating permit programs closely parallel the language of section 504(e). *Compare* CAA § 504(e), 42 U.S.C. § 7661c(e), *with* 40 C.F.R. §§ 70.6(e), 71.6(e). The regulations define "applicable requirement" for Title V purposes as (among other things): "(2) [a]ny term or condition of any preconstruction permits" issued under parts C or D of title I; and "(13) [a]ny [NAAQS] or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act." 40 C.F.R. §§ 70.2, 71.2. REDOIL Petitioners argue on appeal, as commentors did on the draft permit, that the Region's interpretation of "applicable requirement" improperly reads the thirteenth requirement out of the regulations by subsuming it within the second requirement. REDOIL Petition at 33-34.

The Region explained in the Response to Comments why this was not so. *See* RTC at 107-08. The Region stated that "the intent of the Title V temporary source provisions is to relieve sources of the burden of applying for Title V permits for each new location, while at the same time[] assuring compliance with all requirements to which the source would be subject if it were a new [permanent] source at each such new location." *Id.* at 108. For a temporary source that is also a PSD major source, this would include ensuring that the NAAQS and increment standards are met at each future location – a requirement that, the Region pointed out, would exceed the requirements otherwise applicable to the source under the

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[43] This state implementation plan regulation provides, in relevant part:

> If the [s]tate or the Administrator determines that a[n implementation] plan is substantially inadequate to prevent significant deterioration or that an applicable increment is being violated, the plan shall be revised to correct the inadequacy or the violation.

40 C.F.R. § 51.166(a)(3). The regulations also provide, in the next subsection, that the state "shall review the adequacy of a[n implementation] plan on a periodic basis and within 60 days of such time as information becomes available that an applicable increment is being violated." *Id.* § 51.166(a)(4).

PSD program alone.[44] *Id.* at 107. For a temporary source that is also a PSD minor source, this would include ensuring that the NAAQS and, if required under the implementation plan for minor permanent sources, PSD increment standards are met at each future location, even if the implementation plan did not require such a demonstration for temporary minor sources. *See id.* at 107-08; Region Response at 12.

REDOIL Petitioners fail to meaningfully confront the Region's reasoning on this issue or demonstrate why it is clearly erroneous. Instead, REDOIL Petitioners reference an irrelevant minor permit modification provision (40 C.F.R. § 71.7(e)(1)(i)(A)(3)), rather than a minor source provision, as support for their position. REDOIL Petition at 34. REDOIL Petitioners also suggest that the Title V permitting regulations in sections 70.6(e) and 71.6(e) establish a more expansive regulatory program than the one the Region finds present in section 504(e); indeed, one that would even be broad enough to require the *Kulluk* to demonstrate PSD increment compliance. *Id.* at 33. The Board finds otherwise, in light of the fact that sections 70.6(e) and 71.6(e) are expressly limited by a reference to section 504(e) itself and therefore cannot expand the meaning of the statute. *See* RTC at 107-08.

4. *Increment Section Conclusion*

The Board has carefully examined each of REDOIL Petitioners' increment-related arguments and determined that none have merit. Petitioners' burden is to show clear error, but REDOIL Petitioners have failed in all instances to achieve this standard. The Board therefore denies review of the Permit on this ground.[45]

C. *REDOIL Petitioners Failed to Raise Below Their Contention That Shell's Ambient Air Quality Analysis Was Flawed in That It Failed to Conform to Applicable Agency Guidance*

On February 9, 2010, EPA published in the Federal Register a final rule (effective April 12, 2010) revising the primary NO_2 NAAQS "in order to provide requisite protection of public health as appropriate under section 109 of the Clean Air Act." Primary NAAQS for NO_2, 75 Fed. Reg. 6474, 6475 (Feb. 9, 2010); *see also Shell 2010*, 15 E.A.D. at 149-50 & n.74. This rule set the new 1-hour NO_2

[44] As such, the NAAQS and PSD increment requirements for future locations would be "additional" requirements imposed on the temporary source by section 504(e). RTC at 107-08.

[45] In light of the Board's decision to uphold the Region's interpretation of section 504(e) and the implementing regulations, the Board need not reach REDOIL Petitioners' final argument, which challenges the Region's finding that air quality modeling establishes the *Kulluk*'s emissions will not violate the PSD increments.

NAAQS standard (hereinafter "the 1-hour NO_2 NAAQS") at 100 parts per billion ("ppb") to supplement the existing annual standard, set at 53 ppb. 75 Fed. Reg. at 6475. EPA regulations specify how attainment of the standard is to be calculated, providing that the 100 ppb standard is met "when the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb, as determined in accordance with Appendix S of this part for the 1-hour standard." 40 C.F.R. § 50.11(f). This calculation is sometimes referred to as "the form."[46] *See* 75 Fed. Reg. at 6477 n.5, 6492-93. The 100 ppb standard reflects the maximum allowable NO_2 concentrations anywhere in an area. *Id.* at 6493, 6502. EPA has issued guidance clarifying procedures for demonstrating compliance with the new 1-hour NO_2 NAAQS. *See* REDOIL Petition Ex. 16 (Memorandum from Stephen D. Page, Dir., Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Dirs., U.S. EPA, *Guidance Concerning the Implementation of the 1-Hour NO_2 NAAQS for the Prevention of Significant Deterioration* (June 29, 2010) ("Page Memo"));[47] Memorandum from Tyler Fox, Leader, Air Quality Monitoring Grp., Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Dirs., U.S. EPA, *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO_2 National Ambient Air Quality Standard* (Mar. 1, 2011) ("Fox Memo") (A.R. BB-83).

REDOIL Petitioners assert that Shell's ambient air quality analysis was flawed.[48] In particular, REDOIL Petitioners state that in "identifying the Kulluk's

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[46] The 98th percentile form corresponds approximately to the 7th or 8th highest daily maximum concentration in a year. 75 Fed. Reg. at 6492.

[47] According to the Page Memo, the guidance was issued in response to reports that sources were modeling potential violations of the 1-hour NO_2 NAAQS. Page Memo at 1. The Memo states that "[t]o respond to these reports and facilitate the PSD permitting of new and modified major stationary sources, we are issuing the attached guidance in the form of two memoranda." *Id.* The attached memoranda are titled "General Guidance for Implementing the 1-hour NO_2 National Ambient Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" and "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard." *Id.* at 1-2. Although the Page Memo attaches these two memoranda, the Memo is consecutively numbered as a single document.

[48] In order to establish compliance with the NAAQS and PSD increments, permit applicants must conduct an "ambient air quality analysis," which applicants must prepare under the permitting rules for each regulated pollutant their proposed facilities will emit in "significant" amounts. 40 C.F.R. § 52.21(b)(23)(i), (m)(1)(i). This analysis predicts a pollutant's future concentration in the ambient air by modeling a proposed facility's expected emissions of the pollutant against the backdrop of existing ambient conditions. To conduct an air quality analysis, a permit applicant compiles data on the proposed facility's physical specifications and anticipated emission rates, local topography, existing ambient air quality, meteorology, and related factors. *See, e.g.*, *id.* § 52.21(l), (m); *id.* pt. 51 app. W (Guideline on Air Quality Models); *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 145-48 (EAB 1999); *NSR Manual* at C.16-.23, .31-.50. These data are then processed using mathematical models that calculate the rates at which pollutants are likely to disperse into the atmosphere under various climatological conditions, with the goals of determining whether emissions from the proposed source will cause or
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98th percentile cumulative impact – *i.e.*, the Kulluk's impact added to background levels of pollutants – for comparison to the 1-hour NO_2 standard, Shell used an approach that the Region admits is 'less conservative.' More specifically, Shell used background values that were already adjusted to the 98th percentile, instead of basing its calculations on the full distribution of background values." REDOIL Petition at 38 (footnote omitted). According to REDOIL Petitioners, this method for demonstrating compliance with the 1-hour NAAQS was rejected in the Page Memo as "not being protective of the [NAAQS]." *Id.* at 38-39 (quoting Page Memo at 18). REDOIL Petitioners then cite to a portion of the more recent Fox Memo which, according to them, allows for the method Shell used to calculate background values. *Id.* at 39. That is, the Fox Memo states that the approach used in the Page Memo was overly conservative and should not be used in certain cases. *Id.* (citing Fox Memo at 17-20). REDOIL Petitioners assert that the Region allowed Shell to demonstrate compliance with the form of the 1-hour NAAQS using the approach permitted in the Fox Memo without providing an explanation as to why the determination in the Page Memo was incorrect. *Id.* at 40. REDOIL Petitioners argue that "[b]ecause neither EPA nor the Region provided any explanation about whether and, if so, how, its earlier conclusion [in the Page Memo] that the use of the 98th percentile background values is 'not protective' of the national ambient air quality standard was incorrect, EPA's new guidance and the approach taken by the Region here in reliance on it are arbitrary." *Id.* (quoting Page Memo at 17-20). REDOIL Petitioners contend that the Region had an obligation to explain this "departure from its prior analysis." *Id.* at 40-41.

Upon examination of the record, the Board concludes that this issue was not adequately raised during the comment period and was therefore not preserved for review. As stated above, the regulations require any person who believes that a permit condition is inappropriate to raise "all reasonably ascertainable issues and * * * all reasonably available arguments supporting [petitioner's] position" during the comment period on the draft permit. 40 C.F.R. § 124.13. That requirement is made a prerequisite to appeal by 40 C.F.R. § 124.19(a), which requires any petitioner to "demonstrat[e] that any issue[] being raised [was] raised during the public comment period * * * to the extent required[.]". *In re ConocoPhillips Co.*, 13 E.A.D. 768, 800-01 (EAB 2008); *accord In re Christian Cnty. Generation, LLC*, 13 E.A.D. 449, 457 (EAB 2008); *Shell 2007*, 13 E.A.D. at 394 n.55.

The requirement that an issue must have been raised during the public comment period in order to preserve it for review is not an arbitrary hurdle placed in the path of potential petitioners. *Russell City II*, 15 E.A.D. at 10; *In re City of Marlborough*, 12 E.A.D. 235, 244 n.13 (EAB 2005), *appeal dismissed for lack of*

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contribute to a violation of either the NAAQS or the PSD increments. *See* 40 C.F.R. § 52.21(f); *id.* pt. 51 app. W; *NSR Manual* at C.24-.27, .51-.70.

juris., No. 05-2022 (1st Cir. Sept. 30, 2005); *In re BP Cherry Point*, 12 E.A.D. 209, 219 (EAB 2005). Rather, the requirement serves an important function related to the efficiency and integrity of the overall administrative permitting scheme. *Marlborough*, 12 E.A.D. at 244 n.13. The intent of the rule is to ensure that the permitting authority first has the opportunity to address permit objections and to give some finality to the permitting process. *Id.*; *In re Sutter Power Plant,* 8 E.A.D. 680, 687 (EAB 1999). As the Board has explained, "[t]he effective, efficient and predictable administration of the permitting process demands that the permit issuer be given the opportunity to address potential problems with draft permits before they become final." *In re Teck Cominco*, 11 E.A.D. 457, 481 (EAB 2004) (quoting *In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 250 (EAB 1999)). "In this manner, the permit issuer can make timely and appropriate adjustments to the permit determination, or, if no adjustments are made, the permit issuer can include an explanation of why none are necessary." *In re Essex Cnty. (N.J.) Res. Recovery Facility*, 5 E.A.D. 218, 224 (EAB 1994).

Although REDOIL Petitioners' comments on the draft permit asserted that Shell had used background ambient air data in a manner that understated the impact of its operations, *see* REDOIL Comments at 9-11, nowhere in these comments did Petitioners assert that Shell's approach conflicted with the Page Memo or that the Region had any obligation to provide an explanation for its alleged departure from the Page Memo. Indeed, REDOIL Petitioners' comments recognized that, according to the Fox Memo, Shell's approach is appropriate in some circumstances. *Id.* at 11. The comments, however, did not assert any conflict between the Page Memo and the Fox Memo nor is it clear to this Board that any such conflict exists. Thus, this "battle of the memos" issue was not preserved for review.[49] *See Shell Discoverer 2012*, 15 E.A.D. at 507.

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[49] *See Teck Cominco*, 11 E.A.D. at 481-82 (denying review where issue was not specifically raised during the comment period). The Board notes that the issue REDOIL Petitioners did raise during the comment period was fully and adequately addressed in the Region's Response to Comments. Specifically, in commenting on the draft permit, REDOIL Petitioners raised the argument that Shell had failed to demonstrate compliance with the 1-hour NO_2 NAAQS because, according to REDOIL Petitioners, Shell used background ambient air data in a manner that understated the impact of its operations. REDOIL Comments at 10-11. As stated above, REDOIL Petitioners' comments recognized that Shell's approach to analyzing background data was consistent with the Fox Memo, but argued that Shell's approach was inconsistent with the 1-hour NO_2 NAAQS standard itself. *Id.* at 11. The Region provided a detailed response to this assertion in the Response to Comments. RTC at 74-78. Nothing in the REDOIL Petition indicates why the Region's response on this issue was erroneous or otherwise warrants Board review, nor does the Board find anything erroneous in the Region's response. Thus, even if Petitioners had preserved this issue, the Board would deny review. *See, e.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 450 (EAB 2011) (stating that "a petitioner may not simply reiterate comments made during the public comment period, but must substantively confront the permit issuer's explanations in its response to comments document"); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005) (same).

D. *REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Its Ambient Air Exemption Determination*

REDOIL Petitioners allege that the Region clearly erred in exempting the area within a 500 meter radius from the *Kulluk* from the definition of "ambient air."[50] REDOIL Petition at 15. This area is also referred to throughout the record as the United States Coast Guard ("USCG") "safety zone." *See, e.g.*, RTC at 52-54. REDOIL Petitioners claim that the Region's decision "contravenes both EPA's definition of 'ambient air' as well as EPA's longstanding interpretation of that regulation." REDOIL Petition at 16. In particular, they assert that the Region's 500 meter ambient air boundary fails to meet either of the two criteria the Agency has previously used in evaluating the appropriateness of an exemption. *Id.* at 16-18. According to REDOIL Petitioners, the Region's decision essentially allows Shell to emit more pollution, and possibly with fewer controls, than would otherwise be lawful.[51] *Id.* at 15-16.

The CAA regulations define "ambient air" as "that portion of the atmosphere, external to buildings, to which the general public has access." 40 C.F.R. § 50.1(e). Based on this definition, the Agency has, on occasion, exempted certain areas from the definition of ambient air. *E.g.*, Letter from Steven C. Riva, Chief, Permitting Sec., U.S. EPA Region 2, to Leon Sedefian, Air Pollution Meteorologist, N.Y. State Dep't of Env't Conservation, at 1-2 (Oct. 9, 2007) (A.R. BB-19) [hereinafter Broadwater Letter]; Letter from Douglas M. Costle, Adm'r, U.S. EPA, to Sen. Jennings Randolf, Chairman, Env't & Pub. Works Comm., at 1 (Dec. 19, 1980) (A.R. BB-1) [hereinafter Costle Letter]; *see also* Letter from Nancy Helm, Fed. & Delegated Air Programs, U.S. EPA, to John Kuterbach, Alaska Dep't of Envtl. Quality, at 2 (Sept. 11, 2007) (area exempt if certain conditions met) [hereinafter Helm Letter]. The parties agree that the Agency's "longstanding interpretation" of this exemption is set forth in a letter signed by former EPA Administrator Douglas Costle, which states that "the exemption from ambi-

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[50] For an area that is not considered within the definition of "ambient air," Shell would not have to demonstrate compliance with the NAAQS. *See* CAA §§ 109(b), 160, 163, 42 U.S.C. §§ 7409(b), 7470,7473 (NAAQS apply to areas meeting the definition of ambient air); 40 C.F.R. § 50.1(e) (definition of "ambient air"); *In re Hibbing Taconite Co.*, 2 E.A.D. 838, 848 & nn.23-24 (Adm'r 1989); RTC at 53.

[51] REDOIL Petitioners additionally argue that, should the Region's response contain a "natural physical feature" argument similar to an argument the Region raised in its response brief in *Shell Discoverer 2012*, the Board should consider such an argument a "*post hoc* rationalization" and should disallow it. REDOIL Petition at 19; *see also Shell Discoverer 2012*, 15 E.A.D. at 510 n.52 (discussing this issue). REDOIL Petitioners also reserve the right to request leave to file a reply brief addressing this issue. REDOIL Petition at 19. Unlike the situation in *Shell Discoverer 2012*, the Board does not find that the Region's response brief contains an explanation that is clearly different than the rationale set forth in the Response to Comments. Moreover, REDOIL Petitioners do not raise this particular issue in their reply brief. Consequently, the Board does not consider REDOIL Petitioners' "post hoc rationalization" argument further.

ent air is available only for the atmosphere over land owned or controlled by the source and to which the public access is precluded by a fence or other physical barriers." Costle Letter at 1; REDOIL Petition at 16 (quoting same letter); Region Response at 29-30 (referring to same letter); Shell Response at 26-27 & n.27 (same); *see also* RTC at 51 (same). The Costle Letter also indicates that, in determining whether the exemption applies, the Agency reviews "individual situations on a case-by-case basis." Costle Letter at 1; *see also* Approval and Promulgation of State Implementation Plans, 50 Fed. Reg. 7056, 7057 (Feb. 20, 1985) (noting that, in considering ambient air exemptions, "individual variations in the type of land and nature of the limitation on access necessitate a case-by-case evaluation of the facts, and application of the principles involved in this determination").

Here, in its permitting decisions, the Region determined that, as long as certain permit conditions were being met, it was appropriate to set the ambient air boundary at a 500 meter radius from the *Kulluk*, or, in other words, the 500 meter radius "safety zone" was exempt from the ambient air definition. RTC at 51-52; *see also* Statement of Basis at 40. The terms and conditions upon which the Region relied to exempt this area prohibit the operation of vessels and emissions units unless (1) the USCG establishes a safety zone within at least 500 meters from the center of the *Kulluk*, (2) members of the public are precluded from entering the safety zone, and (3) Shell develops and implements a "public access control program."[52] Permit at 42-43. The Region determined that, as long as these safety zone and public access restriction permit conditions are complied with, ex-

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[52] The precise terms and conditions of the Permit are as follows:

> The permit does not authorize operation unless:
>
> > 5.1.1. The Kulluk is subject to a currently effective safety zone established by the [USCG] which encompasses an area within at least 500 meters from the hull of the Kulluk and which prohibits members of the public from entering this area except for attending vessels or vessels authorized by the USCG (such area shall be referred to as the "Safety Zone"); and
> >
> > 5.1.2. The permittee has developed in writing and is implementing a public access control program to:
> >
> > 5.1.2.1. Locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the Safety Zone; and
> >
> > 5.1.2.2. Communicate to the North Slope communities on the Beaufort Sea on a periodic basis when exploration activities are expected to begin and end at a drill site, the location of the drill site, and any restrictions on activities in the vicinity of the Kulluk's exploration operations.

Permit at 42-43.

empting the area within the safety zone from the ambient air definition would generally be consistent with previous Agency interpretations. RTC at 51-52. In so finding, the Region noted that "[g]iven that the permitted activities occur over open water in the Arctic, the[] criteria [for exemption included in the Costle Letter] must be adapted to some extent when applied to this environment." *Id.* In specifically considering the applicability of the two exemption criteria, the Region stated:

> Region 10 recognizes that Shell does not "own" the areas of the Beaufort Sea on which the Kulluk will be operating as might be the case for a stationary source on land. Shell has a lease authorizing the company to use these areas for the activities covered by the permits. A Coast Guard safety zone establishes legal authority for excluding the general public from the area inside the zone. EPA has previously recognized a safety zone established by the Coast Guard as evidence of sufficient ownership or control by a source over areas over water so as to qualify as a boundary for defining ambient air where that safety zone is monitored to pose a barrier to public access. Letter from Steven C. Riva, EPA Region 2, to Leon Sedefian, New York State Department of Conservation, re: Ambient Air for the Offshore LNG Broadwater Project, dated October 9, 2007 (Broadwater Letter).
>
> To meet the second of the criteria applied by EPA and ensure the source actually takes steps to preclude public access, Shell proposed and Region 10 required as a condition of operation under the permits that Shell develop in writing and implement a public access control program to locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the area within 500 meters of the hull of the Kulluk. Region 10 believes that, for the overwater locations in the arctic environment at issue in these permitting actions, such a program of monitoring and notification is sufficiently similar to a fence or physical barrier on land such that the area within the Coast Guard safety zone qualifies for exclusion from ambient air. *See* Broadwater Letter at 2.

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RTC at 52.[53]

Upon consideration of the administrative record and the parties' arguments, the Board concludes that Petitioners have not shown that the Region clearly erred in its decision to exempt the area within the USCG safety zone from the definition of "ambient air." The Region, in its Response to Comments, provided a reasonable interpretation of the ambient air regulation and the Agency's "longstanding interpretation" of that regulation as applied in the OCS context.[54] Furthermore, the Region's analysis was entirely consistent with a similar analysis undertaken by Region 2 in which that Region determined that it was appropriate for a permittee to use the USCG safety zone to define an ambient air boundary around a proposed offshore liquefied natural gas facility. *See* Broadwater Letter at 2. The Broadwater Letter, moreover, suggests that Region 2's analysis, as well as Region 10's, is not unique, stating that "*[i]n previous permitting decisions involving * * * drilling operations, EPA Regional offices have used the USCG's safety zone as the boundary for defining ambient air.*" *Id.* at 2 (emphasis added). The letter explains that the Agency has found that "[t]he 'safety zone' approach represents a reasonable surrogate for a source's fence or physical barrier and thus could act as an ambient air boundary." *Id.*

Thus, while it is true, as Petitioners allege, that the Agency has generally required the source to own or control access over the area in question for that area to meet the first criterion, REDOIL Petition at 16-17, this requirement has been limited to sources located on land.[55] *See, e.g.,* Helm Letter at 1 (referring to possi-

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[53] REDOIL Petitioners also seem to suggest that the Region's approach is flawed because it "is based upon an assumption that Shell will request, and the [USCG] will establish, a safety zone restricting the passage of other vessels." REDOIL Petition at 15 & n.45. This argument is unpersuasive because it fails to recognize that, as the permit conditions quoted in note 52 state, operation is prohibited unless these two conditions are met. *See* Permit at 42-43.

[54] As the Region rightly noted, *see* RTC at 51-52, the regulation and the Costle Letter, by their very terms, were clearly written with overland situations in mind. *See* 40 C.F.R. § 50.1(e) (referring to "buildings"); Costle Letter at 1 (referring to "land" and "fences").

[55] In support of their contention, REDOIL Petitioners rely on a previous Agency determination that leased property could not be exempted from the definition of ambient air because the lessee did not have control over access to its leased property (only the landlord did). REDOIL Petition at 17 & n.52 (citing Helm Letter). Petitioners assert that this onshore interpretation must apply equally to an OCS lease BOEMRE issued. *Id.* As the Petitioners themselves note, federal courts have found agency action to be arbitrary when the agency's "explanation 'runs counter to the evidence,'" *id.* at 17 (quoting *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983)), and "'the agency offer[s] insufficient reasons for treating similar situations differently,'" *id.* (quoting *Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996)); *see also FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-15, 129 S.Ct. 1800, 1810-11 (2009) (discussing standard of review of an agency's policy change). Here, not only are the situations dissimilar enough to arguably not be governed by these cases, but the Agency did offer persuasive reasons for treating the two situations differently.

ble exemption near coal-fired power plant); Memorandum from Steven D. Page, Director, Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Div. Dirs., U.S. EPA, *Interpretation of "Ambient Air" in Situations Involving Leased Land Under the Regulations for the Prevention of Significant Deterioration (PSD)* (June 22, 2007) (A.R. B-26) (discussing the applicability of the exemption where a source is located on "land" leased to them by another source). The Region (and the Agency before it) reasonably determined that application of the regulation and the interpretive letter to an "overwater" situation requires some leeway. REDOIL Petitioners' reliance solely on land-based exemption decisions is thus unpersuasive.[56] Finally, as mentioned above, the Agency has consistently taken the position that ambient air exemption determinations are analyzed on a case-by-case basis.

For all the reasons stated above, REDOIL Petitioners have not shown that the Region clearly erred in its ambient air exemption determination.[57] Consequently, review of the Permit based on this issue is denied.

E. *ICAS and Mr. Lum Have Not Demonstrated That the Region Failed to Satisfy Its Obligation to Comply with Executive Order 12898 and Applicable Board Precedent*

ICAS and Mr. Lum argue that the Region's environmental justice analysis lacked a valid basis on which to conclude that Shell's oil exploration activities in the Beaufort Sea will not have a disproportionately high and adverse effect on the health of the Alaska Native population living on the North Slope. ICAS alleges that the Region's environmental justice analysis fails to account for the impacts of short-term NO_2 and ozone exposures on the Alaska Native population residing on the North Slope, and also asserts that the opportunities for public participation were inadequate. Mr. Lum challenges the lack of analysis regarding the impacts

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[56] REDOIL Petitioners' arguments that the Region's determination fails to meet the second criteria because the safety zone "fails to effectuate a barrier that 'precludes' public access" are equally unpersuasive. REDOIL Petition at 17. REDOIL Petitioners focus on the fact that the USCG will limit access to the area based on safety concerns rather than for air quality considerations. *Id.* at 17-18. The important fact is that access within the zone will be strictly limited, not the reason behind it. Moreover, REDOIL Petitioners do not address the other condition of the permit that the Region relied upon for its ambient air boundary determination: the public access control program Shell is required to implement. The Board does not find clear error in the Region's conclusion that, based on the USCG limiting access to the safety zone and the permittee implementing a public access control program, the latter of which will include notification to the local residents of the location of the drilling and the fact that the public is restricted from the safety zone, the general public will be denied access to the area inside the safety zone.

[57] The Board came to the same conclusion in *Shell Discoverer 2012*. *See* 15 E.A.D. at 513-14. In that case, the Region had adopted and followed the same or a very similar interpretation as described in the text above. *See id.* 15 E.A.D. at 511-13. Nothing REDOIL Petitioners offer in the present case convinces the Board that anything in the prior analysis – and reiterated here – was in error.

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emissions from Shell's activities in the Beaufort Sea could have on traditional subsistence food sources and also challenges Shell's oil spill response capabilities. The Region counters that its environmental justice analysis and resulting conclusions comply with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" ("Executive Order"). The issue the Board must resolve is: did the Region satisfy its obligation to comply with the Executive Order and applicable Board precedent?

The Executive Order states in relevant part:

> *Agency Responsibilities.* To the greatest extent practicable and permitted by law, and consistent with principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice a part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations * * * .

Exec. Order 12898, 59 Fed. Reg. 7629, 7629 (Feb. 11, 1994) (A.R. FF-1). Federal agencies are required to implement the Executive Order "consistent with, and to the extent permitted by, existing law." *Id.* at 7632. The Board has held that a permit issuer should exercise its discretion to examine any "superficially plausible" claim that a minority or low-income population[58] may be disproportionately affected by a particular facility seeking a PSD permit. *In re EcoEléctrica, LP*, 7 E.A.D. 56, 69 n.17 (EAB 1997); *accord Shell 2010*, 15 E.A.D. at 148-49 & n.71 (citing PSD cases).

At the outset, the Board notes that both ICAS and Mr. Lum recently challenged the Region's environmental justice analysis in *Shell Discoverer 2012*. *See* 15 E.A.D. at 493-501. In addition, the environmental justice analysis the Region prepared in the current matter is reminiscent of the environmental justice analysis prepared for the *Discoverer* permits that were the subject of the Board's *Shell Discoverer 2012* decision. Moreover, while their petitions for review in *Shell Discoverer 2012* and the current appeal are not identical, both ICAS and Mr. Lum raise substantially similar arguments in their current appeals as they did in their appeals of the *Discoverer* permits.[59] *Compare* Lum Petition *with* Eskimo

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[58] Under the Executive Order, the Alaska Native population residing on the North Slope qualifies as a minority population. *See* Statement of Basis at 55; ICAS Petition at 30.

[59] ICAS's remaining challenges to the amount and quality of public participation opportunities available pertaining to the environmental justice analysis appear to mirror its more general arguments

Continued

Whaler Petition for Review, *Shell Discoverer 2012* (Doc. No. 24), *and* ICAS Petition *with* ICAS and AEWC Petition for Review, *Shell Discoverer 2012* (Doc. No. 7).

1. *Region's Environmental Justice Analysis*

The Region included a fifteen-page environmental justice analysis in the administrative record to accompany the Permit and to allow for public comment on the analysis. Environmental Justice Analysis for Proposed OCS Permit No. R10 OCS030000 Kulluk Drilling Unit (undated) ("EJ Analysis") (A.R. F-1). The Region's analysis begins with a discussion of environmental justice in the permitting context and notes that "[t]he Title V operating permit program does not generally impose new substantive air quality control requirements."[60] EJ Analysis at 2. In addition, the analysis includes a discussion of how the national ambient air quality standards ("NAAQS") are crafted by integrating scientific information and evidence from rigorously reviewed studies, and a summary of the Board's case law stating that the Board views compliance with the NAAQS as "emblematic of achieving a level of public health protection that, based on the level of protection afforded by the NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants." *Id.* (quoting *Shell 2010*, 15 E.A.D. at 156) (citations omitted); *see also* Statement of Basis at 54-55.

(continued)
regarding the public participation process. *See* ICAS Petition at 6-10, 38-39. Accordingly, the Board addresses ICAS's challenges to the adequacy of the public participation process, both generally and with respect to the environmental justice analysis, in Parts VI.F and VI.G below.

[60] The Region further explained that:

> [T]he Title V operating permit program is generally a vehicle for ensuring that existing air quality control requirements are appropriately applied to facility emission units and that compliance with these requirements is assured. Accordingly, the primary means of addressing environmental justice issues in the Title V program is through increased public participation and review by permitting agencies, and conditions to assure compliance with applicable requirements. As discussed above, the Title V permit at issue in this case is unusual in that it requires the source, as a Title V temporary source, to meet the NAAQS and also establishes limits on the potential to emit. Region 10 has considered environmental justice concerns in this permitting action where possible in the context of assuring compliance with applicable requirements for the source, in particular assuring compliance with the NAAQS as a Title V temporary source and establishing PSD avoidance limits.

EJ Analysis at 2; *see also* Statement of Basis at 54.

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The analysis goes on to catalogue the distances between Inupiat communities on the coast of the North Slope that are closest to Shell's lease blocks in the Beaufort Sea, and discusses the importance of subsistence foods obtained through hunting, fishing, and whaling to the Inupiat diet, and more generally the nexus between subsistence activities and Inupiat culture. EJ Analysis at 3, 5. The Region also included an illustration that juxtaposes the location of Shell's lease blocks, including proposed exploration sites, with onshore and offshore subsistence use areas for the northern Inupiat communities.[61] *Id.* at 4; *see also* Statement of Basis at 56.

The Region then proceeded to analyze demographic, health-related, and air quality data.[62] The demographic analysis indicates that 68% of residents living in the North Slope Borough classify themselves as Alaska Natives. EJ Analysis at 7. In addition, nearly half of North Slope residents speak a language other than English at home. *Id.* at 8. The analysis of health data revealed, among other things, that from 1990 to 2007 there has been a 158% rate of increase in the prevalence of diabetes for Alaska Natives residing on the Arctic Slope, whereas during the same time period there has been a 117% rate of increase in the prevalence in diabetes for Alaska Natives statewide.[63] *Id.* at 9. In addition, there is a higher incidence of outpatient visits for respiratory problems ranging from the common cold to pneumonia in the Arctic Slope than in the rest of Alaska. *Id.*

In the air impacts analysis, the Region first noted that the North Slope Borough is currently designated as attainment/unclassifiable for all of the NAAQS, meaning that the North Slope has sufficient data to determine that the area is meeting the NAAQS or that, due to no data or insufficient data, EPA cannot make a determination. *Id.* at 11 & n.15 (citing CAA § 107(d), 42 U.S.C. § 7407(d)). The

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[61] The analysis also includes, for some of the northern Inupiat communities, the distances residents have reported traveling offshore to hunt for traditional subsistence food sources. *See* EJ Analysis at 6 (noting that Nuiqsut residents have traveled up to 60 miles offshore to the north and as far east as Camden Bay to hunt for bowhead whale and that Kaktovik residents have traveled as far as 35 miles offshore to hunt for bowhead whale and walrus); Statement of Basis at 55; *see also Shell 2010*, 15 E.A.D. at 155 n.80 (noting that subsistence activities, which can take Inupiat residents living on the North Slope far from their local communities and closer to emissions sources, are a potential environmental justice consideration that may be unique to the OCS PSD permitting context); *Shell Discoverer 2012*, 15 E.A.D. at 496 n.32 (same).

[62] The Region used demographic information gathered from the 2000 U.S. Census to compare the population of the North Slope Borough to the populations of both the State of Alaska and the entire United States, which served as reference populations for the demographic analysis. EJ Analysis at 6-8 & n.6. The North Slope Borough consists of the following eight incorporated villages: Point Hope, Point Lay, Wainwright, Atqasuk, Barrow, Nuiqsut, Kaktovik, and Anaktuvuk Pass. *See* Statement of Basis at 55.

[63] The Region utilized data from the Alaska Native Health Status Report 2009, which the Alaska Native Epidemiology Center and the Alaska Native Tribal Health Consortium had prepared to analyze health conditions in the North Slope Borough. *See* EJ Analysis at 8-10 & n.11.

Region then examined the total modeled concentrations of NO_2, particulate matter with a diameter of 10 micrometers or less ("PM_{10}"), particulate matter with a diameter of 2.5 micrometers or less ("$PM_{2.5}$"), SO_2, and CO,[64] including background concentrations and maximum concentrations from the *Kulluk* and the Associated Fleet.[65] *Id.* at 13-14 & tbl.6. The Region compared the total modeled concentrations for each of the three nearest communities while the source is in operation and found that the total maximum modeled concentrations demonstrate that the NAAQS will be attained at all locations beyond the 500-meter boundary, and that the modeled concentrations in the North Slope communities and in areas where the communities conduct subsistence activities will be below the relevant standard.[66] *Id.* at 14. Finally, the Region noted that a majority of the total impacts result from background concentrations. *Id.*

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[64] The Board notes that the information included in table 5 of the air quality analysis includes modeled impacts in the nearest onshore communities from operation of the *Kulluk* alone, without impacts from the Associated Fleet or background concentrations. EJ Analysis at 12 & tbl.5. The Region explains that the maximum modeled concentrations in Nuiqsut, Deadhorse, and Kaktovik listed in table 5 are all below the significant impact levels ("SILs") established for each criteria pollutant. *Id.* at 12. In the PSD program, SILs function as threshold levels for ambient concentrations of a given pollutant; for a given pollutant and averaging period, any source that has a measured concentration that is below the SIL is considered too small to cause or contribute to a violation of the NAAQS. *Id.*

The Region made clear earlier in the environmental justice analysis that emissions from the Associated Fleet while operating within 25 miles of the *Kulluk*, together with emissions from the *Kulluk*, are considered in conducting an ambient air quality analysis to determine whether emissions from the project will cause or contribute to a violation of the NAAQS. *Id.* at 4. The Region's analysis repeatedly emphasized that compliance with the NAAQS is "emblematic of achieving a level of public health protection" that demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental impacts due to exposure to relevant criteria pollutants. *Id.* at 4-5 (quoting *Shell 2010*, 15 E.A.D. at 156). While the inclusion of information on modeled impacts of emissions from the *Kulluk* alone on the nearest onshore communities is illustrative regarding the *Kulluk*'s contribution to the overall emissions profile, it is the information that encompasses both background concentrations and emissions from the *Kulluk* and the Associated Fleet when it is within 25 miles of the *Kulluk* that establishes the Region has satisfied its obligation to comply with the Executive Order.

[65] Monitoring data from Prudhoe Bay, Deadhorse, and Endicott were used for background values. EJ Analysis at 13. The Region also noted that the modeled impacts are based on conservative assumptions, including that all four wells are drilled at the same location to account for overlapping plumes, even though the drilling of four wells at a fixed location and the overlap of plumes will not occur. *Id.*

[66] Specifically, the Region noted that in Kaktovik, located 8 miles from Shell's closest lease block in the Beaufort Sea, the total maximum modeled concentrations, assuming Shell's *Discoverer* is in operation and considering background concentrations, are measured at the following percentages of the NAAQS: 11% for the 1-hour NO_2 NAAQS; 20% for the 24-hour $PM_{2.5}$ NAAQS; 35% for the 24-hour PM_{10} NAAQS, and; 20% for the annual $PM_{2.5}$ NAAQS. EJ Analysis at 13-14 & tbl.6. Similarly, in Nuiqsut, located 33 miles from Shell's closest lease block in the Beaufort Sea, and applying the same assumptions, the total maximum modeled concentrations are measured at the following percentages of the NAAQS: 50% for the 1-hour NO_2 NAAQS; 48% for the 24-hour $PM_{2.5}$ NAAQS, 35% for the 24-hour PM_{10} NAAQS, and 26% for the annual $PM_{2.5}$ NAAQS. *Id.*

Overall, the Region concluded that Shell's proposed OCS activities in the Beaufort Sea will not result in disproportionately high and adverse human health or environmental effects with respect to Alaska Natives residing on the North Slope, and further, in reaching this conclusion the Region considered the impact on these communities while engaging in subsistence activities in the areas where such activities are regularly conducted. *Id.* at 15. With this background in mind, the Board now turns to the specific assertions both ICAS and Mr. Lum make in support of their arguments that the Region has not complied with its obligation under the Executive Order.

2. *One-Hour NO_2 NAAQS Analysis*

ICAS challenges the Region's consideration of 1-hour NO_2 NAAQS[67] compliance in the environmental justice analysis on several grounds, arguing that it is "insufficient and ignores salient record evidence." ICAS Petition at 34. ICAS asserts that in addition to NO_2 emissions from the *Kulluk* when it is an OCS source and from the Associated Fleet when it is within 25 miles of the *Kulluk*, the Region must also account for mobile source NO_2 emissions that remain unregulated by the Permit when assessing potentially adverse health impacts of NO_2 emissions on North Slope communities. *Id.* at 35-38. In addition, ICAS challenges the Region's "fatal flaw of the environmental justice analysis," namely the failure to *analyze* the impacts of Shell's emissions on residents of the North Slope conducting subsistence activities offshore. *Id.* at 36-37 (emphasis in original). Finally, ICAS challenges the Region's analysis of Shell's 1-hour NO_2 NAAQS compliance based on several technical decisions the Region made. *Id.* at 37-38.

ICAS asserts that the Region's environmental justice analysis is inadequate because it does not account for emissions from mobile sources that are not included in the air quality impact analysis conducted to determine whether emissions from the project will cause or contribute to a violation of the NAAQS. *See id.* at 34 & n.30; EJ Analysis at 4. The Board disagrees.

The Region appropriately determined that it was not required to analyze these mobile source emissions where, as here, the Title V permit did not address mobile source emissions, and the record lacked sufficient data for such an analy-

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[67] NAAQS are health based-standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics. *See In re AES Puerto Rico, L.P.*, 8 E.A.D. 324, 351 (EAB 1999), *aff'd sub nom. Sur Contra La Contaminación v. EPA*, 202 F.3d 443 (1st Cir. 2000), *cited in Shell 2010*, 15 E.A.D. at 149 n.72. The Administrator is required to carry out periodic reviews of the air quality criteria published under section 108 of the CAA, 42 U.S.C. § 7408, as well as the NAAQS, and to revise the criteria and standards as appropriate. CAA § 109(d)(1), 42 U.S.C. § 7409(d)(1). The Board outlined the history of the NO_2 NAAQS reviews in its December 2010 remand order. *See Shell 2010*, 15 E.A.D at 150 nn.73-74.

sis.[68] RTC at 114; Statement of Basis at 54; *see also* EJ Analysis at 2; Region Response at 36 n.34. The Region acknowledged that the Title V permit at issue in this case is unusual in that it requires a temporary Title V source to meet the NAAQS, and the permit also establishes limits on PTE. EJ Analysis at 2; Statement of Basis at 54; RTC at 114. However, the Title V permit does not regulate mobile source emissions.[69]

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[68] ICAS asserts that the Board should remand the *Kulluk* permit so that the Region can assess mobile source emissions included in Shell's emissions inventory submitted to BOEMRE as part of Shell's Exploration Plan, both because it "shows that the additional emissions estimates are not as hard to obtain as Region 10 implies," and because once the Region assesses the accuracy of the inventory it can "use the information to conduct an EJ analysis that accounts *for all* of Shell's emissions." ICAS Petition at 35 (emphasis in original).

Nowhere in its petition does ICAS acknowledge the Region's statement, in the Response to Comments, that "[t]he Exploration Plan * * * does not include estimates of air emissions from these other vessels during the time they are more than 25 miles from the Kulluk or before the Kulluk becomes an OCS source." RTC at 15. The Board has consistently stated that, in order to sustain its burden of demonstrating that review is warranted, the petitioner must address the permit issuer's responses to relevant comments made during the permit proceeding. *See, e.g., Peabody*, 12 E.A.D. at 33 ("[T]he petitioner may not simply reiterate comments made during the public comment period, but must substantively confront the permit issuer's subsequent explanations.").

Furthermore, ICAS's suggestion that the Region should "compile rough estimates" of these mobile source emissions because "[s]ome additional steps are particularly necessary here" is similarly unavailing. ICAS Petition at 36. ICAS has acknowledged its ongoing concern regarding emissions that are not included in the PTE analysis, along with its efforts to compel Region 10 to consider non-PTE emissions as OCS source emissions in prior appeals to this Board. ICAS Petition at 34. Despite its concerns, ICAS cannot demonstrate that review is warranted where, as here, ICAS offers a generalized objection to the Region's consideration of mobile sources in the environmental justice analysis, and the Region has demonstrated that it lacks sufficient data to reach a determinative conclusion regarding these mobile source emissions in the environmental justice context. *See Avenal*, 15 E.A.D. at 401-02; *see also In re Cape Wind Assocs., LLC*, 15 E.A.D. 327, 330 (EAB 2011) (noting that petitioners "must raise specific objections to the permit"); *In re BP Cherry Point*, 12 E.A.D. 209, 217 (EAB 2005) (same).

[69] In a memorandum addressing environmental justice in the permitting context, the Agency stated:

> Unlike PSD/[New Source Review] permitting, Title V generally does not impose substantive emission control requirements, but rather requires all applicable requirements to be included in a Title V operating permit. * * * Because Title V does not directly impose substantive emissions control requirements, it is not clear whether or how EPA could take environmental justice issues into account in Title V permitting – other than to allow public participation to serve as a motivating factor for applying closer scrutiny to a Title V permit's compliance with applicable CAA requirements.

Memorandum from Gary Guzy, General Counsel, U.S. EPA, to Assistant Administrators, U.S. EPA, *EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting* 13 (Dec. 1, 2000) (A.R. FF-7).

Despite the fact that mobile source emissions are not regulated under the Title V permit, the Region did go beyond its required review to consider mobile source emissions with respect to environmental justice in the Response to Comments. *See* RTC at 114-15. The Region was unable to reach a determinative conclusion with respect to these emissions due to insufficient information.

ICAS's attempt to construe the Executive Order and Board precedent to *require* in this instance the analysis of emissions from mobile sources that the Region may not have accurate or sufficient data to complete in the context of a Title V permit is unpersuasive. Notably, the Board has held that it will decline to review a permit issuer's environmental justice analysis that cannot reach a determinative conclusion due to the insufficiency of available valid data. *See* RTC at 115; *Avenal*, 15 E.A.D. at 401-02 (stating that where a permit issuer conducts a substantive environmental justice analysis that endeavors to include and analyze data that is germane to the environmental justice issue raised during the comment period, and the permit issuer demonstrated it exercised its considered judgment when determining that it cannot reach a determinative conclusion due to the insufficiency of available data, the Board will decline to grant review of the environmental justice analysis). Moreover, "[t]he plain language of the Executive Order imparts considerable leeway to federal agencies in determining how to comply with the spirit and letter of the Executive Order." *Avenal*, 15 E.A.D. at 401. ICAS overreads *Avenal* when it suggests that *Avenal* compels the analysis of these mobile source emissions in the context of this permit. *See* ICAS Petition at 35 ("The Agency has considered mobile emissions previously in its EJ analyses and should be required to do so here." (citing *Avenal*, 15 E.A.D. at 399)).[70]

ICAS's challenge also fails because ICAS never responded to the Region's stated rationale in the administrative record that Title V permits generally do not impose new substantive air quality control requirements. A petitioner cannot sim-

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[70] ICAS includes a citation to *Avenal* for the proposition that "motor vehicle emissions are by far the greatest concern," in support of its contention that mobile source emissions should be included in the short-term NO_2 NAAQS assessment included in the environmental justice analysis, but the quote is taken out of context and does not support ICAS's position. *See* ICAS Petition at 35. The circumstances in *Avenal* are markedly different than those in the present case. In *Avenal*, the Agency conducted an environmental justice analysis that focused in particular on short-term NO_2 impacts in support of a PSD permit to build a 600-megawatt power plant. 15 E.A.D. at 399. The Agency noted that in the area surrounding the proposed site for the new source, motor vehicles accounted for 91% of NO_2 emissions locally, as compared to 61% of NO_2 emissions nationwide. *Id.* In addition, the environmental justice analysis in *Avenal* noted that the area surrounding the proposed facility was designated as extreme nonattainment for ozone, and NO_2 is a precursor emission. *Id.* Finally, the Agency further explained that NO_2 concentrations on or near major *roadways* have appreciably higher emissions than those measured at monitors in the Agency-approved network. *Id.* ICAS has not demonstrated that the need to assess NO_2 impacts from mobile sources in *Avenal*, where NO_2 emissions near roadways were known to be much higher, translates into a requirement that the Agency account for these mobile emissions on the Arctic OCS to demonstrate that its environmental justice analysis is sufficient.

ply repeat comments made during the comment period, but must substantively confront the permit issuer's substantive explanations in order to demonstrate that review of a particular issue is warranted. *Peabody*, 12 E.A.D. at 33.

Further, ICAS's assertion that the Region failed "to *analyze* the impacts of Shell's emissions on subsistence hunters and fishers while offshore," is unsupported by the record. ICAS Petition at 36-37 (emphasis in original); *see also Shell Discoverer 2012*, 15 E.A.D. at 500. The environmental justice analysis stated that mobile source emissions will dissipate while vessels are in transit, RTC at 115, and the environmental justice analysis analyzed how the subsistence areas located in close proximity to Shell's lease blocks might be affected by Shell's OCS activities. EJ Analysis at 5; *id.* at 6 (discussing distances subsistence hunters, whalers, and fishermen have traveled offshore in search of subsistence foods); *id.* at 4 (depicting subsistence use areas mapped over Shell exploration plan well sites). In addition to demonstrating compliance with the applicable NAAQS, the Region conducted an environmental justice analysis that included and analyzed data that is germane to the environmental justice issues raised during the comment period. *See Shell 2010*, 15 E.A.D. at 160-61 n.87. Although ICAS may disagree with the contents or conclusions of the Region's environmental justice analysis, ICAS has not demonstrated that this difference in opinion equates to an insufficient effort on the Region's part regarding environmental justice, or that the Region failed to analyze impacts. *See Shell Discoverer 2012*, 15 E.A.D. at 500.

Finally, ICAS enumerates several problems with the Region's environmental justice analysis that amount to challenges to the Region's technical expertise. *See* ICAS Petition at 37; Region Response at 43-44; *see also Shell 2012*, 15 E.A.D. at 500-01. Without elaborating any further, ICAS expresses "significant concerns" with, among other things, installed NO_2 controls and their ability to function properly in cold weather, the use of generic NO_x/NO_2 ratios in lieu of actual source tests, the use of "diurnal pairing" of NO_2 data, and the need for additional "tracer experiments" to supply data for the AERMOD model. ICAS Petition at 37. It is axiomatic that a challenge to the fundamental technical expertise of a permit issuer requires a petitioner to overcome a particularly heavy burden, and that a successful challenge to a permit issuer's technical expertise must consist of more than just a difference of opinion. *Shell 2012*, 15 E.A.D. at 501; *accord In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3rd Cir. 1999). Here, ICAS has failed to overcome this particularly heavy burden because it does nothing more than list its broad objections to the Region's environmental justice analysis.

3. *Ozone NAAQS Analysis*

ICAS also challenges the Region's compliance with its obligation under the Executive Order based on the Region's alleged failure to adequately address both the latest scientific findings regarding ozone and the potential impacts of ozone on

local communities. ICAS Petition at 31. ICAS's assertions focus in large part on the Region's decision to demonstrate compliance with the current 8-hour ozone NAAQS, which is set at 0.75 parts per million ("ppm"), as opposed to the range of 0.60 to 0.70 ppm for the 8-hour ozone NAAQS that EPA's Administrator proposed in January 2010 but never finalized. *See id.* at 30-34; Region Response at 40-42; RTC at 96-98, 119-20. On September 2, 2011, four days before the close of the public comment period and prior to the Region issuing the Permit, the President requested that the Administrator withdraw the proposed 8-hour ozone NAAQS standard and instead enforce the current 8-hour ozone standard of 0.75 ppm until the ozone standard is reconsidered again in 2013. Statement on the Ozone National Ambient Air Quality Standards, 2011 Daily Comp. Pres. Doc. 607, at 1 (Sept. 2, 2011), *available at* http://www.gpo.gov/fdsys/ (click on Compilation of Presidential Documents). ICAS also asserts that the Region's conclusion not to model emissions from ozone precursors based on available background data that does not account for the cumulative impacts of proposed activities on the Arctic OCS was in error, and that the Region's response to its comments regarding ozone were inadequate. ICAS Petition at 33.

The Region responds that ICAS's petition raises issues that are largely technical, and that the Region appropriately relied on the Agency's current legal standard of 0.75 ppm when assessing Shell's compliance with the 8-hour ozone NAAQS. Region Response at 40. The Region further asserts that it exercised its technical expertise to determine that ozone levels in the area were not expected to exceed even the lowest level of 0.60 ppm that EPA included in its proposed 8-hour ozone NAAQS. *Id.* at 42. Finally, the Region asserts that it appropriately responded to comments received, including comments specifically raising concerns about the cumulative impacts of proposed OCS operations with respect to attaining the ozone NAAQS. *Id.*

Although ICAS argues to the contrary, the current, enforceable 8-hour ozone NAAQS that Shell must demonstrate compliance with is 0.75 ppm. As this Board has stated previously, "[a] permit issuer must apply the statutes and implementing regulations in effect at the time the final permit decision is made." *Russell City II*, 15 E.A.D. at 81 n.98 (quoting *In re Phelps Dodge Corp.*, 10 E.A.D. 460, 478 n.10 (EAB 2002)). The Region's decision to require Shell to comply with the 0.75 ppm 8-hour ozone NAAQS is consistent with applicable law and the corresponding regulations in effect at the time the Region issued the Permit.

In addition, ICAS does not demonstrate that the Region's analysis of the impacts the 8-hour ozone NAAQS may have on Alaska Natives residing on the North Slope would result in a disproportionately high or adverse impact on the

health of Alaska Natives.[71] In the Response to Comments supporting the Permit, the Region stated that it "stands by its decision" to forego regional photochemical modeling and further explained that "Region 10 reviewed ozone monitoring data along with existing precursor emissions that will impact ozone formation. Based on this review, Region 10 determined further analysis of ozone was not warranted." RTC at 97. In addition, the Region explained that the most recent ozone data indicates that current ozone levels in the Beaufort Sea are well below 0.60 ppm, which represents the low end of the range of the proposed 8-hour ozone NAAQS.[72] *Id.* at 97-98, 120.

Finally, ICAS's assertion that the Region failed to consider the cumulative impacts of emissions from proposed Arctic OCS operations is unavailing. *See* ICAS Petition at 33. ICAS's petition for review not only lacks any further support for this statement, it also fails to substantively confront the Region's explanation in the Response to Comments. *See Peabody*, 12 E.A.D. at 33 (petitioner must

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[71] ICAS's assertion that in the context of an environmental justice analysis the Region's treatment of the 8-hour ozone standard in the current appeal is analogous to the Region's treatment of the newly promulgated 1-hour NO_2 NAAQS in *Shell 2010* must also fail. *See* ICAS Petition at 32. As the Board recently explained, the context of the challenge to the environmental justice analysis in *Shell 2010* was unusual in that the OCS PSD permits at issue were finalized in the interim between the Administrator's publication of the final rule establishing the hourly NO_2 NAAQS in the Federal Register on February 9, 2010, and the effective date of the new hourly NO_2 standard, April 12, 2010. *Avenal*, 15 E.A.D. at 401. The Board emphasized that the environmental justice aspect of the *Shell 2010* remand order turned on the Region's scant environmental justice analysis, which provided no examination or analysis of short-term NO_2 impacts whatsoever. *Id.*

Here, the Region not only analyzed impacts from ozone emissions, *see* RTC at 96-98, 119-20, it further explained that current levels of ozone in the area are well below the low end of the range EPA had requested comment on in the proposed ozone NAAQS, and that emissions of ozone precursors would also not lead to an exceedance of the low range of the proposed ozone NAAQS. *Id.* at 120; *see also* Region Response at 41 n.37 (noting that the discussion of ozone in the Region's environmental justice analysis was brief, but that both the Response to Comments and the technical support document contained in the administrative record provide more detailed discussions of the Region's determination regarding ozone). Of equal importance, and unlike the events leading up to the Board's remand order in *Shell 2010*, in this instance the Agency has not made a final determination or issued a final rule stating that the current 8-hour ozone standard is inadequate. *See* Region Response at 41. ICAS has not demonstrated that the Region's consideration of the ozone NAAQS in the current appeal warrants Board review based on similarities to the Region's treatment of the hourly NO_2 NAAQS in *Shell 2010*.

[72] ICAS challenges the Region's conclusion not to model emissions of ozone and ozone precursors, and alleges that the "limited background data" that exists does not demonstrate that current ozone levels are well below the proposed ozone NAAQS. ICAS Petition at 33. ICAS does not provide any citation or reference as support for this statement, which amounts to a challenge to the Region's technical expertise. This Board recently stated that "it is axiomatic that a challenge to the fundamental technical expertise of a permit issuer requires a petitioner to overcome a particularly heavy burden, and that a successful challenge to a permit issuer's technical expertise must consist of more than just a difference of opinion." *Shell Discoverer 2012*, 15 E.A.D. at 501 (citing *Shell 2011*, 15 E.A.D. at 203, and *NE Hub*, 7 E.A.D. at 567). ICAS's bald assertion that background ozone data was limited and does not support the Region's conclusions cannot overcome this particularly heavy burden.

demonstrate why a permitting authority's response to objections made during the public comment period warrants review). In this instance, the Region explained:

> [T]he Clean Air Act permitting programs are essentially 'first come, first served' programs and each subsequent permitting action needs to account for all of those that went before but not any actions that will occur subsequent to that action. The permits for the Discoverer drill ship in the Chukchi Sea and Beaufort Sea are the first permits in their respective vicinities and they only need to assess their impacts on the existing air quality situation.
>
> The Kulluk drill rig in the Beaufort Sea is the second permit and EPA has addressed cumulative impacts by including conditions in the permit that prevent Shell from operating the Kulluk drill rig and the Discoverer drill ship in the Beaufort Sea during the same drilling season. Permit Condition D.4.8. As such, only one of the two drill rigs can operate in the Beaufort in any year so there will be no overlapping impacts with respect to compliance with short[]term NAAQS. * * *
>
> As discussed above, ConocoPhillips has withdrawn its permit application for operation of a jack-up drill rig in the Chukchi Sea.

RTC at 101; *see also* EJ Analysis at 14 (reporting total maximum modeled concentrations for criteria pollutants in Kaktovik and Nuiqsut, which account for both the *Discoverer*'s operation and background concentrations); Region Response at 42 n.39 (noting that "[p]otential OCS operations in the Chukchi Sea and the Beaufort Sea are over 200 miles apart at the closest point"). Aside from its plain statement that the Region did not consider the emissions from all proposed OCS operations, ICAS does not address the Region's response to its comment, and thus cannot demonstrate that this issue warrants Board review. *Peabody*, 12 E.A.D. at 33.

4. *Oil Spill Response Capabilities*

Mr. Lum asserts that EPA has failed to require Shell to demonstrate its oil spill response capabilities in "clear, windy, broken ice and sheet ice conditions." Lum Petition at 1-2. The Region responds that this issue is outside the scope of these permit proceedings and thus is not properly subject to review. Region Response at 47.

The Board has previously emphasized that "[t]he PSD review process is not an open forum for consideration of every environmental aspect of a proposed project, or even every issue that bears on air quality."[73] *In re Knauf Fiber Glass GmbH*, 8 E.A.D. 121, 127 (EAB 1999) ("*Knauf I*"), *quoted in In re Sutter Power Plant*, 8 E.A.D. 680, 688 (EAB 1999); *see also In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 259-60 (EAB 1999). The Board has jurisdiction "to review issues directly related to permit conditions that implement the federal PSD program," *Sutter*, 8 E.A.D. at 688, but will deny review of issues not governed by the PSD regulations because it lacks jurisdiction over them. *Id.*; *see also Encogen*, 8 E.A.D. at 259 (noting that petitioners had not shown how the issues they requested the Board to review fell within the Board's PSD jurisdiction). Moreover, there are often other regulatory programs in place that may address environmental concerns that fall outside the Board's scope of review. *Knauf I*, 8 E.A.D. at 162; *see also Shell 2007*, 13 E.A.D. at 405 n.66.

EPA's jurisdiction over portions of the OCS applies to air emissions subject to the CAA and its implementing regulations. In this instance, BOEMRE[74] is responsible for implementing regulations that address oil spill and response capabilities.[75] The Board does not have jurisdiction to consider Shell's oil spill and re-

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[73] As noted above, see Part VI.A.1.a, the OCS air regulations require that OCS permit proceedings follow the procedures used to issue PSD permits contained in 40 C.F.R. part 124. 40 C.F.R. § 55.6(a)(3).

[74] As the Board has noted in previous *Shell* decisions, in May 2010 the Secretary of the Department of the Interior ("DOI") signed a Secretarial Order reorganizing the former Minerals Management Service ("MMS") into three independent entities to better carry out its three missions of: (1) improving the management, oversight, and accountability of activities on the OCS; (2) ensuring a fair return to the taxpayer from offshore royalty and revenue collection and disbursement activities; and (3) providing independent safety and environmental oversight and enforcement of offshore activities. *Shell 2012*, 15 E.A.D. at 492 n.29; *see also Shell 2010*, 15 E.A.D. at 112 n.7; U.S. DOI, Departmental Manual, pts. 118 & 119, ch. 1 (Sept. 30, 2011), *available at* http://elips.doi.gov/app_dm/dm.cfm ("Departmental Manual") (establishing the creation, authorities, objectives, and reporting relationships for the Bureau of Ocean Energy Management ("BOEM") and Bureau of Safety and Environmental Enforcement ("BSEE")). BOEMRE assumed all of MMS's responsibilities in the interim until the full implementation of the reorganization into the three separate entities was complete. *Shell 2012*, 15 E.A.D. at 492 n.29; *see Shell 2010*, 15 E.A.D. at 112 n.7. The transfer of the revenue collection function to the Office of Natural Resources Revenue was completed on October 1, 2010. *See* Secretary of the Interior, U.S. DOI, Order No. 3306, *Organizational Changes Under the Assistant Secretary – Policy, Management and Budget* (Sept. 20, 2010), *available at* http://elips.doi.gov/app_SO/so.cfm; Departmental Manual, pt. 112, ch. 34 (Apr. 15, 2011). One year later, on October 1, 2011, the reorganization was completed when BOEMRE was replaced by BOEM and BSEE. *See* Departmental Manual, pts. 118 & 119. For consistency the Board refers to BOEMRE because the Permit and the supporting documentation refer exclusively to BOEMRE.

[75] On August 4, 2011, BOEMRE (now BOEM, see note 74 above) conditionally approved Shell's exploration plan for the Beaufort Sea. Letter from Jeff Walker, Regional Supervisor, Field Operations, Alaska OCS Region, BOEMRE, U.S. DOI, to Susan Childs, Shell Offshore, Inc. (Aug. 4,

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sponse capabilities in the Arctic OCS, and thus, the Board denies Mr. Lum's petition for review on these grounds.

5. *Impacts of Air Emissions on Traditional Subsistence Food Sources*

Mr. Lum asserts that the *Kulluk*'s operations in the Beaufort Sea will introduce toxins into the ocean "via the exhaust [from the *Kulluk*] that settles down into it," and contaminate the marine mammals and fish the coastal Inupiat consume as part of their indigenous diet. Lum Petition at 2-3. Mr. Lum continues that this will not only contaminate the food supply but also alter traditional Inupiat culture. *Id.* The Region responds that this issue is outside the scope of these permit proceedings and thus is not properly subject to Board review. Region Response at 47. The Board construes Mr. Lum's assertions as a challenge to the adequacy of the Region's compliance with the Executive Order.

Mr. Lum also raised this issue in the appeals that led to the Board's *Shell Discoverer 2012* decision. *See* 15 E.A.D. at 502. In *Shell Discoverer 2012*, the Board denied review on procedural grounds because the impacts of air emissions on traditional subsistence food sources was not raised at the time of the first appeals.[76] *Id.* In the current appeal, Mr. Lum timely submitted comments on this issue and thus his petition for review is procedurally sound. *See* Lum Comments at 1. The Board, however, has previously held that "[i]mpacts on subsistence hunting and fishing are outside the scope of the PSD program and therefore the Board's jurisdiction." *Shell 2007*, 13 E.A.D. at 405 n.66 (citing *Knauf I*, 8 E.A.D. at 161-62), *quoted in* RTC at 125. The Board does not have jurisdiction to consider the impacts of air emissions on traditional subsistence food sources and Inupiat culture, and thus, the Board denies Mr. Lum's petition for review on these grounds.

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2011) [hereinafter Beaufort EP Letter]. The approval of the Beaufort Sea exploration plan was conditioned, among other things, on Shell submitting to BOEMRE prior to the commencement of exploratory drilling operations documentation regarding the subsea well capping and containment system Shell has committed to have at its disposal. *Id.* at 3. Specifically, Shell must "submit documentation on the procedures for deployment, installation, and operation of the system under anticipated environmental conditions, including the potential presence of sea ice for approval by BOEMRE. Shell will also be required to conduct a field exercise to demonstrate Shell's ability to deploy the system." *Id.*

[76] As mentioned above, the Board remanded to the Region two OCS PSD permits in December 2010. *See generally Shell 2010*, 15 E.A.D. at 161-62. In the subsequent appeals of the permits issued upon completion of remand proceedings, the Board unequivocally stated that "in the current appeals, '[n]o new issues may be raised that could have been raised, but were not raised,' in the previous appeals." *Shell Discoverer 2012*, 15 E.A.D. at 477 (quoting *Shell 2010*, 15 E.A.D. at 162).

For all of the foregoing reasons, the Board declines to review the Region's compliance with the Executive Order and applicable Board precedent.

F. *ICAS Has Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Providing 46 Days for Comment on the Draft Permit and in Denying ICAS's Request for Nonoverlapping Comment Periods*

ICAS claims that the Region "committed clear legal error by failing to provide the public an adequate opportunity to comment on" the draft permit.[77] ICAS Petition at 6. More specifically, ICAS alleges that the Region failed to meet the parts 71 and 124 procedural requirements that require permit issuers to "allow *at least* 30 days for public comment" on draft permits. *Id.* at 7 (citing 40 C.F.R. §§ 71.11(d)(2)(i), 124.1) (emphasis added by Petitioners). Although ICAS acknowledges that the comment periods for the Permit ran from July 22, 2011, to September 6, 2011, an interval of 46 days, ICAS contends that, because the Region issued the draft *Kulluk* permit for comment at the same time it issued another draft minor source air permit for comment and in the middle of comment periods for two major source air permits for another Shell drillship,[78] in reality, ICAS only "had 16 days to comment on each of the[] permits," rather than the required minimum of 30. *Id.* at 7. This is because, according to ICAS, it "does not have the resources to comment on more than one air permit at a time." *Id.* ICAS further claims that "the short and overlapping comment periods * * * deprived [them] of a meaningful opportunity to comment on Shell's new air modeling results." *Id.* at 8.

In a related argument, ICAS asserts that the Region clearly erred in denying its request that the Region "hold nonoverlapping comment periods on the OCS permits and [] provide 45 days to comment on each permit." *Id.* at 8-9. ICAS claims that it met the regulatory standard for demonstrating the need for additional time to prepare comments. *Id.* (referring to the standard at 40 C.F.R. § 71.11(g)); *see also id.* attach. 8 (Letter from Harry Brower, Chairman, Alaska Eskimo Whaling Commission ("AEWC"), et al., to Doug Hardesty, Air Permits Project Manager, U.S. EPA Region 10 (June 15, 2011) (A.R. C-487)) (AEWC and ICAS request for nonoverlapping comment periods) [hereinafter ICAS Let-

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[77] The Board also considers ICAS's claim under an abuse of discretion standard. *See infra* note 80.

[78] The Region had issued two draft permits for Shell's *Discoverer* drillship earlier in July of 2011. *See Shell Discoverer 2012*, 15 E.A.D. at 480. The comment period for those two permits ran from July 6 to August 5, 2011. *Id.*; ICAS Petition at 7. In addition, on the same date the Region had issued the *Kulluk* draft permit, it had also issued a draft permit for ConocoPhillips to operate a jackup drill rig in the Chukchi Sea. ICAS Petition at 7. The comment period for this permit originally ended at the same time as the *Kulluk* draft permit, but was later extended to September 21, 2011. ICAS Petition at 8-9; RTC at 7.

ter]; *id.* attach. 9 (Letter from Richard Albright, Director, Office of Air, Waste, & Toxics, U.S. EPA Region 10, to Harry Brower, AEWC Chairman, et al. (July 21, 2011) (A.R. C-532)) (EPA response).

The part 71 procedural regulation governing public notices and public comment periods specifically provides that "[p]ublic notice of the preparation of a draft permit * * * shall allow at least 30 days for public comment." 40 C.F.R. § 71.11(d)(2)(i). The part 124 procedural regulations, which also apply to the Permit,[79] contain the same language. *See* 40 C.F.R. § 124.10(b). The Board has traditionally read these regulations to establish a minimum comment period length of 30 days, recognizing that the regulations clearly allow the permit issuer, in its discretion, to grant a longer comment period. *Shell Discoverer 2012*, 15 E.A.D. at 520-21 (discussing the applicable part 124 regulation); *see also In re Genesee Power Station*, 4 E.A.D. 832, 841 (EAB 1993) (noting that the part 124 regulation governing public comment periods "only require[s them] to last 30 days"). In addition, as ICAS points out, part 71 contains a separate provision specifically authorizing a permit issuer to grant additional time. It states that "[a] comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted to the extent that a commenter who requests additional time demonstrates the need for such time."[80] 40 C.F.R. § 71.11(g)).

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[79] As the Region explained, the Permit is subject to the procedural requirements of both part 55 (and consequently part 124) as well as part 71:

> The portion of this permit that is a Part 71 permit (e.g., the portion of the permit that applies on the Outer OCS) is issued under 40 CFR Part 55 and 40 CFR Part 71 and subject to the procedural requirements of 40 CFR Part 71 as provided in 40 CFR § 71.4(d). The portion of this permit that is a COA Title V permit and a COA minor source permit (e.g., the portion of the permit that applies on the Inner OCS) is issued under 40 CFR Part 55 and, in the absence of other applicable procedures, subject to the permit issuance procedures for PSD permits under 40 CFR Part 124, Subpart A and C. *See* 40 CFR §§ 55.6(a) (3) and 124.1.

RTC at 6 n.3.

[80] Because the regulations authorize the permit issuer to grant a longer comment period upon an adequate showing of need, the Board also considers ICAS's challenge under an abuse of discretion even though ICAS did not clearly present its challenge as such, alleging instead only "clear error." *See Shell Discoverer 2012*, 15 E.A.D. at 521 (considering similar argument as raising an abuse of discretion claim); *In re Guam Waterworks Auth.*, 15 E.A.D. 437, 443 n.7 (EAB 2011) (explaining Board's standard in reviewing claims involving a permit issuer's exercise of discretion); *In re Desert Rock Energy Co.*, 14 E.A.D. 484, 530 (EAB 2009) (using an abuse of discretion standard where the permit issuer had "broad discretion" in making the challenged determination). The Board similarly reads ICAS's challenge to the Region's denial of nonoverlapping comment periods as raising an abuse of discretion claim.

In the present case, the Region provided a 46 day public comment period for the *Kulluk* draft permit, albeit a comment period that partially overlapped with several other comment periods. The Region, in its Response to Comments, provided a lengthy, well-reasoned explanation for its establishment of a 46 day comment period for the *Kulluk* permit and for its denial of ICAS's request for nonconcurrent comment periods. *See* RTC at 5-8. In addressing comments on these topics, the Region pointed out that it had granted a period longer than the regulatory minimum for this permit and had also extended the comment period for one of the other permits, the ConocoPhillips permit. *Id.* at 6; *accord id.* at 7. The Region further noted that the ConocoPhillips permit, for which it had extended the comment period to 60 days, was for a proposed 2013 operation, whereas Shell "intends to begin its exploratory drill operations with the Kulluk in July 2012." *Id.* at 7. The Region also enumerated the many steps it had taken before and during the public comment period "to promote meaningful public involvement." *Id.* at 6.

In addition, the Region observed that, while "it agree[d] with the commenters that some aspects of the Draft Permit are technically and legally complex," on the other hand, "[t]he comments submitted * * * demonstrate[d] that the public was able to review, evaluate, and comment on many complex issues during the comment period provided." RTC at 8. The Region noted that among the more than 14,500 public comments it had received, a number of them had contained "substantive comments on, among other issues, the definition of OCS Source, limits on the source's potential to emit, choice of model, modeling data, ambient air boundary, source testing, emission factors, air quality analysis, applicability of increments and visibility, and cumulative impacts." *Id.* Accordingly, the Region believed that "[t]he volume of comments received and the substantive issues addressing technically and legally complex issues demonstrate[d] that the public was able to meaningfully review and comment on the Draft Permit." *Id.*

The Region also explained that "40 CFR § 71.7(a)(2) requires that it take a final action on a Title V permit application within 18 months of receiving a complete application. In conducting the permitting process, Region 10 must strike a balance between its obligation to provide for meaningful public participation and its responsibility to make a final permitting decision in a timely manner." *Id.* Based on all these factors, the Region had determined that "the commenters have not demonstrated that a period of more than 46 days is necessary to give the public a reasonable opportunity to comment." *Id.* at 7 (citing 40 C.F.R. §§ 71.11(g) and 124.13).

In its petition, ICAS does not explain why the Region's response to these comments is clearly erroneous or an abuse of discretion. In fact, ICAS does not even address the Region's response. ICAS's failure to address the Region's response is, in and of itself, sufficient to deny its claims of procedural error con-

cerning the comment period.[81]

Nevertheless, even if the Board considered ICAS's claim of procedural error, the Board would deny review of this claim for several reasons. First, the length of time the Region provided for comment on this permit – 46 days – is 16 days more than the regulatory minimum required by 40 C.F.R. §§ 71.11(d)(2)(i) and 124.10(b). It is also one day more than the amount of time ICAS had specifically requested for each permit in its letter.[82] *See* ICAS Letter at 2 (requesting nonconcurrent comment periods of 45 days). ICAS's attempt to recalculate the length of the comment period as "16 days" based on an unexplained mathematical formula involving the number and lengths of other comment periods is unconvincing and does not demonstrate clear error. *See Shell Discoverer 2012*, 15 E.A.D. at 521; *see also Russell City II*, 15 E.A.D. at 95-98 (denying review of a procedural error claim where petitioners fail to point to a part 124 procedural regulation that was violated); *Knauf II*, 9 E.A.D. at 17 (denying review where the permit issuer fulfilled the applicable regulatory obligations, but did not go beyond those requirements).

Furthermore, while it is true that the Region did not grant ICAS's request for nonoverlapping comment periods, ICAS has not pointed to any regulations that prohibit the Agency from issuing concurrent permits or that require – or even specify – a different comment period length when the Agency does issue concurrent permits. To the contrary, the relevant regulations authorize the Agency to issue a single public notice to "describe more than one permit or permit actions," 40 C.F.R. §§ 71.11(d)(1)(iii), 124.10 (a)(3), without mentioning a different time frame for public comment when concurrent permits are issued. While section 71.11(g) authorizes the Agency to extend a particular comment period on a case-by-case basis where a commenter has demonstrated the need for additional time – which would thereby provide an avenue for commenters to obtain longer comment periods in situations where comment periods overlap[83] – the provision does not prohibit, or even mention, overlapping comment periods.

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[81] As the Board discussed above in Part III, a petitioner must explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. "[A] petitioner's failure to address the permit issuer's response is fatal to its request for review." *In re Indeck-Elwood LLC*, 13 E.A.D. 126, 143, 170 (EAB 2006); *accord Russell City II*, 15 E.A.D. at 10.

[82] Notably, therefore, for this permit, by providing a longer comment period, the Region did in essence partially grant ICAS's request.

[83] And, in this case, the Region did, provide additional time for comment on two of the permits whose comment period overlapped. The Region increased the comment period for the Shell *Kulluk* permit to 46 days and the comment period for the ConocoPhillips permit to 60 days. *See supra* note 78.

Finally, it is clear from the administrative record that the Region appropriately balanced conflicting considerations in deciding on the length of the comment period for this permit and in denying the request for nonoverlapping periods. ICAS has not demonstrated otherwise[84] and has therefore failed to show that the Region clearly erred or abused its discretion in either selecting a 46 day comment period or in denying ICAS's request for nonconcurrent comment periods. *See Shell Discoverer 2012*, 15 E.A.D. at 523 (denying review of a similar claim based on similar facts). Review of the Permit is therefore denied on this issue.

G. *ICAS Has Failed to Demonstrate That the Region Clearly Erred in Its Public Hearing Procedures or That Any of the Alleged Procedural Deficiencies Otherwise Warrant Review*

As noted above in Part V, the Region held two public hearings on the draft permit, one in Barrow, and a second in Anchorage. The Region also held an informational meeting prior to the Barrow public hearing. *See* Statement of Basis at 11 (scheduling informational hearing from 5:00-6:30 pm, public hearing from 7:00-9:00 pm); RTC at 6-7.

ICAS claims that the Region "committed clear legal error by failing to provide the public an adequate opportunity" to participate in the Barrow public hearing. ICAS Petition at 6; *see also id.* at 9-10. ICAS alleges three procedural problems with the Barrow hearing. *Id.* at 9-10. ICAS first claims that the Region continued with the hearing despite difficulties with the teleconference phone system that allegedly impaired the ability of the Region to hear all comments. *Id.* at 9. ICAS next alleges that, "for a significant portion of the hearing," the Region discussed a PowerPoint presentation that was not made available to the public attending the hearing. *Id.* at 9-10. Finally, ICAS contends that the Region failed to sufficiently inform those attending the public hearing that it had procured an

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[84] The Board is unpersuaded by ICAS's argument that it had difficulty locating an expert to review the air modeling. *See* ICAS Petition at 8. As the Region indicated in its Response to Comments, RTC at 8, other commenters provided substantive, technical comments on the air modeling, which suggests that the comment period was sufficient to allow opportunity for meaningful comment. *See Fla. Power & Light Co. v. United States*, 846 F.2d 765, 772 (D.C. Cir. 1988) (upholding a short comment period as sufficient where the agency had received numerous comments, some lengthy, and the comments had had a "measurable impact" on the final rule); *Conference of State Bank Supervisors v. Office of Thrift Supervision*, 792 F. Supp. 837, 844 (D.D.C. 1992) (holding length of comment period not unreasonable especially in light of the comments that plaintiffs and other parties submitted). Furthermore, as the Region points out, it notified ICAS in May that the comment periods would begin in July. *See* Letter from Doug Hardesty, EPA, to North Slope Borough et al. (May 25, 2011) (A.R. HH-1). The Region also conducted three separate informational meetings in Barrow and Kaktovik, Alaska, more than a month prior to the start of the public comment period for the Permit "to inform the North Slope community of the draft permit and to describe opportunities for public participation." RTC at 6.

Inupiat interpreter for the hearing.[85] *Id.* at 10. ICAS asserts that making an interpreter "available in this fashion is akin to not having [one] at all." *Id.*

Part 71 and part 124 each contain a provision governing public hearings. *See* 40 C.F.R. §§ 71.11(f), 124.12. Both public hearing regulations require the permitting authority to hold a public hearing when the permitting authority "finds, on the basis of requests, a significant degree of public interest in a draft permit." *Id.* §§ 71.11(f)(1), 124.12(a)(1). The regulations also authorize the permitting authority to hold a public hearing "at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision." *Id.* §§ 71.11(f)(2), 124.12(a)(2); *accord In re Russell City Energy Ctr.* ("*Russell City I*"), 14 E.A.D. 159, 164 n.6 (EAB 2008). The public hearing regulations also prescribe the method of giving public notice of the hearing, 40 C.F.R. §§ 71.11(f)(3), 124.12 (a)(4), the procedure for designating a presiding officer to preside at the hearing, *id.* §§ 71.11(f)(4), 124.12 (b), and the procedures for the public to comment at the hearing, *id.* §§ 71.11(f)(5), 124.12 (c). Finally, both regulations require that a tape recording or written transcript of the hearing be made publically available. *Id.* §§ 71.11(f)(6), 124.12 (d).

Parts 71 and 124 also both require the permit issuer, in making its final decision, to consider all comments it receives during the public comment period and at any public hearings and to issue a "response to comments." *Id.* §§ 71.11(j), 124.17(a); *see also id.* §§ 71.11(e), 124.11. More particularly, these provisions require the permit issuer to "[b]riefly describe and respond to all significant comments on the draft permit * * * raised during the public comment period, or during any hearing" in the response to comments document issued at the same time the final permit decision is issued. *Id.* §§ 77.11(j)(1)(ii), 124.17(a)(1). Importantly, none of the aforementioned regulations refer to, or in any way mention, a requirement to provide an interpreter or a requirement to provide written materials at the hearing.

Upon review of the administrative record and the parties' arguments, the Board concludes that ICAS has not shown that the Region clearly erred in its handling of the Barrow public hearing for any of the three reasons ICAS advances. Not only does ICAS fail to point to any specific regulatory provision that the Region violated, but none of the alleged problems otherwise warrant Board review. The Board addresses each alleged deficiency in more detail below.

ICAS's first contention – that the Region committed clear error because it was allegedly unable to adequately obtain input from the public due to telecom-

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[85] According to ICAS, although the Region may have noted that an interpreter was available at the top of the hearing's sign-in sheet, it did not make a public announcement of this fact at the outset of the hearing. ICAS Petition at 10; ICAS Reply at 6; *see also infra* note 89.

munication problems during the hearing – is unpersuasive. The Region addressed this concern in its Response to Comments. *See* RTC at 9. There, the Region explained that, because such telecommunication problems are common on the North Slope, it had "recorded the public hearing in addition to having the hearing transcribed by a court reporter. From these *two* sources, Region 10 was able to capture the comments provided during the public hearing." *Id.* (emphasis added); *see also* Public Hearing Transcript ("Pub. Hrg Tr.") at 3 (explaining that the hearing was recorded on the teleconference line as a "safety net"). In response, ICAS merely asserts that "this does not change the fact that people were not able to be heard via phone." ICAS Petition at 9. Significantly, however, ICAS does not identify any comment that the Region failed to hear or for which the Region failed to provide a response.[86] *See id.* at 9; ICAS Reply at 6. Nor has any commenter come forward alleging that the Region failed to respond to his or her public hearing comments. The fact that the call center experienced some telecommunications problems during the public hearing – which the Region appears to have adequately anticipated and addressed by utilizing two methods of note taking – does not, without more, constitute clear legal error. Speculative claims that a permitting authority may have failed to hear a comment are insufficient to warrant Board review.

ICAS's contention that the Region committed clear procedural error by failing to provide pre-meeting copies of a Powerpoint presentation is inapposite. In its response to the petition, the Region explains that this presentation was given during the informational meeting, not during the public hearing. Region Response at 39; *see also* Statement of Basis at 11 (scheduling informational hearing prior to public hearing); RTC at 6-7 (mentioning informational meeting). ICAS does not dispute this.[87] *See* ICAS Reply at 5-7. Furthermore, nowhere do the regulations require a permitting authority to provide informational handouts at an informational meeting (or at a public hearing).[88] Thus, while it may be useful for a permit

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[86] As discussed above, the regulatory requirement is for a permit issuer to respond to significant comments. *See* 40 C.F.R. § 77.11(j)(1)(ii), 124.17(a)(1). Thus, had ICAS identified significant comments raised at the public hearing that the Region failed to address, ICAS's arguments would have been more persuasive. *See, e.g., In re Rockgen Energy Ctr.*, 8 E.A.D. 536, 557 (EAB 1999) (remanding so that permit issuer could demonstrate it had given thoughtful and full consideration to public comments); *In re W. Suburban Recycling & Energy Ctr., L.P.*, 6 E.A.D. 692, 710-12 (EAB 1996) (remanding permit and requiring permit issuer to comply with procedures under part 124 including provision requiring a response to all significant comments received); *see also In re N. Mich. Univ.*, 14 E.A.D. 283, 317-18 (EAB 2009) (discussing part 124 requirement to adequately respond to comments).

[87] The Region's explanation makes sense in light of the purpose of the two meetings. While the permitting authority may present its analyses, findings, and conclusions about the draft permit at an informational meeting, the purpose of the public hearing is to obtain comments *from* the public.

[88] The only document the public hearing regulations require a permit issuer make available to the public is the transcript of the hearing. 40 C.F.R. §§ 71.11(f)(6), 124.12 (d).

issuer to provide copies of a presentation to the audience attending an informational meeting, failure to do so at the meeting – or at a subsequent public hearing – does not constitute clear error or otherwise warrant Board review.

ICAS's final contention – that the Region committed clear procedural error by not adequately informing the public that an interpreter was available at the public hearing – is also unconvincing. Importantly, as noted above, there is no regulatory requirement for an interpreter in either part 71 or part 124, nor is there a provision specifying the method a permit issuer should use to inform the public of the availability of an interpreter at the public hearing.[89] ICAS has not pointed to any other requirement, regulatory or otherwise, requiring an interpreter or prescribing the method for announcing one. Accordingly, while it may be preferable for the permit issuer to formally announce the availability of an interpreter at the beginning of the public hearing, and in both languages, failure to do so does not constitute clear error or otherwise warrant Board review.

In sum, ICAS has failed to demonstrate that the public hearing procedures utilized by the Region constituted clear error. ICAS has not shown that the Region violated any part 71 or 124 procedural regulation. Moreover, the alleged problems ICAS has identified do not, even if the Board were to find them to constitute a deficiency in some way, warrant Board review. Consequently, the Board denies review of the Permit on this ground.

VII. *CONCLUSION AND ORDER*

For the foregoing reasons, the Board concludes that none of the petitioners have demonstrated that review of Permit No. R10 OCS030000 is warranted on any of the grounds presented. The Board therefore denies review of the Permit.

So ordered.

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[89] The parties seemingly dispute the method in which the Region notified the public of the availability of the interpreter. The Region stated in its Response to Comments that, "[p]rior to the Barrow public hearing, Region 10 contacted [ICAS] to arrange for an Inupiat speaker to be available to provide Inupiat interpretation at the hearing if requested by any participant. At the beginning of the hearing, participants were provided the opportunity to request Inupiat interpretation during the hearing. No participant requested translation and therefore an interpreter was not used." RTC at 10-11. In response, ICAS claims that attendees only recall mention of an interpreter on the sign-up sheet, and only in English. ICAS Petition at 10. ICAS further asserts that the transcript of the public hearing does not indicate that an announcement was made. ICAS Reply at 6. In light of the Board's conclusion on this issue, it is unnecessary to determine the precise methodology the Region used to notify the public of the interpreter's availability.

IN RE TUCSON ELECTRIC POWER

PSD Appeal No. 18-02

ORDER DENYING REVIEW

Decided December 3, 2018

Syllabus

The Sierra Club petitions the Environmental Appeals Board ("Board") to review a decision by the Department of Environmental Quality for Pima County, Arizona ("Pima County") to issue a federal Prevention of Significant Deterioration ("PSD") permit to Tucson Electric Power. The permit authorizes Tucson Electric Power to construct and operate up to ten additional electricity-generating units ("Units") at its Irvington Generating Station facility. Sierra Club challenges Pima County's determination that PSD requirements do not apply to the nitrogen oxide ("NO_x") emissions from the modified facility. Although the permit contains a cap that limits NO_x emissions below the level triggering PSD requirements, Sierra Club argues that the permit's monitoring requirements are not adequate to render the NO_x emissions cap practically enforceable and thus PSD requirements should apply.

The permit imposes several monitoring requirements to verify compliance with the NO_x emissions cap. Those requirements include, among other things: (i) biennial performance (stack) tests to determine how much NO_x each Unit emits; (ii) calculation of monthly and yearly NO_x emissions using information from the required stack tests and monitoring of ongoing operations; and (iii) monitoring of the pollution control devices for the new Units to ensure that the devices are working properly. Pima County concluded that these compliance monitoring requirements were sufficient to make the NO_x emissions cap practically enforceable.

Held: The Board denies Sierra Club's Petition for Review. Sierra Club has not carried its burden of showing that Pima County clearly erred or abused its discretion in determining that the NO_x emissions cap is practically enforceable.

Sierra Club's argument that the NO_x emissions cap is not practically enforceable because the permit's compliance monitoring requirements rely solely on biennial stack tests lacks merit because monitoring of the facility's pollution control devices is also an integral part of the permit's compliance monitoring requirements. Sierra Club's contention that the monitoring of the pollution control devices does not cure the problem with the permit's reliance on biennial stack tests was not preserved for review because that assertion

was not raised during the public comment period. In any event, Sierra Club's contention is not responsive to the role of monitoring of the pollution control devices as described by Pima County. Additionally, Sierra Club does not substantiate its argument that Pima County failed to support in the administrative record its conclusion that the method for calculating monthly and yearly NO_x emissions would likely overstate emissions. Lastly, Pima County adequately responded to Sierra Club's comments on the practical enforceability of the NO_x emissions cap. Pima County responded to Sierra Club's generalized claims on the inadequacy of biennial stack testing to monitor compliance throughout the year by providing a description of all the elements of the permit's compliance monitoring requirements. Given the general nature of Sierra Club's comments, more was not required.

Before Environmental Appeals Judges Aaron P. Avila, Mary Kay Lynch, and Mary Beth Ward.

Opinion of the Board by Judge Ward:

I. *STATEMENT OF THE CASE*

This case involves a challenge by the Sierra Club to a determination in a federal Clean Air Act permit that the Act's Prevention of Significant Deterioration ("PSD") requirements do not apply to the emissions of nitrogen oxides – commonly referred to as NO_x – from a facility owned and operated by Tucson Electric Power ("Tucson Electric"). Potential NO_x emissions from the facility are reduced by pollution control devices, and the permit imposes a limit (or cap) on NO_x emissions consistent with the control devices' ability to reduce emissions. In such circumstances, the applicability of PSD requirements is based on the facility's emission rate, as reduced by the control devices, so long as the cap on the reduced emissions is enforceable as a practical matter. The specific issue presented here is whether the challenged permit's compliance monitoring requirements are sufficient to make the NO_x emissions cap practically enforceable.

In August 2018, the Department of Environmental Quality for Pima County, Arizona ("Pima County") issued a federal PSD permit ("Permit") to Tucson Electric authorizing the construction and operation of up to ten additional electricity-generating units ("Units") at Tucson Electric's Irvington Generating Station facility. Although the expanded facility would emit several pollutants above levels that trigger PSD requirements, the Permit imposes certain requirements as to NO_x emissions that bring those emissions below levels that trigger such requirements. Specifically, the Permit requires two existing electricity-generating units at the facility to be shut down, mandates the use of pollution control devices on the new Units that reduce NO_x emissions, and imposes a NO_x emissions cap consistent with that reduction.

The Permit further imposes monitoring and recordkeeping requirements to verify compliance with the NO_x emissions cap. Those compliance monitoring requirements include, among other things: (i) biennial performance (stack) tests to determine how much NO_x each Unit emits; (ii) calculation of monthly and yearly NO_x emissions using information from the required stack tests and monitoring of ongoing operations; and (iii) monitoring of pollution control devices to ensure that they are working properly. Finding that these compliance monitoring requirements made the NO_x emissions cap practically enforceable, Pima County concluded that PSD requirements do not apply to the new Units as to their NO_x emissions.

In its Petition for Review, Sierra Club argues that the NO_x emissions cap is not practically enforceable – that is, compliance with the cap cannot be verified – because the stack tests are conducted too infrequently, the monthly and yearly emission calculations rely solely on these infrequent stack tests, and the monitoring of pollution control devices does not cure the problem with the infrequent stack tests. As a consequence, Sierra Club contends that PSD requirements should apply to the facility's increased NO_x emissions resulting from its proposed expansion.

We conclude that Sierra Club has not carried its burden of showing that Pima County clearly erred or abused its discretion in determining that the NO_x emissions cap is practically enforceable. The Petition for Review is therefore denied.

II. *PRINCIPLES GOVERNING BOARD REVIEW*

In considering a petition filed under 40 C.F.R. § 124.19(a), the Board first evaluates whether the petitioner has met threshold procedural requirements such as timeliness, standing, issue preservation, and specificity. *In re Indeck-Elwood, LLC*, 13 E.A.D. 126, 143 (EAB 2006). For example, a petitioner must demonstrate that any issues and arguments it raises on appeal have been preserved for Board review (i.e., were raised during the public comment period or public hearing on the proposed permit), unless the issues or arguments were not reasonably ascertainable at the time. 40 C.F.R. §§ 124.13, .19(a)(4)(ii); *see, e.g.*, *In re City of Attleboro*, 14 E.A.D. 398, 405-06, 444 (EAB 2009); *In re City of Moscow*, 10 E.A.D. 135, 141, 149-50 (EAB 2001).

Under part 124, the petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19(a)(4). Ordinarily, the Board will deny review of a permit decision and thus not remand it unless the petitioner demonstrates that the permit decision is based on a clearly erroneous finding of fact or conclusion of law or involves a matter of policy or exercise of discretion that warrants review. *Id.* § 124.19(a)(4)(i)(A)-(B); *see, e.g.*, *In re La Paloma Energy Ctr., LLC*,

16 E.A.D. 267, 269 (EAB 2014). The Board's power to grant review "should be only sparingly exercised," and "most permit conditions should be finally determined at the [permit issuer's] level." Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980); *see also* Revisions to Procedural Rules Applicable in Permit Appeals, 78 Fed. Reg. 5281, 5282 (Jan. 25, 2013).

When evaluating a permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised "considered judgment" in rendering its decision. *See, e.g.*, *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 191, 224-25 (EAB 2000); *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). Similarly, the Board will uphold a permitting authority's exercise of discretion if that decision is cogently explained and supported in the record. *See, e.g.*, *La Paloma Energy Ctr.*, 16 E.A.D. at 270, 284, 292. The Board does not find clear error or an abuse of discretion simply because petitioner presents a difference of opinion or alternative theory regarding a matter. *See In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 667 (EAB 2001); *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999). And on matters that are fundamentally technical or scientific in nature, the Board typically defers to a permit issuer's technical expertise and experience, as long as the permit issuer has adequately explained its rationale and supported its reasoning in the administrative record. *See, e.g.*, *In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 733-35 (EAB 2015), *review dismissed as moot sub nom. DJL Farm LLC v. EPA*, 813 F.3d 1048 (7th Cir. 2016).

III. *STATUTORY AND REGULATORY HISTORY*

The PSD provisions of the Clean Air Act govern air pollution both in "attainment" areas, where the air quality meets or is cleaner than the Environmental Protection Agency's ("EPA") national ambient air quality standards, and in "unclassifiable" areas where EPA has not categorized the air quality as having attainment or nonattainment status. Clean Air Act ("CAA") §§ 160-169, 42 U.S.C. §§ 7470-7479; *see also In re Palmdale Energy, LLC*, PSD Appeal No. 18-01, slip op. at 4-7 (EAB Oct. 23, 2018), 17 E.A.D. ___ (providing in-depth description of the PSD program). In both these areas, the PSD program requires that new "major stationary sources" of air pollutants or "major modifications" to such sources obtain a permit prior to construction.[1] *See* CAA § 165, 42 U.S.C. § 7475; 40 C.F.R.

[1] The actual term in the PSD statutory provisions is "major emitting facility." *See* CAA § 169(1), (2)(C), 42 U.S.C. § 7479(1), (2)(C). The related term "major stationary source" is used elsewhere in the Clean Air Act, *see* CAA § 111(a), (f), 40 U.S.C. § 7411(a),

§ 52.21. Among other things, an applicant for a PSD permit must show that its facility will achieve emission limits attainable by the "best available control technology" for pollutants emitted from the facility above designated levels. CAA § 165(a)(4), 42 U.S.C. § 7475(a)(4); 40 C.F.R. § 52.21(b)(23), (j)(2)-(3).

Under the regulations implementing the PSD program, a "major stationary source" is, among other things, any source from certain source categories (including fossil fuel-fired steam electric power plants such as the facility here) that have the "potential to emit" 100 tons per year or more of any of several regulated pollutants, including NO_x.[2] 40 C.F.R. § 52.21(b)(1)(i). A "major modification" is "any physical change in or change in the method of operation of a major stationary source" that would result in: (1) a "significant emissions increase" of any of such pollutants; and (2) a "significant net emissions increase" of any of such pollutants. *Id.* § 52.21(b)(2)(i). The regulations define a significant emissions increase and significant net emissions increase on a pollutant-by-pollutant basis. *Id.* § 52.21(b)(23), (40). For NO_x, a significant increase and a significant net increase are both defined as an increase of 40 tons per year. *Id.*

A critical aspect of determining whether a new source or the modification of a source would be a major source or major modification, respectively, is ascertaining the new source or modification's "potential to emit" pollutants and whether that potential meets or exceeds designated levels. "Potential to emit" has been defined by regulation as requiring consideration of "[a]ny physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment." *Id.* § 52.21(b)(4). However, the definition makes clear that a pollution control device's limitation on capacity can only be considered in determining a facility's potential to emit "if the limitation or the effect it would have on emissions is federally enforceable." *Id.*

(f). The Act recognizes the similarity between the two terms by defining "major stationary source" and "major emitting facility" as synonymous "[e]xcept as otherwise expressly provided." CAA § 302(j), 42 U.S.C. § 7602(j); *see Chevron, U.S.A., Inc. v. NRDC, Inc.*, 467 U.S. 837, 860 (1984). In implementing the PSD program, EPA uses the terms "major stationary source" and "major modification," 40 C.F.R. § 52.21(b)(1), (2), and, therefore, the Board will use that terminology as well. *See* U.S. EPA, *New Source Review Workshop Manual*, at A.1 (draft Oct. 1990).

[2] The applicable regulation defines these pollutants as including "[a]ny pollutant for which a national ambient air quality standard has been promulgated." 40 C.F.R. § 50.21(b)(50)(i).

Whether a physical or operational limitation on a source's emissions is "federally enforceable" has been interpreted by EPA as meaning that the emission limit reflecting the physical or operational limitation is "enforceable as a practical matter," or "practically enforceable." Memorandum from John S. Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, and Robert I. Van Heuvelen, Dir., Office of Regulatory Enf't, U.S. EPA, to EPA Reg'l Air Div. Dirs., Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act 3 & attach. 3, at 1 (Jan. 25, 1995) ("Seitz Memorandum"); *see also In re Peabody W. Coal Co.*, 12 E.A.D. 22, 32 (EAB 2005). To be practically enforceable, a permit must, among other things, specify "the method to determine compliance including appropriate monitoring, recordkeeping, and reporting." Seitz Memorandum at 6; *cf.* 40 C.F.R. § 49.152 (defining "enforceable as a practical matter" in a similar manner for air quality planning and management in Indian country). To be appropriate, such monitoring, recordkeeping, and reporting must be sufficient to allow a permitting agency to verify a source's compliance with the permit's emission limit. *See In re Shell Offshore, Inc.*, 15 E.A.D. 536, 557, 559 n.25 (EAB 2012) (holding that the permit issuer did not clearly err in concluding that emission limits were practically enforceable because the permit's monitoring requirements provided "the ability to assess and verify compliance"); *Peabody*, 12 E.A.D. at 39-41 (finding no clear error by the permit issuer in determining that the permittee's proposed monitoring requirements were insufficient to make an emission limit practically enforceable because the requirements did not provide "a reliable method of determining compliance"); *In re Pencor-Masada Oxynol, LLC*, Pet. No. II-2001-05, 2002 EPA CAA Title V LEXIS 44, at *16 (Adm'r Apr. 8, 2002) (stating that for an emission limit to be practically enforceable, the permit must contain terms and conditions sufficient "to determine whether the limit has been exceeded").

Pima County's Department of Environmental Quality administers the federal PSD permitting program within Pima County, Arizona pursuant to a delegation from EPA. *See* Agreement for Delegation of Source Review under the Federal Prevention of Significant Deterioration (PSD) Program Set Forth in 40 CFR 52.21 by the United States Environmental Protection Agency, Region 9 to the Pima County Air Quality Control District (June 5, 2018). Accordingly, the Tucson Electric Permit is a federally-issued permit appealable to the Board under section 124.19 of Title 40 of the Code of Federal Regulations. 40 C.F.R. § 124.19(a)(1).

IV. *FACTUAL AND PROCEDURAL HISTORY*

A. *Tucson Electric's Proposed Expansion of the Irvington Generating Station Facility*

Tucson Electric is proposing to expand its fossil fuel-fired steam electric power plant, known as the Irvington Generating Station, by building up to ten new internal combustion engine units ("Units"). Pima Cty. Dep't of Envtl. Quality, *Prevention of Significant Deterioration Air Quality Permit, Permit No. 1052*, at 4 (Aug. 8, 2018) (Administrative Record ("A.R.") 23) ("Permit"). Tucson Electric plans to use these new Units to support increased use of wind and solar-generated electrical power sources. The new Units can compensate for the variability of wind and solar power sources by providing "[r]eliable, efficient, grid-balancing resources which can ramp up quickly and provide 100 percent of their [effective load carrying capability] during multiple peak periods of any length." Tucson Elec. Power, *Application for a Prevention of Significant Deterioration (PSD) Authorization and Significant Revision to Class I Air Quality Permit for Irvington Generating Station* 2-2, 2-5 (July 2017) (A.R. 2) ("Permit Application").

The Irvington Generating Station is a major stationary source subject to the Clean Air Act's PSD program and is in an area designated by EPA as in attainment. Permit at 4. Because the proposed addition of ten new Units would significantly increase potential emissions of several regulated pollutants, this expansion of the facility qualifies as a major modification and triggers PSD requirements. *Id.* Accordingly, Tucson Electric applied to Pima County to amend its existing air quality permit (referred to as a Class I permit) and convert it to a combined PSD permit and Class I permit.[3]

The modified facility would have triggered PSD requirements for its NO_x emissions; however, Tucson Electric requested a limit on NO_x emissions – referred to by the parties as a NO_x emissions cap – for the new Units to keep their emissions below the PSD threshold.[4] *See* Letter from Conrad Spencer, Tucson Elec. Power,

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[3] The Class I permit was required to allow construction and operation of the original facility under the Arizona Administrative Code, *see* Ariz. Admin. Code § R18-2-302, which implements Arizona's operating permits program, authorized by EPA under Title V of the Clean Air Act, 42 U.S.C. §§ 7661-7661f. *See* Clean Air Act Full Approval of the Arizona Operating Permits Program, 66 Fed. Reg. 63,175 (Dec. 5, 2001) (final rule fully approving Arizona's operating permits program).

[4] In the Administrative Record, the limitation on NO_x emissions is described interchangeably as a "cap" and a "limit." *See, e.g.*, Permit at Part B § II.A.1. For clarity

to Rupesh Patel, Pima Cty. Dep't of Envtl. Prot. (Feb. 23, 2018) (A.R. 13) (requesting NO_x emissions cap of 170 tons per year). Tucson Electric also identified in its permit application three other aspects of the modified facility that would curtail NO_x emissions from the new Units or the overall facility. First, each new Unit would be equipped with a selective catalytic reduction device that would substantially reduce NO_x emissions. *See* Permit Application at 2-6, 3-3. Second, the Units would be limited to five startups per day. *See id.* at 2-6. Third, two existing steam-generating units at the facility would be permanently shut down offsetting, in part, the increase in NO_x emissions from the addition of the ten new Units. *See id.* at 2-5, 4-9. In combination, these terms of operation would limit the net increase in NO_x emissions from the expansion of the Irvington facility to an amount that is below the "significant" level of 40 tons per year.[5] Permit at 4.

We describe below: (i) the terms of the proposed combined PSD and Class I permit ("Proposed Permit") noticed for public comment with a focus on the compliance monitoring requirements pertaining to the NO_x emissions cap, *see* Part IV.B; and (ii) Sierra Club's comments on the Proposed Permit and Pima County's response to those comments, *see* Part IV.C.

B. *The Proposed Permit's Requirements Concerning the NO_x Emissions Cap*

In February 2018, Pima County issued the Proposed Permit for public comment. The Proposed Permit included the conditions necessary to restrict NO_x emissions below the level triggering PSD requirements – requiring use of selective catalytic reduction devices on each new Unit, limiting startups of the new Units to five per day, retiring two existing steam-generating units, and a 170 tons per year NO_x emissions cap – and imposed requirements to verify compliance with the NO_x

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and consistency, the Board will use the term "cap" to refer to the limitation on NO_x emissions.

[5] The to-be-eliminated steam units emit approximately 140 tons per year of NO_x. Thus, the replacement of these units with the ten new Units (limited to a combined total of 170 tons per year of NO_x) would result in a net legally-allowed increase of NO_x of approximately 30 tons per year. *See* Pima Cty. Dep't of Envtl. Quality, *Responses to Public Comments* 7 (Aug. 8, 2018) (A.R. 22) ("RTC"). Further, Pima County estimated that the ten Units would emit 152.8 tons per year of NO_x – i.e., less than the 170 tons per year cap – based on the manufacturer's specifications on NO_x emissions from the Units with selective catalytic reduction devices and assuming five startups per day, the maximum allowed under the Permit. Pima Cty. Dep't of Envtl. Quality, *Technical Support Document* attach. B at 2 tbl.B-2 (Aug. 2018) (A.R. 24).

emissions cap. Pima Cty. Dep't of Envtl. Quality, *Proposed Prevention of Significant Deterioration Air Quality Permit, Permit No. 1052*, at 4 & Part B § V.E (Feb. 9, 2018) (A.R. 12.1) ("Proposed Permit").

As to the verification of compliance, the Proposed Permit specified that "[c]ompliance with the NO_x emission [cap] shall be demonstrated by performance tests as detailed in Condition II.D, monitoring as detailed in Condition II.B, and recordkeeping as detailed in Condition II.C." *Id.* at Part B § II.A.1.b. The performance tests, monitoring, and recordkeeping required for compliance are described further below.

First, the Proposed Permit called for performance tests – also referred to as "stack tests" – for each of the new Units to be conducted "using the methods and procedures in 40 C.F.R. § 60.4244 and Table 2 of 40 C.F.R. part 60, subpart JJJJ." Proposed Permit at Part B § II.D.2.a. For NO_x emissions, these stack tests measure "the concentration of NO_x in the engine exhaust" during operation of the facility at periods other than at startup (i.e., non-startup operating periods). 40 C.F.R. § 60.4244(b), (d). Because the selective catalytic reduction devices must be operated "at all times while fuel is flowing to the [Unit], excluding periods of startup," stack tests reflect the impact the selective catalytic reduction devices have on NO_x emissions. *See* Proposed Permit at Part B § II.A.c.

In addition to the regulatory procedures for stack tests, the Proposed Permit specified that the tests "shall be performed at 25, 40, 70, and 100 percent of peak load" or at the minimum and peak load levels based on the prior twelve months of operation. *Id.* at Part B § II.D.2.b. As to the frequency of testing, each Unit must be tested "within 60 days after achieving the maximum production rate, but not later than 180 days after initial startup." *Id.* at Part B § II.D.1. Thereafter, each Unit must be subjected to a stack test "no less frequently than once in each period of two consecutive calendar years," but at least five of the Units must be tested each calendar year. *Id.* This means that each Unit will be tested at least once every two years.

Second, the Proposed Permit imposed several monitoring and recordkeeping requirements to verify continuing compliance with the NO_x emissions cap. These monitoring and recordkeeping requirements established a procedure for calculating monthly and yearly NO_x emissions and a program for ensuring that the selective catalytic reduction devices are operated properly at all times. *See id.* at Part B § II.C.

The Proposed Permit required the calculation of NO_x emissions on a monthly and yearly basis for non-startup and startup operating periods. For non-

startup operating periods, the Proposed Permit required that monthly NO_x emissions be calculated by combining information on NO_x emission rates measured in required stack tests with monitoring data on the operation of the Units. Specifically, the Proposed Permit required that Tucson Electric calculate a NO_x "emission factor" from the most recent stack test expressed in terms of pounds of NO_x emitted per the heat input measured in British thermal units ("BTUs") of natural gas used to power the Unit. *Id.* at Part B § II.D.2.c. Additionally, the Proposed Permit required Tucson Electric to monitor and record the hours of operation of each Unit and natural gas consumption in BTUs during operation. *Id.* at Part B § II.B.1. The Proposed Permit then directed that Tucson Electric calculate monthly NO_x emissions during non-startup operating periods on a Unit-by-Unit basis by multiplying each Unit's emission factor by the BTUs of heat input used by the Unit over the month during these operating periods. *Id.* at Part B § II.C.9.

For startup operating periods, the Proposed Permit required that monthly NO_x emissions be calculated by multiplying the number of startups per Unit in a month by the manufacturer-supplied NO_x rate of emissions for startup ("startup emission rate") of the Unit. *Id.* at Part B § II.C.9. To implement this requirement, the Proposed Permit specified that Tucson Electric monitor the number of startups for all Units and record the number and duration of all startups. *Id.* at Part B § II.B.2, II.C.1. Emission calculations for startup operating periods are then combined with emission calculations for non-startup operating periods to calculate total monthly emissions and a twelve-month (i.e., yearly) rolling average of NO_x emissions. *Id.* at Part B § II.C.9.

Lastly, the Proposed Permit imposed additional requirements as to the selective catalytic reduction devices to assure proper functioning of these devices. These monitoring and recordkeeping requirements included the following: (i) the devices must be maintained and operated in a manner consistent with good air pollution control practice for minimizing NOx emissions; (ii) the catalyst in the devices must be cleaned and replaced according to the manufacturer's recommendations; (iii) two key operating parameters of the devices – ammonia injection rate and temperature – must be monitored and recorded at least once every fifteen minutes; (iv) if ammonia injection to a device fails and cannot be restored in ten minutes, the Unit must be shut down; (v) records must be kept of any instance in which ammonia injection fails for more than two minutes; and (vi) the selective catalytic reduction devices must have a continuous NO_x process monitor (which measures NO_x concentration and adjusts ammonia injection levels to achieve desired NO_x reduction). Proposed Permit at Part B § II.A.1.c, II.B.3, II.C.4; *see* Hug Eng'g, *Operating Manual: Control Unit SNQ* 1 (v03.00 Mar. 6, 2013) (A.R. 12).

C. *Sierra Club's Comments on the Proposed Permit and Pima County's Response*

Sierra Club submitted comments on the Proposed Permit arguing, among other things, that the NO_x emissions cap is not "practically enforceable,"[6] and thus the cap cannot be considered a limitation on the facility's potential to emit NO_x. Sierra Club, *Intent to Approve: Proposed Revision to the existing Air Quality Permit No. 1052 to Tucson Electric Power (TEP) Irvington/H. Wilson Sundt Generating Station (IGS)* 8-9 & attach. at 20 (Mar. 29, 2018) (A.R. 21.2) ("Sierra Club Comments"). Sierra Club contended that absent a practically enforceable limitation on the facility's potential to emit NO_x, Pima County erred in concluding that PSD requirements are not applicable to NO_x emissions. In its comments and in an expert report attached to its comments, Sierra Club advanced three arguments as to why the NO_x emissions cap is not practically enforceable.

First, Sierra Club contended that the Proposed Permit's compliance monitoring for NO_x was inadequate because it relied on stack tests that could be performed as infrequently as every two years. *Id.* at 2, 9. Sierra Club argued that "using stack tests once every two years to determine whether the [Units] are in compliance with the permit is woefully inadequate." *Id.* The expert report attached to Sierra Club's comments asserted that stack tests "may not be representative for emissions during routine operations" because stack tests do not provide data on whether pollution control devices at a facility are functioning at an effective level at times other than when the stack test is performed. *Id.* attach. at 21-22 & n.59 (citing to EPA comment letters on state permits that raise this concern as a reason to require additional compliance monitoring to supplement annual stack tests). The solution, according to the expert report, would be to require Continuous Emissions Monitors. *Id.* attach. at 23. The report argued that without Continuous Emissions Monitors, "community members will not be able to protect themselves against harmful emissions and local, state, and federal regulatory agencies cannot detect and cure violations of permit conditions." *Id.*

Second, Sierra Club argued that the NO_x emissions cap is not practically enforceable because the Permit does not contain an "unambiguous methodology for calculating NO_x emissions from the emission [stack] test." *Id.* attach. at 25; *see*

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[6] Sierra Club uses the term "practicably enforceable" as well as "practically enforceable" in its Petition. *See, e.g.*, Petition for Review of Prevention of Significant Deterioration Permit 1, 6 (Sept. 7, 2018) ("Pet."). But as we see no difference between the two (and Sierra Club does not assert that there is), the Board will use the term "practically enforceable" for clarity and consistency.

also id. at 2, 9. Sierra Club requested that the Proposed Permit "be revised to include an equation that lays out the emission calculation in detail." *Id.* attach. at 25.

Third, Sierra Club asserted that there was no record support for a manufacturer-supplied NO_x emission rate during startup, which was to be used to calculate emissions during startup operating periods. *Id.* at 2, 9 & attach. at 25. Although the Proposed Permit referred to the NO_x startup emission rate as "guaranteed," Sierra Club noted that there was no manufacturer guarantee provided for a startup NO_x emission rate included in an attachment to the draft Technical Support Document. *Id.* attach. at 25.

In August 2018, Pima County issued the Permit and its response to the public comments ("Response to Comments") received on the Proposed Permit, including its response to each of Sierra Club's comments on whether the NO_x emissions cap is practically enforceable.

As to Sierra Club's comment about the adequacy of stack tests for determining continuing compliance with the NO_x emissions cap, Pima County acknowledged that "EPA has indicated * * * that annual [stack] tests alone are insufficient to assure compliance with emission limits." Pima Cty. Dep't of Envtl. Quality, *Responses to Public Comments* 10 (Aug. 8, 2018) (A.R. 22) ("RTC"). However, Pima County explained that the Permit does not rely solely on the results of stack tests to determine compliance. *Id.* Pima County detailed how monthly and yearly NO_x emissions would be calculated using conservative non-startup emission factors and a similarly conservative startup emission rate and how monitoring of the selective catalytic reduction devices would assure that these control devices function properly at all times. *Id.* at 10-13.

In response to the request for an unambiguous methodology in calculating NO_x emissions, Pima County revised the Permit to include "a more detailed compliance determination methodology, expressed in the form of an equation." *Id.* at 13. Pima County noted that "[t]his methodology clearly indicates the emission factors and monitored data that will be used when calculating total NO_x emissions from the engines." *Id.*; *compare* Proposed Permit at Part B § II.C.9 *with* Permit at Part B § II.C.9.

Finally, to address the concern with the manufacturer-supplied startup emission rates, Pima County clarified that it had meant to reference the manufacturer-specified, not manufacturer-guaranteed, startup emission rates, and it amended the Permit accordingly. RTC at 12; *see* Permit at Part B § II.C.9. Further, Pima County admitted it had not included the latest manufacturer data in the

administrative record and explained that it had corrected this error by obtaining a waiver of the manufacturer's confidentiality claim concerning this information and included the information on its website. RTC at 4, 12.

This appeal followed.

V. *ANALYSIS*

In its Petition for Review, Sierra Club renews its challenge to Pima County's determination that the Permit's inclusion of a NO_x emissions cap prevents the addition of the ten new Units to Tucson Electric's Irvington facility from triggering PSD requirements for NO_x emissions. The sole issue that Sierra Club raises on appeal is whether the NO_x emissions cap is practically enforceable.

Specifically, Sierra Club argues (as it did in its comments) that biennial stack tests – used to develop each Unit's emission factor for calculating non-startup operating period emissions – are too infrequent to verify compliance with the NO_x emissions cap. Petition for Review of Prevention of Significant Deterioration Permit 5, 7 (Sept. 7, 2018) ("Pet."). Sierra Club further contends that reliance on biennial stack testing is not cured by the Permit's compliance monitoring requirements for the selective catalytic reduction devices or by Pima County's assertion that the emission factors for non-startup operating periods are required to be calculated in a conservative fashion. *Id.* at 12, 16 n.37. In a related vein, Sierra Club also asserts that Pima County's response to its comments was inadequate because Pima County did not "show that the permit relies on sufficient monitoring data to assure accurate and continuous monthly compliance with the NO_x cap." *Id.* at 12.

Mirroring its response to Sierra Club's comments, Pima County defends the practical enforceability of the NO_x emissions cap in its Response to the Petition by emphasizing the interconnected relationship of the entire suite of the Permit's compliance monitoring requirements. Pima County's Response to Sierra Club's Petition for Review 15, 17-19 (Oct. 1, 2018) ("Pima County Resp."); *see also* Response of Permittee Tucson Electric Power to Petition for Review 10-15 (Sept. 28, 2018) ("Tucson Electric Resp.").[7] Pima County does not claim that biennial

[7] Additionally, Tucson Electric contends that the Petition should be summarily dismissed because the question of whether a permit's compliance monitoring requirements are sufficient to ensure the practical enforceability of an emissions cap is not a "novel issue," as the Board and the Administrator have upheld substantially similar challenges to the practical enforceability of an emissions cap in *In re Shell Offshore, Inc.*, 15 E.A.D. 536,

stack testing is sufficient to make the NO_x emissions cap practically enforceable. Pima County Resp. at 16. Nor do we read Pima County's Response to Comments or its Response to the Petition as contending that biennial stack testing combined with monthly and yearly emission calculations based on that testing would *alone* provide adequate compliance monitoring requirements for the expansion of the Irvington facility. *Id.* Rather, Pima County argues that the NO_x emissions cap is practically enforceable based on how the biennial stack testing and the monthly and yearly emission calculations requirements are complemented by: (i) the requirements pertaining to the use, operation, and monitoring of the selective catalytic reduction devices; and (ii) the Permit's conservative methodology for calculating emission factors. *Id.* at 15-19; *see also* Tucson Electric Resp. at 11-15.

Given the Permit's compliance monitoring requirements and Pima County's justification for the practical enforceability of the NO_x emissions cap, the issues before us are narrower than stated by Sierra Club. Sierra Club's objections to the adequacy of the biennial stack tests and stack test-derived emission factors are not responsive to the actual compliance monitoring requirements in this Permit – which include more than stack tests and stack-test derived emission factors – and Pima County's explanation of how compliance with the Permit's NO_x emissions cap will be verified.[8] Thus, we need not determine whether biennial stack tests and use of

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546-67 (EAB 2012), and *In re Pope & Talbot, Inc., Lumber Mill*, Pet. No. VIII-2006-04, 2007 EPA CAA Title V LEXIS 3, at *12-13 (Adm'r Mar. 22, 2007). Tucson Electric Resp. at 7. We reject this argument. The Board's two main decisions involving a similar issue, *Shell Offshore* and *Peabody*, 12 E.A.D. at 34-47, as well as the Administrator's decision in *Pope & Talbot*, turned on a fact-based analysis of the permit in question, the nature of the facility, and the claims of the petitioner. They do not stand for the proposition that any permit using emission factors and monitoring of control devices to verify compliance with an emissions cap can be summarily affirmed as sufficient to ensure the practical enforceability of that cap.

[8] At times, several of Sierra Club's statements in its Petition and its comments appear to question the adequacy of the regulatorily-established requirements for conducting performance (stack) tests in subpart JJJJ, 40 C.F.R. § 60.4244, to determine the compliance of internal combustion engines with NO_x emission limitations. *See* Pet. at 11 (arguing that stack tests provide inadequate emissions compliance data due to the shortness of the tests and because they are conducted under ideal, prearranged conditions); Sierra Club Comments attach. at 21-22 & n.59 (same). To the extent Sierra Club intends this Petition to be a challenge to the requirements for tests in subpart JJJJ, 40 C.F.R. § 60.4244, that question is not properly before the Board because challenges to Clean Air Act regulations must be brought in the U.S. Court of Appeals, District of Columbia Circuit, within 60 days of promulgation. 42 U.S.C. § 7607(b). Moreover, the Board does not

emission factors based on those biennial stack tests to project monthly and yearly emissions – standing alone – would be sufficient to verify compliance with the NO_x emissions cap. What remains at issue, however, are Sierra Club's challenges to: (i) Pima County's reliance on two aspects of the Permit's compliance monitoring requirements – monitoring of the selective catalytic reduction devices and the conservative methodology for calculating emission factors for non-startup operating periods – to ensure the NO_x emissions cap is practically enforceable; and (ii) the adequacy of Pima County's response to Sierra Club's comments on the practical enforceability of the NO_x emissions cap. We address these contentions in turn below.

A. *Sierra Club's Challenges to the Permit's Compliance Monitoring Requirements*

1. *Sierra Club Fails to Show Clear Error in Pima County's Reliance on Monitoring of the Selective Catalytic Reduction Devices to Ensure the NO_x Emissions Cap is Practically Enforceable*

As discussed, the Permit's compliance monitoring requirements have two main components in addition to stack tests. The first component involves calculating monthly and yearly NO_x emissions for each Unit during non-startup and startup operating periods. NO_x emissions for non-startup periods are based on NO_x emission factors derived from stack tests conducted every two years and for startup periods are based on manufacturer data. The second component is monitoring of the selective catalytic reduction devices.

In its Petition, Sierra Club contends that the monitoring requirements for the selective catalytic reduction devices do not cure the problem with the Permit's reliance on stack tests and stack test-derived emission factors because the monitoring does not produce data to be "included in the formula to establish the NO_x emission factor." Pet. at 12. To the extent Sierra Club is challenging Pima County's conclusion that the monitoring requirements for the selective catalytic reduction devices are, in combination with the Permit's other monitoring requirements, adequate to ensure the NO_x emissions cap is practically enforceable, this argument is raised for the first time in Sierra Club's Petition. As a result, it has not been preserved for Board review. The regulations governing Board review of

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review EPA regulations as part of permit appeals. *See In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 724 (EAB 2015) (the Board "is not the appropriate forum" for raising dissatisfaction with an EPA regulation); *In re Tondu Energy Co.*, 9 E.A.D. 710, 715-16 (EAB 2001) ("As we have repeatedly stated, permit appeals are not appropriate fora for challenging Agency regulations.").

permit appeals, require that the party seeking review establish "that each issue being raised in the petition was raised during the public comment period (including any public hearing)," or demonstrate that the issue was not "reasonably ascertainable" at that time. 40 C.F.R. § 124.13, 19(a)(4)(ii); *see, e.g.*, *In re Seneca Res. Corp.*, 16 E.A.D. 411, 415 (EAD 2014). As the Board has previously explained, "[t]he effective, efficient and predictable administration of the permitting process demands that the permit issuer be given the opportunity to address potential problems with draft permits before they become final." *In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 250 (EAB 1999). This is a particularly important requirement as to technical issues such as the adequacy of the compliance monitoring requirements presented here because "the locus of responsibility for important technical decisionmaking rests primarily with the permitting authority, which has the relevant specialized expertise and experience." *Peabody*, 12 E.A.D. at 33.

Although Sierra Club did challenge the practical enforceability of the NO_x emissions cap in its comments, Sierra Club did not include as part of that challenge any critique of the role that the monitoring requirements for the selective catalytic reduction devices play. In fact, Sierra Club's comments never even mentioned the Permit's monitoring requirements for the selective catalytic reduction devices.

The section in Sierra Club's comments addressing practical enforceability of the NO_x emissions cap contains four paragraphs: (1) two paragraphs describing in general terms the legal requirement for practically enforceable emission limits; (2) one paragraph arguing that the Permit contained nothing more than a "[b]lanket" emission limitation, which was not practically enforceable; and (3) a final paragraph raising the frequency of stack tests and two other unrelated concerns with practical enforceability of the NO_x emissions cap. Sierra Club Comments at 8-9. The two other concerns were described in that final paragraph as follows:

> [Sierra Club's] expert comments detail at length the enforceability issues with the proposed permit. Specifically, using stack tests once every two years to determine whether the [Units] are in compliance with the permit is woefully inadequate. *The permit does not contain an unambiguous methodology for demonstrating compliance with the annual NO_x emission cap, and there is no support for the applicant's "vendor-guaranteed" NO_x rate that is used to demonstrate compliance.*

Id. at 9 (emphasis added) (footnote omitted). While Sierra Club's expert report, which was attached to its comments, expanded on the concerns raised with stack

tests, the methodology issue as to emission factors, and the manufacturer data on NO_x emissions during startup, that report did not raise concerns with or otherwise discuss the Permit's monitoring requirements for the selective catalytic reduction devices. *See Id.* attach. at 20-25.

Sierra Club cannot claim that Pima County did not provide notice of the role that monitoring of the selective catalytic reduction devices plays in verifying compliance with the NO_x emissions cap. On its face, the Proposed Permit expressly stated that its requirements for monitoring of selective catalytic reduction devices are an element bearing on verifying compliance with the NO_x emissions cap. Condition II.A.1.b of the Proposed Permit provided that "[c]ompliance with the NO_x emission limit shall be demonstrated by performance [i.e. stack] tests as detailed in Condition II.D, monitoring as detailed in Condition II.B, and recordkeeping as detailed in Conditions II.C." Proposed Permit at Part B § II.A.1.b. And Conditions II.B and II.C on monitoring and recordkeeping, as well as Condition II.A addressing emission limitations, contain multiple requirements pertaining to monitoring of the selective catalytic reduction devices in addition to requirements as to stack tests and calculation of monthly and yearly emissions. *See id.* at Part B § II.A.1 (setting the 170 tons per year NO_x emission limit, requiring installation of selective catalytic reduction devices with continuous NO_x process monitors, and imposing operating requirements on such devices); *id.* at Part B § II.B (requiring monitoring of fuel consumption and startups of the new Units and monitoring of operating parameters – ammonia injection rate and temperature – for selective catalytic reduction devices); *id.* at Part B § II.C (requiring records be kept of the monitoring of fuel consumption, of startups of the engines, and of the operating parameters of the selective catalytic reduction devices; and specifying that monthly and yearly NO_x emissions must be calculated). Thus, the Permit's reliance on monitoring of the selective catalytic reduction devices as a key part of determining compliance with the NO_x emissions cap was reasonably ascertainable at the time of the comment period. Any challenge to the way in which the monitoring of the selective catalytic reduction devices functioned in verifying compliance with the NO_x emissions cap should have been presented to the permit issuer in the first instance.

In any event, even if Sierra Club's challenge to Pima County's reliance on the monitoring of the selective catalytic reduction devices to verify compliance with the NO_x emissions cap was preserved for Board review, Sierra Club's specific challenge (the monitoring results are not "included in the formula to establish the 'NO_x emission factor'") reflects a misunderstanding of how the Permit works. *See* Pet. at 12. In response to Sierra Club's general argument about the lack of practical enforceability of the NO_x emissions cap through reliance on biennial stack tests,

Pima County explained that it was not relying solely on stack tests to verify compliance. In addition to the required stack tests, Pima County pointed to the Permit's requirements to calculate monthly and yearly NO_x emissions and the monitoring of the selective catalytic reduction devices. RTC at 10-13. As to the latter, Pima County explained that monitoring of the selective catalytic reduction devices would assure that the devices were functioning properly "at all times." *Id.* at 10. Pima County's intent was not to obtain data from this monitoring to adjust the emission factors. Instead, the data are required to make sure the selective catalytic reduction devices are working properly at all times. Thus, Sierra Club's argument in its Petition is not responsive to the role of monitoring of the selective catalytic reduction devices as described by Pima County.

2. *Sierra Club Fails to Show Clear Error in Pima County's Determination that the Non-Startup Emission Factors Are Conservative*

In a footnote to its Petition, Sierra Club also takes issue with Pima County's assertion that the methodology for calculating emission factors for non-startup operating periods is conservative. Pet. at 16 n.37. Under Board case law, a determination such as this one by Pima County "requires the sort of quintessential technical expertise the permit issuer possesses." *In re Shell Offshore, Inc.*, 15 E.A.D. 536, 558 (EAB 2012) (upholding a permit issuer's choice of emission factors in a challenge to the practical enforceability of an emissions cap limiting a facility's potential to emit). Sierra Club has not met the "particularly heavy burden" it bears on this technical question. *See Peabody*, 12 E.A.D. at 41.

Sierra Club disputes that calculating non-startup emission factors from the highest emission rate produced during required stack tests will, as Pima County claims, result in an emission factor that "over-calculat[es]" NO_x emissions. Pet. at 16, n.37. Sierra Club maintains that there is no support in the record for this conclusion and no specific calculation of the quantitative extent of the over-calculation. We find no merit in Sierra Club's argument.[9]

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[9] Sierra Club's argument here also appears for the first time in its Petition. However, neither the Proposed Permit nor draft Technical Support Document explained that the conservative nature of the methodology for calculating non-startup emission factors was a consideration bearing on the practical enforceability of the NO_x emissions cap. That explanation appears for the first time in the Response to Comments, RTC at 13, and thus Sierra Club's challenge to that rationale may be raised on appeal. *See In re Pio Pico Energy Ctr.*, 16 E.A.D.56, 102 (EAB 2013) (allowing consideration of an issue not

First, although Pima County does state at one point that the Permit's methodology for calculating emission factors based on stack tests will overstate actual emissions, the record as a whole suggests that Pima County did not design the procedure for establishing emission factors to overstate emissions by a specific quantitative amount but rather to guard against understating emissions. For example, Pima County introduced its emission factor methodology by explaining that "certain elements [of the methodology] * * * will inherently produce a conservative calculation of emissions (i.e., a tendency to over-calculate, rather than under-calculate, engine NO_x emissions)." RTC at 13. Nor does the record show that Pima County relied upon a specific quantitative degree of over-calculation in the emission factors to justify the practical enforceability of the NO_x emissions cap.

Second, the Permit's description of the methodology for establishing an emission factor for non-startup operating periods provides sufficient record support for Pima County's description of emission factors as conservative (i.e., likely to overstate emissions). The emission factor methodology requires Tucson Electric to identify the maximum NO_x emissions that will be emitted across the full range of load levels during non-startup operating periods. To do this, the Permit requires Tucson Electric to conduct each stack test across the full range of non-startup operating load levels. Permit at Part B § II.D.2.b. The methodology then requires that the emission factor be calculated using the maximum emission rate found in that test as the presumed emission rate whenever the engine is operating in non-startup conditions, irrespective of the load level at which it is operating. *Id.* at Part B § II.D.2.c. Given that the methodology requires that the highest measured emission rate from stack tests be used in the calculation of emission factors, it was reasonable for Pima County to conclude that this approach is a conservative one. Sierra Club's "bare assertion" to the contrary is not adequate to support the opposite conclusion. *See Shell Offshore*, 15 E.A.D. at 561 n.28 (the Board refuses to rely on a petitioner's "bare assertion" that stack tests supporting emission factors were too infrequent).[10]

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raised in a public comment "where the permit issuer's reasoning on an issue was not clearly ascertainable from the record at the draft permit stage").

[10] Additionally, Sierra Club ignores that the methodology for calculating emissions during startup operating periods is also designed to conservatively calculate emissions. NO_x emissions differ significantly between "cold" or "warm" startups with cold startups generating approximately three times the NO_x emissions as warm startups. Letter from Conrad Spencer, Tucson Elec. Power, to Rupesh Patel, Pima Cty. Dep't of Envtl. Prot. 6 (Sept. 21, 2017) (A.R. 6) (finding that a cold startup emits 10.3 pounds of NO_x compared

For all the above reasons, Sierra Club fails to substantiate its claim that the record does not support Pima County's determination that the emission factor methodology is likely to overstate, not understate, actual emissions.

3. *Conclusion*

Sierra Club failed to preserve for Board review its ability to challenge Pima County's reliance on monitoring of the selective catalytic reduction devices as a component of the Permit's compliance monitoring program. Sierra Club further did not substantiate its challenge to either the adequacy of that monitoring or the conservative emission factor methodology. Accordingly, the Board concludes that Sierra Club has not carried its burden to show that Pima County clearly erred in its determination that the Permit's NO_x emissions cap is practically enforceable.

B. *Sierra Club Fails to Show Pima County Clearly Erred in Responding to Sierra Club's Comments*

Sierra Club asserts that Pima County's "responses to Sierra Club's comments were inadequate." Pet. at 12. In support of that contention, Sierra Club argues that Pima County did not "otherwise show that the permit relies on sufficient monitoring data to assure accurate and continuous monthly compliance with the NO_x cap," and "did nothing to address the fact that the NO_x cap remains practically unenforceable." *Id.*

The adequacy of a permit issuer's response to comments must be evaluated in the context of the content, specificity, and precision of the submitted comments. The Board has held that "parties submitting comments on draft permits must present their concerns with sufficient precision and specificity to apprise the permitting authorities of the significant issues so that the permit issuer can make timely and appropriate adjustments to its permit determination, or, if no adjustments are made, can explain why none are necessary in its response to comments." *In re Pio Pico Energy Ctr.*, 16 E.A.D. 56, 85 (EAB 2013). Where a comment lacks specificity and precision, the permit issuer's obligation to respond is similarly tempered. It is well settled that "permit issuers need not guess the meaning behind imprecise comments and are under no obligation to speculate about possible concerns that were not articulated in the comments." *In re Scituate Wastewater*

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to a warm startup that emits 3.5 pounds). Nonetheless, the methodology for calculating emissions during startup requires Tucson Electric to assume that all startups are cold startups. Permit at Part B II.C.9.

Treatment Plant, 12 E.A.D. 708, 723 (EAB 2006) (quotations and citations omitted).

Sierra Club's comments on practical enforceability of the NO_x emissions cap focused on the adequacy of biennial stack testing as a form of compliance monitoring and were very general in nature.[11] In its comments, Sierra Club merely stated that "using stack tests once every two years to determine whether the [Units] are in compliance with the permit is woefully inadequate." Sierra Club Comments at 9. The expert report attached to Sierra Club's comments added some detail but not much more. *See id.* attach. at 20-25. The report explained that infrequent stack tests may not be representative of "routine operations" and noted that "EPA itself has stated that annual stack tests are not sufficient to assure compliance with emissions limits." *Id.* attach. at 21-22. The information cited to support this assertion showed that EPA was concerned that annual stack tests may not be adequate to demonstrate compliance throughout the remainder of the year, particularly where the proper functioning of pollution control technology is necessary for the source to meet applicable requirements. *Id.* attach. at 21 n.59. Instead of stack testing, Sierra Club's expert report recommended that the Permit require Continuous Emissions Monitors. *Id.* attach. at 23.

Pima County responded to these comments by first acknowledging that annual stack tests "are insufficient to assure compliance with emission limits." RTC at 10. Pima County then provided a detailed explanation of what other requirements it had included in the Permit to assure sufficient compliance monitoring during all periods of operation. That lengthy explanation touched on the requirements for use of stack test-derived emission factors and manufacturer emission rates to calculate monthly and yearly NO_x emissions, the conservative nature of these emission factors and emission rates, and the required monitoring of the selective catalytic reduction devices. *Id.* at 10-13. This level of detail was more than an adequate response to Sierra Club's comment that the Permit's compliance

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[11] As described in Part IV.B, Sierra Club also argued in its comments that the NO_x emissions cap was not practically enforceable because the Proposed Permit lacked a clear statement of the methodology for calculating NO_x emissions from emission factors and because Pima County had not included in the record the manufacturer data on startup emission rates that are required for calculating emissions during startup operating periods. Sierra Club Comments at 2, 9. In response, Pima County amended the Permit to include an equation for calculating NO_x emissions and included in the record the manufacturer data on startup emission rates. RTC at 4, 13. Sierra Club has not suggested these comment responses were inadequate.

monitoring was "woefully inadequate" and the expert report explanation that infrequent stack tests may not be representative of routine operations. As the Board has previously held, if "an issue is raised only generically during the public comment period, the permit issuer is not required to provide more than a generic justification for its decision, and the petitioners cannot raise more specific concerns for the first time on appeal." *Encogen*, 8 E.A.D. at 251 n.12; *see In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 146-47 (EAB 1999) (where commenter submitted comments challenging representativeness of air quality data without supplying reasons, permit issuer's response that the data is conservative was adequate given the generic nature of the comment).

To the extent Sierra Club now raises concerns about any of the specifics of that response, we have addressed those claims in Part V.A, above. Sierra Club provides no further detail to support its claim of an inadequate response to comments. In fact, a substantial portion of Sierra Club's Petition is composed of block quotes from Pima County's explanation in the Response to Comments of its basis for concluding that the NO_x emissions cap is practically enforceable. *See* Pet. at 13-16. But as the Board's regulations make clear, when a permit issuer has addressed a petitioner's comments in the record, the petitioner must do more than insist that the permit issuer's response is incorrect, the petitioner "must * * * explain why the Regional Administrator's response to the comment was clearly erroneous or otherwise warrants review." 40 C.F.R. § 124.19(a)(4)(ii); *see In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769, 797-98 (EAB 2015) ("Simply disagreeing with the Region and repeating concerns [raised in public comments] in a petition for review * * * does not satisfy the regulatory requirement that petitioners confront the permit issuer's responses and explain why the responses were clearly erroneous."). Accordingly, the Board concludes that Sierra Club has not shown Pima County clearly erred in the manner in which it responded to Sierra Club's comments.

VI. *CONCLUSION*

For the reasons stated above, the Board denies Sierra Club's Petition for Review.

So ordered.

United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

AIR QUALITY CONSTRUCTION PERMIT

Permit Number: **2020-49WION-001**

Issue Date: September 9, 2020 Effective Date: September 9, 2020

In accordance with the provisions of the Clean Air Act and the Federal Minor New Source Review Program in Indian Country, 40 C.F.R. §§ 49.151 – 49.165,

Cintas Corporation

is authorized to construct and operate air emissions units and to conduct other air pollutant emitting activities in accordance with the permit conditions listed in this permit.

This source is authorized to construct in the following location:

Cintas Corporation – Green Bay
800 Isbell Street
Green Bay, WI 54303

Cintas Corporation – Green Bay is located on reservation lands held by the United States government in trust for the Oneida Tribe.

All terms and conditions of the permit are enforceable by the U.S. Environmental Protection Agency and citizens under the Clean Air Act.

Genevieve Damico, Chief
Air Permits Section
Air and Radiation Division
U.S. EPA, Region 5

Date

Abbreviations and Acronyms

BTU	British Thermal Unit
CAA	Clean Air Act
C.F.R	Code of Federal Regulations
CO	Carbon Monoxide
DSCF	Dry Standard Cubic Foot
DSCM	Dry Standard Cubic Meter
EPA	U.S. Environmental Protection Agency
g	gram
hr	Hour
lb	Pound
MMBTU	Millions of BTUs
NAAQS	National Ambient Air Quality Standards
NSPS	New Source Performance Standards
NO_x	Oxides of Nitrogen
PM	Particulate Matter
PM_{10}	PM less than or equal to 10 microns diameter
$PM_{2.5}$	PM less than or equal to 2.5 microns diameter
PTE	Potential to Emit
PSD	Prevention of Significant Deterioration
tpy	Tons per year
VOC	Volatile Organic Compound

Facility Cintas Corporation – Green Bay

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SECTION I FACILITY DESCRIPTION

(A) General Source Information

Owner: Cintas Corporation
27 Whitney Drive
Milford, OH 45150

Facility: Cintas Corporation – Green Bay
800 Isbell Street
Green Bay, WI 54303

County: Brown

Reservation: Oneida Tribe of Wisconsin

SIC Code: 7218, Commercial and Industrial Laundering Facility

NAICS Code: 812332, Industrial Launderers

This permit authorizes Cintas Corporation to take synthetic minor limits for VOC in order to convert from a Part 71 to a Part 49 source at the Cintas Corporation – Green Bay facility located within the exterior boundaries of the Oneida Tribe of Wisconsin. The facility launders (cleans and reconditions) soiled industrial towels, coveralls, uniforms, and other textiles for industrial customers.

The permit establishes federally enforceable potential to emit emission limits for the industrial laundering facility. The Permittee shall not process more than 28,950,000 pounds of soiled shop towels during any 12 consecutive-month period to avoid major source Prevention of Significant Deterioration review. This is an existing facility and no modification, expansion, or change in the method of operation is being taken in this permitting action.

(B) Emission Unit Description

(1) Boiler B01 – 10.46 MMBtu/hr

(2) Process P01 – Industrial Washers, Indoor-vented
   a. Industrial Washing Machine (#3)
   b. Industrial Washing Machine (#4)
   c. Industrial Washing Machine (#5)
   d. Industrial Washing Machine (#6)
   e. Industrial Washing Machine (Unimac #1)

(3) Process P02 – Industrial Washers, Stack-vented
   a. Industrial Washing Machine (Unimac #3)
   b. Industrial Washing Machine (Unimac #2)
   c. Industrial Washing Machine (#1)
   d. Industrial Washing Machine (#2)

(4) Process P03 – Industrial Dryers Burning Natural Gas
   a. Industrial Dryer (Wash Tech), 0.25 MMBtu/hr
   b. Industrial Dryer (Cissell #2), 0.25 MMBtu/hr
   c. Industrial Dryer (#3), 2.75 MMBtu/hr
   d. Industrial Dryer (#4), 2.75 MMBtu/hr
   e. Industrial Dryer (Jensen #1), 2.5 MMBtu/hr
   f. Industrial Dryer (Jensen #2), 2.5 MMBtu/hr

(5) Process P04 – Wastewater Pretreatment System

(6) Insignificant Emission Sources
   a. Steam Tunnel, 3.0 MMBtu/hr
   b. Miscellaneous Natural Gas Combustion Units, Combined 11.6 MMBtu/hr
      i. Space Heating
      ii. Water Heating

SECTION II UNIT-SPECIFIC REQUIREMENTS

(A) Emissions Limitations and Standards

The Permittee shall comply with the following requirements:

(1) The Permittee shall not exceed the following emission limits:

Pollutant	Limit	Time Period/Monitoring/Emission Unit
1. NO_x	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
2. CO	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
3. VOC	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
4. SO_2	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
5. PM	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
6. PM	0.23 grams/DSCM Or 0.1 grains/DSCF	3-hour average for natural gas-fired Boiler
7. PM	0.12 grams/DSCM or 0.05 grains/DSCF	3-hour average for natural gas-fired Industrial Dryers and process vents.
8. PM_{10}	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
9. $PM_{2.5}$	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
10. Single HAP	9.9 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
11. Total HAPs	24.9 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.

(2) The Permittee shall not operate the facility to process more than 28,950,000 pounds of soiled shop towels per year based on a 12-month rolling time period as determined at the end of each calendar month.

(3) The permittee shall not dry or heat any soiled shop towels in any dryer unless they have first been washed in a washing machine included in Process P01 or Process P02.

(4) The Industrial Dryers may only be fired using natural gas.

(5) The Boiler may only be fired using natural gas.

(6) Lint filters or other particulate capture systems, installed as part of the equipment design, shall be operated at all times that each process is in operation.

(7) All emission units and associated equipment authorized by this permit, must be maintained in good working order and operated properly.

(8) Good Air Pollution Control Practices- At all times, including start-up, shut-down, and malfunction, the permittee shall maintain and operate all sources, including associated air pollution control equipment regulated by this permit in a manner consistent with good air pollution control practices for minimizing emissions. This includes, but is not limited to, operating emission units and the particulate matter control systems in accordance with the manufacturer's guidelines and following the instructions included in the owners' operations manual [40 CFR 49.125(d)(1) and (3)].

(B) Monitoring and Performance Testing [40 C.F.R. § 49.155(a)(3)]

(1) Monitoring

(a) The Permittee shall develop and follow guidelines and procedures for sorting and categorizing soiled materials to be washed and dried during industrial laundry operations. At minimum, these procedures shall document the method of classifying soiled materials as either soiled shop towels or non-VOC containing items.

(b) The Permittee shall develop and follow guidelines and procedures for sorting soiled shop towels to minimize fugitive VOC and HAP emissions in accordance with good work practices. Good work practices include, but are not limited to, storing soiled shop towels in covered containers prior to sorting or washing the towels.

(c) The facility shall sort, categorize, and weigh laundry by type (shop towel, other);

(d) The facility shall conduct daily visual inspections of the lint coup to ensure lint filters (screens) are installed and functioning properly;

(e) The Permittee shall calculate monthly VOC emissions using Equation 1:

(1) $E_M = U \times VOC_{ef} \div 2{,}000$

Where:

E_M is the total monthly VOC emissions from industrial laundry operations, in tons;
U is the total mass of soiled shop towels processed by the facility, in 1000 pounds;
VOC_{ef} is the VOC emission factor for soiled towels processed by the facility, in pounds of VOC per 1000 pounds of soiled shop towels, as applicable

(f) The permittee shall calculate the VOC emissions on a 12-month rolling period using Equation 2:

(2) $E_T = \sum_{i=1}^{12} E_{Mi}$

Where:
E_T is the total emissions of all VOCs during the previous 12 consecutive calendar months, in tons; and
E_{Mi} is the total VOC emissions during each of the previous 12 consecutive calendar months, in tons, as calculated using Equation 1.

(g) The permittee shall calculate monthly Federal HAP emissions using Equation 3:

(3) $E_i = U \times HAP_{ef} \div 2{,}000$

Where:
E_i is the monthly emissions of an individual HAP from industrial laundry operations, in tons;
U is the total mass of shop towels processed by the facility, in 1000 pounds; and
HAP_{ef} is the Federal HAP emission factor for soiled towels processed by the facility, in pounds of an individual HAP per 1000 pounds of soiled shop towels, as applicable.

(h) The permittee shall calculate monthly total of all Federal HAP emissions using Equation 4:

(4) $E_M = \sum_{i=1}^{n} E_i$

Where:
E_M is the monthly total of all federal HAP emissions from industrial laundry operations, in tons;
E_i is the monthly emissions of an individual federal HAP, calculated using Equation 3; and
n is the total number of federal HAPs emitted by the industrial laundry operations.

(i) The permittee shall calculate the emissions of total individual Federal HAP on a 12-month rolling period using Equation 5:

(5) $E_{Tl} = \sum_{i=1}^{12} EM_i$

Where:
E_{Tl} is the total emissions of an individual Federal HAP during the previous 12 consecutive months, in tons;
EM_i is the total of an individual Federal HAP during the previous 12 consecutive calendar months, in tons, as calculated using Equation 4.

(j) The permittee shall calculate the emissions of total Federal HAPs on a 12-month rolling period using Equation 6:

(6) $E_T = \sum_{i=1}^{12} EM_i$

Where:
E_T is the total emissions of all Federal HAPs during the previous 12 consecutive months, in tons;
EM_i is the total of all Federal HAP emissions during the previous 12 consecutive months, in tons, as calculated using Equation 4.

(k) The Permittee shall calculate the monthly and rolling 12-month NO_x, CO, SO_2, VOC, HAP, PM, PM_{10}, $PM_{2.5}$, and Lead emissions from all combustion units at the facility using AP-42 emission factors.

(l) The Permittee shall calculate the monthly and rolling 12-month NO_x, CO, SO_2, VOC, HAP, PM, PM_{10}, $PM_{2.5}$, and Lead emissions from all processes at the facility.

(2) Performance Testing

(a) Reference Test Methods. Upon request, the Permittee shall test for emissions of particulate matter, VOCs, and HAPs in accordance with the methods and procedures specified in Method 5 of 40 C.F.R. Part 60, Appendix A or an alternative method approved by the EPA.

(b) No less than 30 days prior to testing, the Permittee shall submit a complete test plan to the EPA. The EPA must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete test report of the test results to the EPA within 60 days following the last date of the test.

(c) Representative Testing Conditions. Performance tests shall be conducted under such conditions as the EPA shall specify to the facility operator based on representative performance of the affected facility. The permittee shall make available to the EPA such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

(d) Operating Conditions for Performance Testing. All performance tests shall be conducted at worst-case operating (non-malfunction) conditions for all emission units for each air pollutant.

(e) Failure to Demonstrate Compliance. Upon the EPA's written notice that the facility has failed to demonstrate compliance with an applicable emission limit, unless an alternative schedule is given in an applicable requirement or compliance document, the permittee shall:

(i) Conduct a retest within 30 days of receipt of the EPA written notice;
(ii) Submit to the EPA written notice of testing and submit a test plan for the retest; and
(iii) Submit a complete report of the results of the retest within 45 days after completion.

(C) Recordkeeping and Reporting [40 C.F.R. § 49.155(a)(4)]

(1) Recordkeeping

(a) The permittee shall maintain a file of all records required by this permit. The permittee shall retain all records required in this permit for at least 5 years. [40 C.F.R. § 49.155(a)(4)(ii)]

(b) The permittee shall retain records of all calibration and maintenance records, and copies of all reports required by the permit. The Permittee shall also maintain the following records of the monitoring required by this permit:

(i) Total weight of soiled towels processed by the facility per month sorted by category (shop towels, other) in 1,000 pounds;
(ii) Amount of natural gas used by the facility each month;
(iii) Total emissions of each individual Federal HAP emitted during each month, in tons;
(iv) Total emissions of each individual Federal HAP emitted during the previous 12 consecutive months, in tons;

(v) Total emissions of all Federal HAPs combined emitted during each month, in tons;
(vi) Total emissions of all Federal HAPs combined emitted during the previous 12 consecutive months, in tons;
(vii) Total emissions of NO_x, CO, SO_2, Lead, PM, PM_{10}, and $PM_{2.5}$ emitted during each month and the previous 12 consecutive months.
(viii) Documentation of the source and development of any Federal HAP emission factor used; and
(ix) Daily records of visual inspection of the lint coup and note the date when the lint coup collection fabric is replaced.

(2) Reporting

(a) Testing Notification. The Permittee shall submit notification of the proposed test date to EPA at least 30 days prior to the planned test date. The Permittee may submit the testing notification at the same time the test protocol is submitted. If there is a delay in conducting the scheduled performance test, the Permittee shall notify EPA as soon as possible, either by providing 7 days prior notice of the rescheduled date of the performance test or by arranging a rescheduled test date with EPA by mutual agreement.

(b) Test Protocol. The Permittee shall submit a test protocol to the EPA at least 30 days prior to testing. The test protocol shall contain, at a minimum, the following information:

(i) Name and address of the facility;
(ii) Emissions units to be tested;
(iii) Proposed operating conditions for each emissions unit to be tested;
(iv) Air pollution control equipment for each emission unit to be tested;
(v) Pollutants to be measured;
(vi) Proposed analytical techniques and test methods;
(vii) Emission points and sampling locations; and
(viii) Expected date of the test, if known.

(c) Test Reports. No later than 45 days following the completion of the initial or periodic performance tests required in Sections II(B)(2)(a) and (b) of this permit, the Permittee shall submit to EPA a written report of the test results obtained from the performance tests.

(d) Deviation Reporting. The Permittee shall promptly report to EPA any deviation from any permit requirements, including those attributable to upset conditions, the probable cause of such deviation, and any corrective

actions or preventative measures taken. "Promptly" shall mean within 30 business days of the deviation. [40 C.F.R. § 49.155(a)(5)(ii)]

(e) Annual Report. The Permittee shall submit an annual report of all required monitoring to assure compliance with the synthetic minor limits established in this permit. This report must include confirmation that the synthetic minor limit was maintained for the previous 12 months and must clearly list all instances of deviations from the permit requirements. The annual reporting period shall end on December 31, and the annual report shall be submitted by March 1. [40 C.F.R. § 49.155(a)(5)(i)] An annual report under this section shall include the following:

(i) The company name and address;
(ii) The beginning and ending dates of the reporting period;
(iii) Copies of records required to be maintained in Section II(C)(1)(b)(i) – (vii) of this permit;
(iv) All instances of deviations from permit requirements whether demonstrated by reference test method, monitoring, or through any other creditable evidence, the date on which each deviation occurred, and either the total duration of deviations indicated by such monitoring or the actual records of deviations.
(v) The name, title, and signature of the responsible official who is certifying the truth, accuracy, and completeness of the report.

SECTION III GENERAL PERMIT REQUIREMENTS

(A) Definitions

Terms and conditions in this permit have the meaning assigned to them in 40 C.F.R. § 49.152 unless other regulations or statutes are referenced or applicable.

(B) Submittals

(1) Unless otherwise directed by EPA or this permit, the Permittee shall submit a copy of all test plans, reports, certifications, notifications, and other information pertaining to compliance with this permit to:

Air Enforcement and Compliance
Assurance Branch (AE-18J)
Enforcement Division
EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Alternatively, the Permittee may submit the Annual Reports and Deviations Reports required under Section II(C)(2) of this permit through the Compliance and Emissions Data Reporting Interface (CEDRI).

(2) The Permittee shall submit permit applications, applications for permit amendments, MAP and other applicable permit information, which includes but is not limited to applications and information regarding installation of control equipment, replacement of an emissions unit, and requests for changes that contravene permit terms to:

Air Permits Section
Air Programs Branch (AR-18J)
EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

(C) Severability [40 C.F.R. § 49.155(a)(6)]

The terms and conditions in this permit are distinct and severable. Each permit term and condition is independent of the permit as a whole and remains valid regardless of a challenge to any other part of this permit. If any term or condition in this permit is held invalid, such invalidity shall not affect the validity or application of other terms or conditions.

(D) Compliance with Permit Requirements [40 C.F.R. § 49.155(a)(7)(i)]

The Permittee shall comply with all conditions of this permit, including emission limitations that apply to the affected emissions units at the source. Noncompliance with any permit term or condition is a violation of the permit and may constitute a violation of the Clean Air Act and is grounds for enforcement action and for a permit termination or revocation.

(E) Prohibition on Violation of National Ambient Air Quality Standards and Prevention of Significant Deterioration Increments [40 C.F.R. § 49.155(a)(7)(ii)]

The permitted source shall not cause or contribute to a violation of a National Ambient Air Quality Standard or, in an attainment area, shall not cause or contribute to a Prevention of Significant Deterioration increment violation.

(F) Need to Halt or Reduce Activity Not a Defense [40 C.F.R. § 49.155(a)(7)(iii)]

It is not a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(G) Permit Revision, Reopening, Revocation and Reissuance, or Termination [40 C.F.R. § 49.155(a)(7)(iv)]

This permit may be revised, reopened, revoked and reissued or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance or termination or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

(H) Property Rights [40 C.F.R. § 49.155(a)(7)(v)]

This permit does not convey any property rights of any sort or any exclusive privilege.

(I) Duty to Provide Information [40 C.F.R. § 49.155(a)(7)(vi)]

The Permittee shall furnish to the EPA, within a reasonable time, any information that EPA may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. For any such information claimed to be confidential, the Permittee must also submit a claim of confidentiality in accordance with 40 C.F.R. Part 2, Subpart B.

(J) Entry and Inspection [40 C.F.R. § 49.155(a)(7)(vii)]

Upon presentation of proper credentials, the Permittee shall allow a representative of the EPA to:

(1) Enter upon the premises where a source is located or emissions-related activity is conducted or where records are required to be kept under the conditions of the permit;

(2) Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

(3) Inspect, during normal business hours or while the source is in operation, any facilities, equipment (including monitoring and air pollution control equipment), practices or operations regulated or required under the permit;

(4) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and

(5) Record any inspection by use of written, electronic, magnetic and photographic media.

(K) Permit Invalidation [40 C.F.R. §§ 49.155(a)(1)(i), (b)]

This permit becomes invalid if the Permittee does not commence construction within 18 months after the effective date of this permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The reviewing authority may extend the 18-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project. The Permittee must commence construction of each phase within 18 months of the projected and approved commencement date.

(L) Construction Without a Permit

If the Permittee constructs or operates any source or modification not in accordance with the terms of any approval to construct, the Permittee shall be subject to appropriate enforcement actions.

(M) Construction Approval

(1) Nothing in this permit shall alter the requirement for the Permittee to obtain a construction permit before commencement of construction or modification of an emission unit.

(2) Approval for construction or installation shall not relieve the Permittee of the responsibility to comply fully with the applicable provisions of any other requirements of federal law or regulation, including Title V of the CAA.

(N) Circumvention

The Permittee shall not build, erect, install, or use any article, machine, equipment, or process, the use of which conceals any emission which would otherwise constitute a violation of an applicable standard.

Appendix F – Cost Spreadsheets for Control Technology Analysis

Data Inputs

Select the type of oxidizer: Regenerative Thermal Oxidizer

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	16	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760	hours/year	
Inlet volumetric flow rate(Q_{std}) at 77°F and 1 atm.	62,594	scfm	
Inlet volumetric flow rate(Q_{act}) (actual conditions)	74,592	acfm	
Pressure drop (ΔP)	19	inches of water	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60	percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_{wg})	170.5	°F	
Operating Temperature (T_{ft})	1,900	°F	* Note: Default value for Tft is 2000°F for thermal regenerative oxidizers. Use actual value if known. Tft for regenerative oxidizers typically between 1800 and 2000°F
Destruction and Removal Efficiency (DRE)	90	percent	
Estimated Equipment Life	20	Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Heat Loss (η)	1	percent*	* 1 percent is a default value for the heat loss. User should enter actual value, if known. Heat loss is typically between 0.1 and 1.5%.

Percent Energy Recovery (HR) = 70 percent

Enter the cost data:

Desired dollar year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	541.7	2016 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 3 and 15 percent

*CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	16	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	16	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0 °F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408 lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{c,af}$) =		21,502 Btu/lb
Density of waste gas at 77 °F (ρ_w) =		0.0739 lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{pm,air}$)	(For thermal oxidizers)	0.255 Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Limits
Sum of volume fraction of combustible components =	$= (\sum x_i) =$	16	ppmv		
Lower Explosive Limit of waste gas ($LEL_{m,i}$)	$= [\sum((x_i)/([\sum x_i) \times LEL_i))]^{-1} =$	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% $LEL_{m,i}$	= (Total Combustible Conc. In Mixture/$LEL_{m,i}$) × 100 =	0.01	percent	* Note: Since the LEL of the waste gas stream is below 25% no dilution air is needed	
Dilution Factor	= ($LEL_{m,i}$ x 0.249)/[$\sum x_i$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/$LEL_{m,i}$) × 100 =	Not Applicable			
Inlet volumetric flow rate(Qw) at 77°F and 1 atm	(From Data Inputs Tab) =	62,594	scfm		
Oxygen Content of gas stream	= 100 - ($\sum x_i \times 100/10^6$) x 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_w × ΔP]/e	276.4	kW		
Q_{wo}	= Q_w =	62,594	scfm		
Operating temperature of oxidizer (T_o)	(From Data Inputs Tab)	1,900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_o - T_{wi}) + T_{wi} =	1,381	°F		
Temperature of flue gas exiting the regenerative oxidizer (T_{fo})	= T_o - 0.95(T_o - T_{wi}) =	257	°F		
Heat Input of waste gas ($-\Delta h_{c,w}$)	= $\sum (-\Delta h_{c,i})\ x_i$				
	Where $(-\Delta h_{c,i})$ is the heat of combustion and x_i the fraction of component "i" at 77 °F.	0.01	Btu/scf	0.1	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm.	(Calculated using Equation 2.45 in Appendix B)	2.25	scfm		
Auxillary fuel Energy Input =		1,976	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_w × Q_w × $C_{pm,w}$ × (T_o - T_{ref}) =	107,521	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion?	(Note: If the auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)	No		Note: Additional auxiliary fuel equivalent to 5% of total energy input is required to stabilize combustion	
Auxiliary fuel flow (Qaf) (adjusted for fuel required for combustion stabilization) at 77°F and 1 atm =		123	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm	= Q_A = Q_{wo} + Q_a + Q_{af} = Q_w + Q_{af} =	62,717	scfm		

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$i(1+i)^n/(1+i)^n - 1$ =	0.0944
	Where n = Equipment Life and i = Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Cost = (EC) for Regenerative Oxidizer	=[2.664 x 100,000 + (13.98 x Qtot)] x (2022 CEPI/2016 CEPCI) =	$1,683,227 in 2022 dollars
Instrumentation[b] =	0.10 x A =	$168,323
Sales taxes =	0.03 x A =	$50,497
Freight =	0.05 x A =	$84,161
	Total Purchased equipment costs (B) =	$1,986,207 in 2022 dollars

Footnotes
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor
b - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 x B =	$158,897
Handlong and Errection =	0.14 x B =	$278,069
Electrical =	0.04 x B =	$79,448
Piping =	0.02 x B =	$39,724
Insulation for Ductwork =	0.01 x B =	$19,862
Painting =	0.01 x B =	$19,862
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$595,862
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$2,582,070 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 x B =	$198,621
Construction and field expenses =	0.05 x B =	$99,310
Contractor fees =	0.10 x B =	$198,621
Start-up =	0.02 x B =	$39,724
Performance test =	0.01 x B =	$19,862
	Total Indirect Costs (IC) =	$556,138
Continency Cost (C) =	CF(IC+DC) =	$313,821
Total Capital Investment =	**DC + IC +C =**	**$3,452,028 in 2022 dollars**

Direct Annual Costs

Annual Electricity Cost	= Fan Power Consumption x Operating Hours/year x Electricity Price =	$205,780
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ x Fuel Usage Rate x 60 min/hr x Operating hours/year	$553,997
Operating Labor	Operator = 0.5hours/shift x Labor Rate x (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift x Labor Rate x (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$806,535 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$69,041
Property Taxes	= 1% of TCI	$34,520
Insurance	= 1% of TCI	$34,520
Capital Recovery	= CRF(TCI-1.08(cat. Cost))	$325,847
Indirect Annual Costs (IC) =		**$491,983 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$1,298,518 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$1,298,518 per year in 2022 dollars
CO Destroyed =	17.4 tons/year
Cost Effectiveness =	$74,754 per ton of pollutants removed in 2022 dollars

Data Inputs

Select the type of oxidizer: Catalytic Oxidizer - Fixed Bed

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	16	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760 hours/year	
Inlet volumetric flow rate(Q_{scf}) at 77°F and 1 atm.	62,594 scfm	
Inlet volumetric flow rate(Q_{acf}) (actual conditions)	74,592 acfm	
Pressure drop (ΔP)	23 inches of water*	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60 percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_{wi})	170.5 °F	
Operating Temperature (T_{ri})	900 °F	* Note: Default value for Tri is 900°F for catalytic oxidizers. Use actual value if known. Tri for catalytic oxidizers is typically between 300 and 900°F
Destruction and Removal Efficiency (DRE)	90 percent	
Estimated Equipment Life	20 Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Catalyst Data:		
Estimated catalyst life (y)	4 years	* 4 years is a default value. User should enter actual value, if known.
Catalyst Unit Cost (CC)	0 $/ft^3	
Space velocity for catalyst (Φ)	30,000 /hour	* 30,000 per hour is a default value. User should enter actual value, if known.

Percent Energy Recovery (HR): 50 percent

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	390.6	1999 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 5 and 15 percent

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

R001120

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (p_{pmv})
Carbon monoxide	16	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	16	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0 °F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408 lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{af}$) =		21,502 Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739 lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{pm,air}$) =	(For catalytic oxidizers)	0 Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components =	= ($\sum x_i$) =	16	ppmv		
Lower Explosive Limit of waste gas ($LEL_{m,i}$)	= $\{\sum(x_i)/(\sum x_i / LEL_i)\}^{-1}$ =	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% $LEL_{m,i}$	= (Total Combustible Conc. In Mixture/$LEL_{m,i}$) × 100 =	0.01	percent	* Note: Since the LEL of the waste gas stream is below 25%, no dilution air is needed.	
Dilution Factor	= ($LEL_{m,i}$ × 0.249)/($\sum x_i$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/$LEL_{m,i}$) × 100 =	Not Applicable			
Inlet volumetric flow rate(Q_W) at 77°F and 1 atm	(From Data Inputs Tab) =	62,594	scfm		
Oxygen Content of gas stream	= 100 - ($\sum x_i$ × $100/10^6$) × 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_{wa} × ΔP]/ε	334.5	kW		
Q_{wa}	= Q_w =	62,594	scfm		
Operating temperature of oxidizer (T_o)	(From Data Inputs Tab)	900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_o - T_{wi}) + T_{wi} =	535	°F		
Temperature of flue gas exiting the oxidizer (T_{fo})	= T_o - T_{wo} + T_{wi} =	535	°F		
Heat Input of waste gas ($-\Delta h_{f,wg}$)					
	= $\sum$ [$-\Delta h_{c,i}$] x_i				
	Where [$-\Delta h_{c,i}$] is the heat of combustion and x_i the fraction of component "i" at 77 °F	0.01	Btu/scf	0.1	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm	(Calculated using Equation 2.21 in Chapter 2 of the Cost Manual)	590.38	scfm		
Auxiliary fuel Energy Input =		517,928	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_f × Q_A × $C_{pm,a}$ × (T_o - T_{af}) =	47,652	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion? auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)	(Note: If the	Yes			
Auxiliary fuel flow (Q_{af}) at 77°F and 1 atm =		590	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm =	= Q_A + Q_{wa} + Q_A + Q_{af} = Q_{wa} + Q_{af} =	63,185	scfm		

Calculation of Catalyst Volume and Estimated Temperature of Waste Gas Entering the Catalyst Bed

Volumetric Flow Rate at 60 °F and 1 atm (Q_s)	= Q_{act} × (519)/(77 °F + 460) =	61,067	scfm
Catalyst Volume (V_{cat})	= Q_s/Φ	122.13	ft^3
Estimated inlet temperature to the catalyst bed (T_a) =	(Calculated using Equation 2.27 in Chapter 2 of the Cost Manual)	900	°F

Capital Recovery Factor

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$i(1+i)^n/[(1+i)^n - 1]$ =	0.0944
	Where n = Equipment Life and i = Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Costs (EC) for a Fixed Bed Catalytic Oxidizer	= (1,215 × Qtot^(0.5575)) × (2022 CEPI/1999 CEPCI) =	$1,177,527 in 2022 dollars
Instrumentation[b] =	0.10 × A =	$117,753
Sales taxes =	0.03 × A =	$35,326
Freight =	0.05 × A =	$58,876
	Total Purchased equipment costs (B) =	$1,389,482 in 2022 dollars

Footnotes

a Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.

b Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 × B =	$111,159
Handlong and Erection =	0.14 × B =	$194,528
Electrical =	0.04 × B =	$55,579
Piping =	0.02 × B =	$27,790
Insulation for Ductwork =	0.01 × B =	$13,895
Painting =	0.01 × B =	$13,895
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$416,845
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$1,806,327 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 × B =	$138,948
Construction and field expenses =	0.05 × B =	$69,474
Contractor fees =	0.10 × B =	$138,948
Start-up =	0.02 × B =	$27,790
Performance test =	0.01 × B =	$13,895
	Total Indirect Costs (IC) =	$389,055
Continency Cost (C) =	CF(IC+DC)=	$219,538
Total Capital Investment =	**DC + IC +C =**	**$2,414,920 in 2022 dollars**

Direct Annual Costs

Catalyst Replacement Cost	= 1.08 × CC × Vol_{cat} × FWF Where CC is the $/ft^3 cost for the replacement catalyst; Vol_{cat} is the volume of catalyst required based on the waste gas flow rate (Q_R) and the catalyst space velocity (Φ), and FWF is the future worth factor.	$0
Annual Electricity Cost	= Fan Power Consumption × Operating Hours/year × Electricity Price =	$249,102
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$2,668,605
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$2,964,465 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$48,298
Property Taxes	= 1% of TCI	$24,149
Insurance	= 1% of TCI	$24,149
Capital Recovery	= CRF(TCI-1.08(cat. Cost))	$227,951
Indirect Annual Costs (IC) =		**$352,603 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$3,317,068 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$3,317,068	per year in 2022 dollars
CO Destroyed =	17.4	tons/year
Cost Effectiveness =	$190,959	per ton of pollutants removed in 2022 dollars

Data Inputs

Select the type of oxidizer [Regenerative Thermal Oxidizer]

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	43	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760	hours/year	
Inlet volumetric flow rate(Q_{ref}) at 77°F and 1 atm	255,617	scfm	
Inlet volumetric flow rate(Q_{act}) (actual conditions)	282,389	acfm	
Pressure drop (ΔP)	19	inches of water	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60	percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_{wi})	126.8	°F	
Operating Temperature (T_{fi})	1,900	°F	* Note: Default value for Tfi is 2000°F for thermal regenerative oxidizers. Use actual value if known. Tfi for regenerative oxidizers typically between 1800 and 2000°F
Destruction and Removal Efficiency (DRE)	90	percent	
Estimated Equipment Life	20	Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Heat Loss (η)	1	percent*	* 1 percent is a default value for the heat loss. User should enter actual value, if known. Heat loss is typically between 1 2 and 1 5%.

Percent Energy Recovery (HR) = [70 percent]

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	541.7	2016 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 3 and 15 percent

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

R001123

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	43	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	43	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0 °F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408 lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{c,af}$) =		21,502 Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739 lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{p,ma}$)	(For thermal oxidizers)	0.255 Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components =	= ($\sum x_i$) =	43	ppmv		
Lower Explosive Limit of waste gas ($LEL_{m,i}$)	= $[\sum(x_i/[(\sum x_i) \times LEL_i)]^{-1}$ =	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% LEL_m =	= (Total Combustible Conc. In Mixture/$LEL_{m,i}$) × 100 =	0.03	percent	* Note: Since the LEL of the waste gas stream is below 25% no dilution air is needed.	
Dilution Factor	= (LEL_m × 0.249)/($\sum x_i$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/$LEL_{m,i}$) × 100 =	Not Applicable			
Inlet volumetric flow rate(Qwi) at 77°F and 1 atm.	(From Data Inputs Tab) =	255,617	scfm		
Oxygen Content of gas stream	= 100 - ($\sum x_i$ × 100/10^6) x 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_{wi} × ΔP]/ε	1046.3	kW		
Q_{wo}	= Q_{wi} =	255,617	scfm		
Operating temperature of oxidizer (T_o)	(From Data Inputs Tab)	1,900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_o - T_w) + T_w =	1,368	°F		
Temperature of flue gas exiting the regenerative oxidizer (T_{fo})	= T_o - 0.95(T_o - T_w) =	215	°F		
Heat Input of waste gas ($-\Delta h_{c,wg}$)	= $\sum$ ($-\Delta h_c$) x_i				
	Where ($-\Delta h_c$) is the heat of combustion and x_i the fraction of component 'i' at 77 °F	0.01	Btu/scf	0.2	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm	(Calculated using Equation 2.45 in Appendix B)	0.70	scfm		
Auxiliary fuel Energy Input =		614	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_{fi} × Q_{fi} × $C_{p,m-a}$ × (T_o - T_{ref}) =	439,069	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion?	(Note: If the auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)	No		Note: Additional auxiliary fuel equivalent to 5% of total energy input is required to stabilize combustion	
Auxiliary fuel flow (Qaf) (adjusted for fuel required for combustion stabilization) at 77°F and 1 atm. =		500	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm	= Q_A = Q_{wo} + Q_a + Q_{af} = Q_w + Q_{af} =	256,118	scfm		

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	= [(1+ i)^n]/[(1+ i)^n - 1] =	0.0944
	Where n = Equipment Life and i = Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Costs (EC) for Regenerative Oxidizer	[2.664 x 100,000 + (13.98 x Qtot)] x (2022 CEPI/2016 CEPCI) =	$5,664,224 in 2022 dollars
Instrumentation[b] =	0.10 × A =	$566,422
Sales taxes =	0.03 × A =	$169,927
Freight =	0.05 × A =	$283,211
	Total Purchased equipment costs (B) =	$6,683,784 in 2022 dollars

Footnotes
a = Auxillary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.
b = Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 × B =	$534,703
Handlong and Erection =	0.14 × B =	$935,730
Electrical =	0.04 × B =	$267,351
Piping =	0.02 × B =	$133,676
Insulation for Ductwork =	0.01 × B =	$66,838
Painting =	0.01 × B =	$66,838
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$2,005,135
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$8,688,920 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 × B =	$668,378
Construction and field expenses =	0.05 × B =	$334,189
Contractor fees =	0.10 × B =	$668,378
Start-up =	0.02 × B =	$133,676
Performance test =	0.01 × B =	$66,838
	Total Indirect Costs (IC) =	$1,871,460
Continency Cost (C) =	CF(IC+DC) =	$1,056,038
Total Capital Investment =	**DC + IC +C =**	**$11,616,417 in 2022 dollars**

Direct Annual Costs

Annual Electricity Cost	= Fan Power Consumption × Operating Hours/year × Electricity Price =	$779,039
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$2,262,287
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$3,088,083 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$232,328
Property Taxes	= 1% of TCI	$116,164
Insurance	= 1% of TCI	$116,164
Capital Recovery	= CRF(TCI,1.08(cat. Cost))	$1,096,508
Indirect Annual Costs (IC) =		**$1,589,219 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$4,677,302 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$4,677,302 per year in 2022 dollars
CO Destroyed =	190.4 tons/year
Cost Effectiveness =	$24,563 per ton of pollutants removed in 2022 dollars

Data Inputs

Select the type of oxidizer: Catalytic Oxidizer | Fixed Bed

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	43	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760	hours/year	
Inlet volumetric flow rate(Q_{std}) at 77°F and 1 atm.	255,617	scfm	
Inlet volumetric flow rate(Q_{act}) (actual conditions)	282,389	acfm	
Pressure drop (ΔP)	23	inches of water*	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60	percent*	* 60% is a default fan efficiency. User should enter actual value, if known
Inlet Waste Gas Temperature (T_w)	126.8	°F	
Operating Temperature (T_n)	900	°F	* Note: Default value for Tfi is 900°F for catalytic oxidizers. Use actual value if known. Tfi for catalytic oxidizers is typically between 600 and 900°F
Destruction and Removal Efficiency (DRE)	90	percent	
Estimated Equipment Life	20	Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Catalyst Data:			
Estimated catalyst life (y)	4	years	* 4 years is a default value. User should enter actual value, if known.
Catalyst Unit Cost (CC)	0	$/ft³	
Space velocity for catalyst (Φ)	30,000	/hour	* 30,000 per hour is a default value. User should enter actual value, if known.

Percent Energy Recovery (HR) = 50 percent

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	390.6	1999 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 3 and 15 percent

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	43	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	43	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0 °F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408 lb/ft^3
Heat input of auxiliary fuel ($-\Delta h_{c\,af}$) =		21,502 Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739 lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{p\,mair}$) =	(For catalytic oxidizers)	0 Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components	= ($\sum x_i$) =	43	ppmv		
Lower Explosive Limit of waste gas ($LEL_{m,i}$)	= $\{\sum[(x_i/\sum x_i) \times LEL_i)]\}^{-1}$ =	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% $LEL_{m,i}$	= (Total Combustible Conc. in Mixture/$LEL_{m,i}$) × 100 =	0.03	percent	* Note: Since the LEL of the waste gas stream is below 25%, no dilution air is needed.	
Dilution Factor	= ($LEL_{m,i}$ × 0.249)/($\sum x_i$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/$LEL_{m,i}$) × 100 =	Not Applicable			
Inlet volumetric flow rate (Q_{wi}) at 77°F and 1 atm	(From Data Inputs Tab) =	255,617	scfm		
Oxygen Content of gas stream	= 100 − ($\sum x_i$ × 100/10^6) × 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_{wi} × ΔP]/e	1266.5	kW		
Q_{wo}	= Q_{wi} =	255,617	scfm		
Operating temperature of oxidizer (T_o)	(From Data Inputs Tab)	900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_o − T_{wi}) + T_{wi} =	513	°F		
Temperature of flue gas exiting the oxidizer (T_{fl})	= T_o − T_{wo} + T_{wi} =	513	°F		
Heat input of waste gas ($-\Delta h_{cwg}$)	= $\sum$ ($-\Delta h_{ci}$) x_i				
	Where ($-\Delta h_{ci}$) is the heat of combustion and x_i the fraction of component "i" at 77 °F	0.01	Btu/scf	0.2	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm	(Calculated using Equation 2.21 in Chapter 2 of the Cost Manual)	2,526.25	scfm		
Auxiliary fuel Energy Input =		2,216,233	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_g × Q_g × C_{pmg} × [T_o − T_{wi}] =	194,683	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion? (Note: If the auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)		Yes			
Auxiliary fuel flow (Q_{af}) at 77°F and 1 atm =		2,526	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm	= Q_g = Q_{wg} + Q_a + Q_{af} = Q_{wi} + Q_{af} =	258,144	scfm		

Calculation of Catalyst Volume and Estimated Temperature of Waste Gas Entering the Catalyst Bed

Volumetric Flow Rate at 80 °F and 1 atm (Q_{sc})	= Q_{tot} × (519)/(77 °F + 460) =	249,491	scfm
Catalyst Volume (Vol_{cat})	= Q_{sv}/Φ	498.98	ft^3
Estimated inlet temperature to the catalyst bed (T_{in}) =	(Calculated using Equation 2.27 in Chapter 2 of the Cost Manual)	899	°F

Capital Recovery Factor

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$[(1+i)^n i]/[(1+i)^n - 1]$ =	0.0944
	Where n = Equipment Life and I = Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for a Fixed Bed Catalytic Oxidizer	= (1,215 x Qtot^(0.5575)) x (2022 CEPI/1999 CEPCI) =	$2,580,726	in 2022 dollars
Instrumentation[b] =	0.10 × A =	$258,073	
Sales taxes =	0.03 × A =	$77,422	
Freight =	0.05 × A =	$129,036	
	Total Purchased equipment costs (B) =	$3,045,257	in 2022 dollars

Footnotes
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor
b - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 × B =	$243,621	
Handling and Erection =	0.14 × B =	$426,336	
Electrical =	0.04 × B =	$121,810	
Piping =	0.02 × B =	$60,905	
Insulation for Ductwork =	0.01 × B =	$30,453	
Painting =	0.01 × B =	$30,453	
Site Preparation (SP) =		$0	
Buildings (Bldg) =		$0	
	Total Direct Installaton Costs =	$913,577	
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$3,958,834	in 2022 dollars

Total Indirect Installation Costs (In 2022 dollars)

Engineering =	0.10 × B =	$304,526	
Construction and field expenses =	0.05 × B =	$152,263	
Contractor fees =	0.10 × B =	$304,526	
Start-up =	0.02 × B =	$60,905	
Performance test =	0.01 × B =	$30,453	
	Total Indirect Costs (IC) =	$852,672	
Continency Cost (C) =	CF(DC+DC)=	$481,151	
Total Capital Investment =	**DC + IC +C =**	**$5,292,657**	**in 2022 dollars**

Direct Annual Costs

Catalyst Replacement Cost	= 1.08 × CC × Vol_{cat} × FWF Where CC is the $/ft^3 cost for the replacement catalyst, Vol_{cat} is the volume of catalyst required based on the waste gas flow rate (Q_{tr}) and the catalyst space velocity (Φ); and FWF is the future worth factor	$0	
Annual Electricity Cost	= Fan Power Consumption × Operating Hours/year × Electricity Price =	$943,047	
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$11,419,055	
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$14,569	
	Supervisor = 15% of Operator	$2,185	
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$15,002	
	Materials = 100% of maintenance labor	$15,002	
Direct Annual Costs (DC) =		**$12,408,859**	**in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054	
Administrative Charges	= 2% of TCI	$105,853	
Property Taxes	= 1% of TCI	$52,927	
Insurance	= 1% of TCI	$52,927	
Capital Recovery	= CRF(TCI-1.08(cat. Cost))	$499,589	
Indirect Annual Costs (IC) =		**$739,350**	**in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$13,148,209**	**in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$13,148,209	per year in 2022 dollars
CO Destroyed =	190.4	tons/year
Cost Effectiveness =	$69,049	per ton of pollutants removed in 2022 dollars