Layman, Robb

From: James OPOLONY <james.opolony@lafargeholcim.com>
Sent: Monday, January 13, 2020 2:56 PM
To: Barria, German; Alyssa Makridakis
Cc: Peter Kossis; Sprague, Jeff; Bernoteit, Bob
Subject: Re: [External] Re: Holcim (US), Inc. - ID #031600FHQ
Attachments: 5 03-22-2019 - Figures.pptx

Bucket Elevator (P03) and Day Bin (P04) .jpg

Hopper Belt (P02) with Truck Unloading Hopper (...

Main Distribution Silo (P23) .jpg

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Truck Unloading Hopper (P01A) underground.jpg

Venting Stack S10 & Main Distrubution Sllo (P23...

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Enviromental Protection Specialist,

IEPA, Bureau of Air, Permit Section, FESOP/LOP Unit

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Sent: Monday, January 13, 2020 10:51 AM
To: Barria, German <German.Barria@Illinois.gov>; James OPOLONY <james.opolony@lafargeholcim.com>
Subject: [External] Re: Holcim (US), Inc. - ID #031600FHQ

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To: Barria, German
Cc: Alyssa Makridakis; Peter Kossis; Sprague, Jeff; Bernoteit, Bob
Subject: Re: [External] Re: Holcim (US), Inc. - ID #031600FHQ
Attachments: image001.png

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Attachments: Truck Unloading Hopper (P01A) underground.jpg; Venting Stack S10 & Main Distrubution SIlo (P23) .jpg; Main Distribution Silo (P23) .jpg; Hopper Belt (P02) with Truck Unloading Hopper (P01A) underground - Copy.jpg; Truck Unloading Hopper (P01A) above ground .jpg; Bucket Elevator (P03) and Day Bin (P04) .jpg

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R 010050
DANGER
EXIT


R 010051
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4004050084

R 010052


R 010053


1
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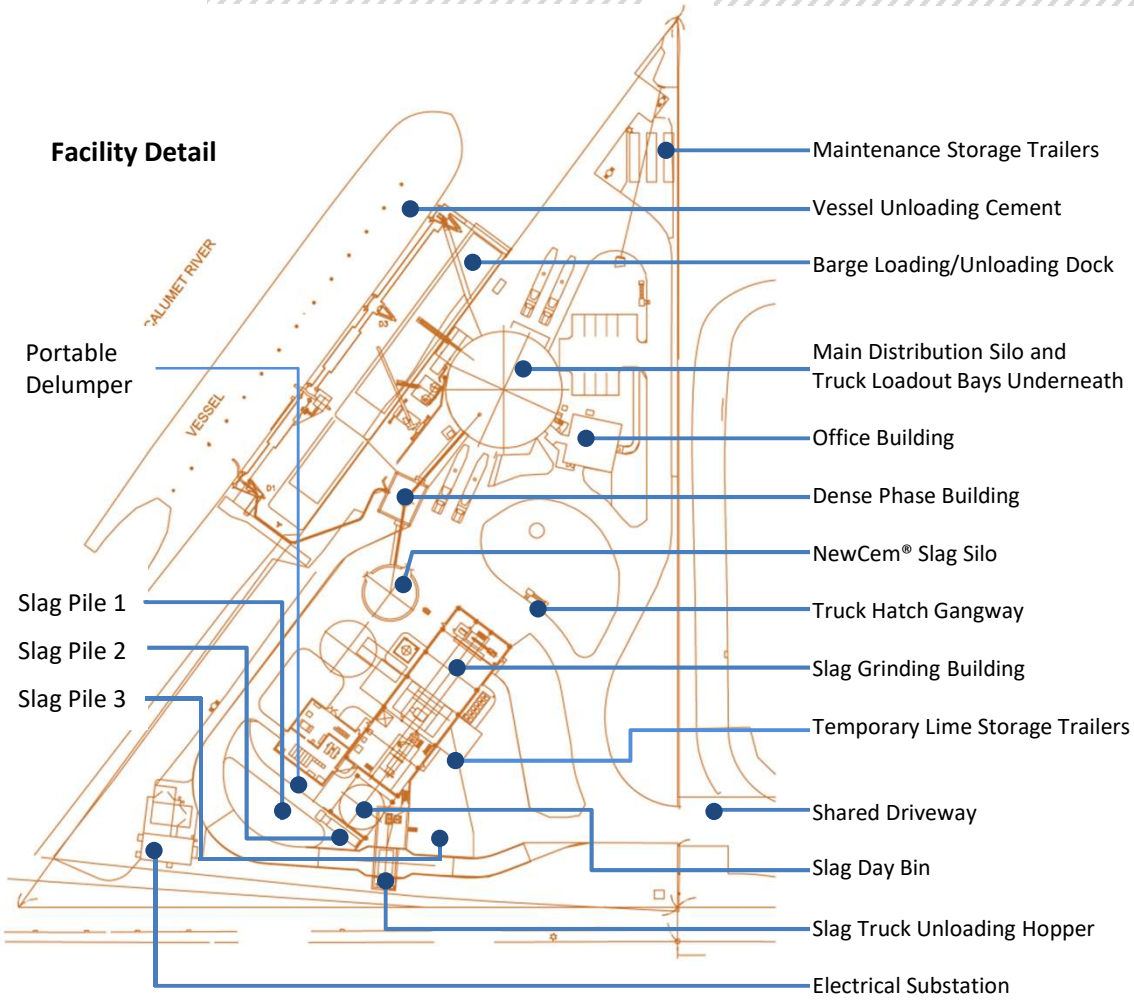
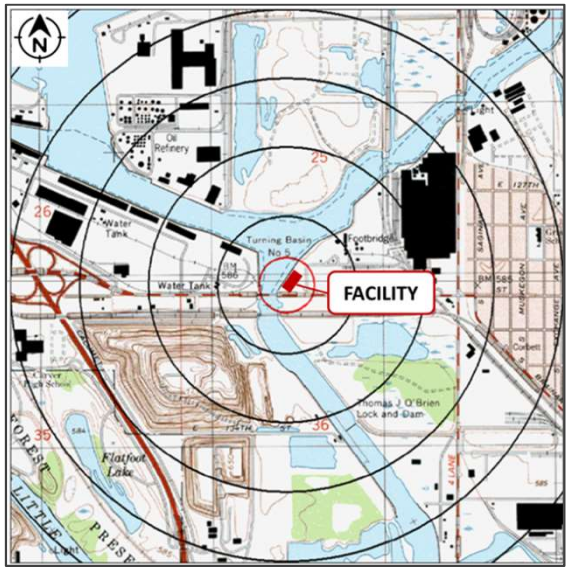
3 TON CAP.

Facility Detail





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800-965-5323
www.chemreport.com

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FIGURE 1

FACILITY LOCATION AND KEY FEATURES

Approved By: MGB	Figure 1
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	1 of 11
Title: **Fugitive Dust Plan**	

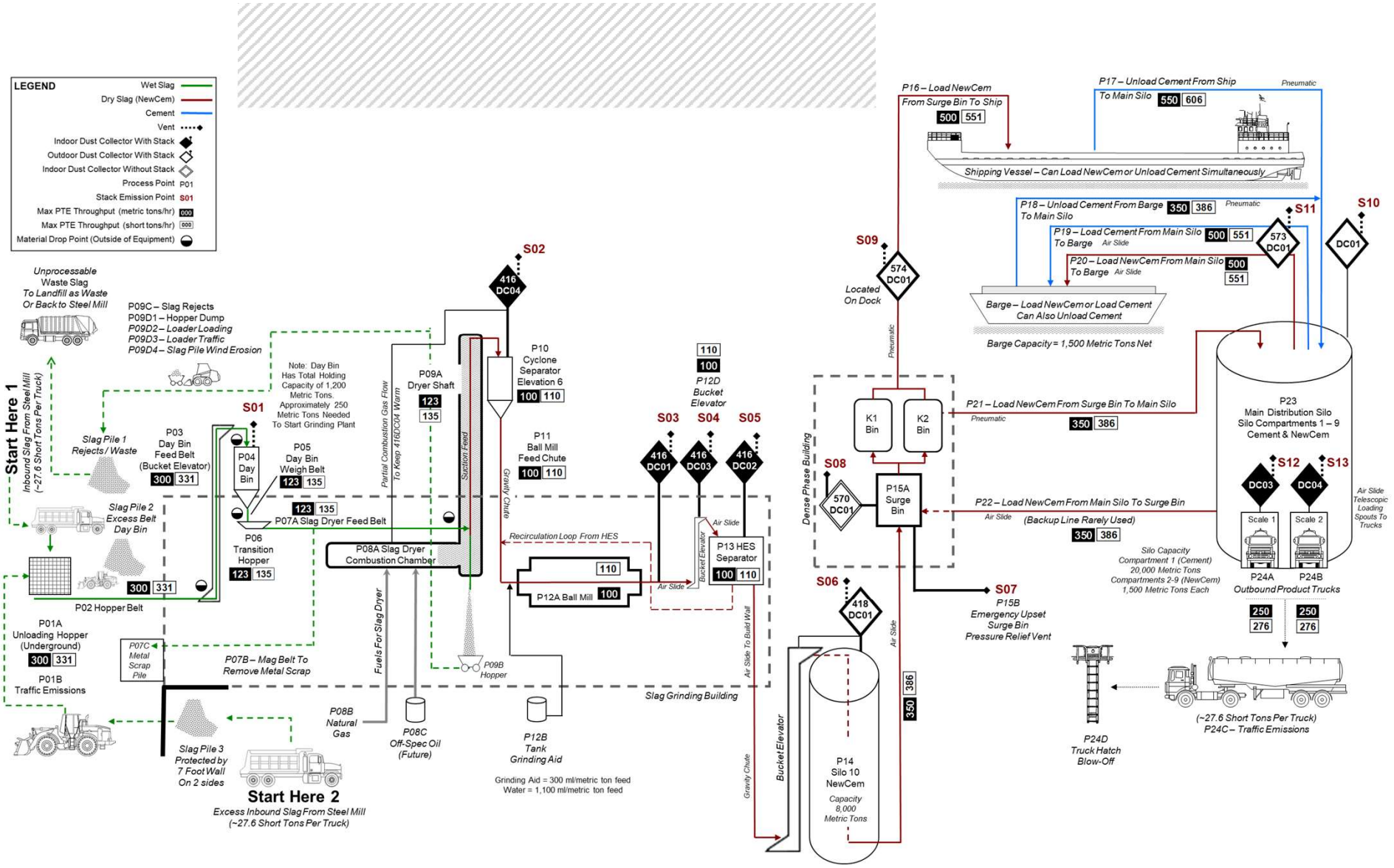

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FIGURE 2

PROCESS BLOCK FLOW DIAGRAM

FESOP CONFIGURATION with SLAG PILES UPDATED

Approved By: MGB	Figure 2
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	2 of 11
Title: Fugitive Dust Plan	

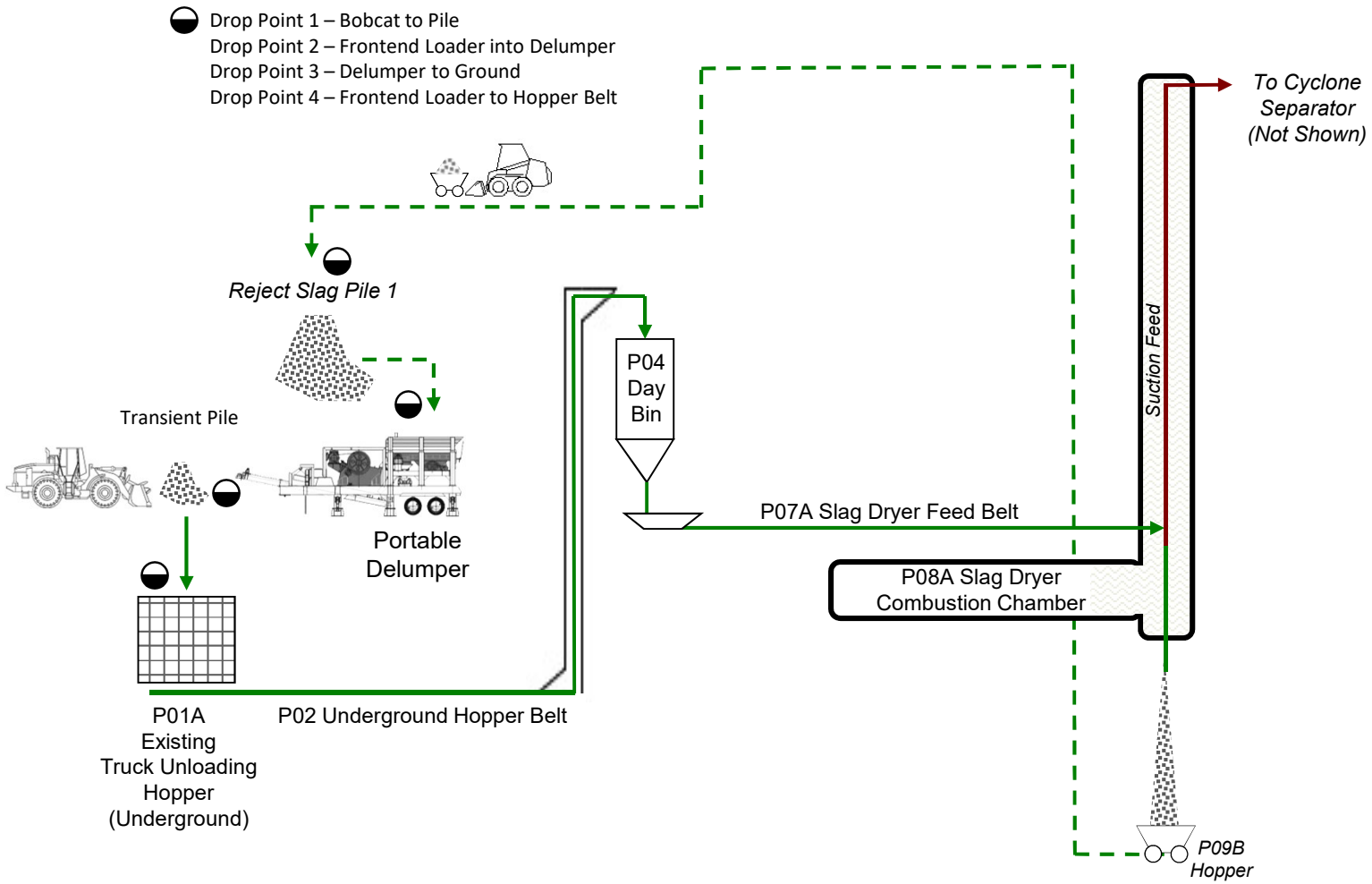

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FIGURE 2A

SIMPLIFIED PROCESS BLOCK FLOW DIAGRAM
PORTABLE DELUMPER

Approved By: MGB	Figure 2A
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	3 of 11
Title: Fugitive Dust Plan	

No.	Dust Collector	Equipment ID
1	Shaft Dryer	416DC04
2	Mill Sweep	416DC01
3	Bucket Elevator (bldg side)	416DC03
4	HES Separator	416DC02
5	NewCem® Silo 10	418DC01
6	Dense Phase Bldg Surge Bin	570DC01
7	Barge Loading (Figure 4)	573DC01
8	Vessel Loading (Figure 4)	574DC01
9	Truck Loadout 1	DC03
10	Truck Loadout 2	DC04
11	Main Distribution Silo	DC01

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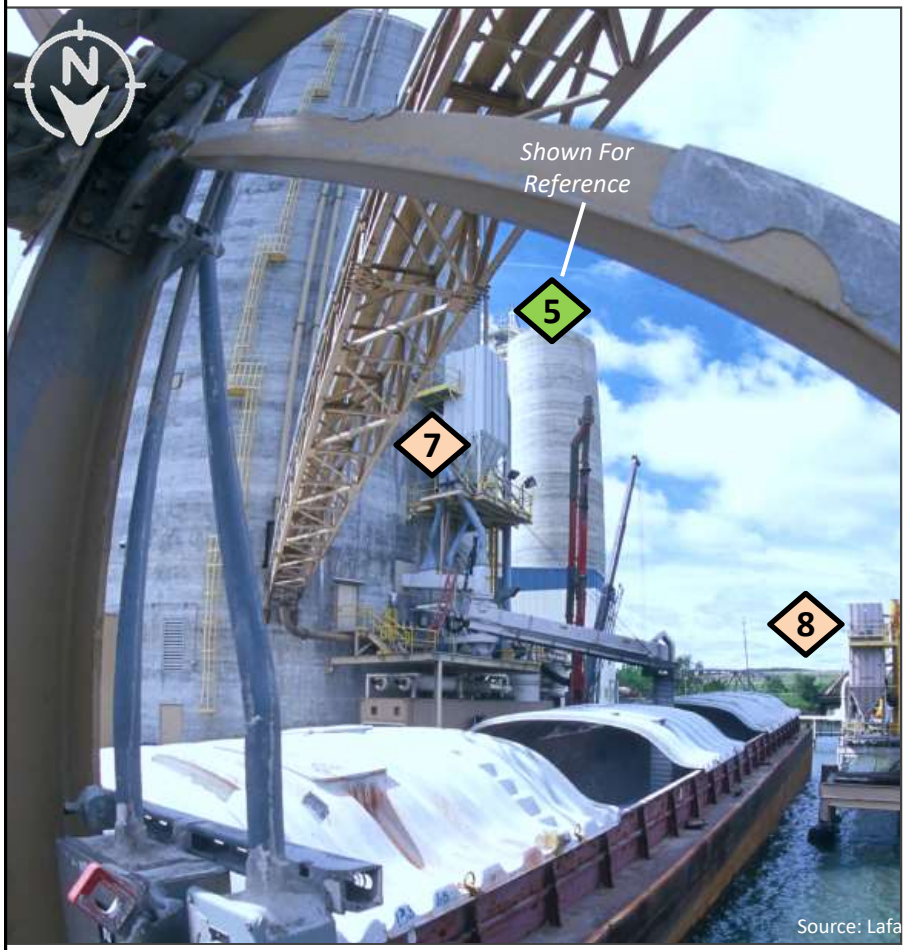
FIGURE 3

DUST COLLECTOR LOCATIONS

Approved By: MGB	Figure 3
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	5 of 11
Title: Fugitive Dust Plan	

No.	Dust Collector	Equipment ID
5	NewCem® Silo 10	418DC01
7	Barge Loading	573DC01
8	Vessel Loading	574DC01

Showing Dust Collector No. 7 During Barge Loading



Showing Dust Collector No. 8 During Vessel Loading

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FIGURE 4

DUST COLLECTOR LOCATIONS DOCKSIDE

Approved By: MGB	Figure 4
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	6 of 11
Title: Fugitive Dust Plan	

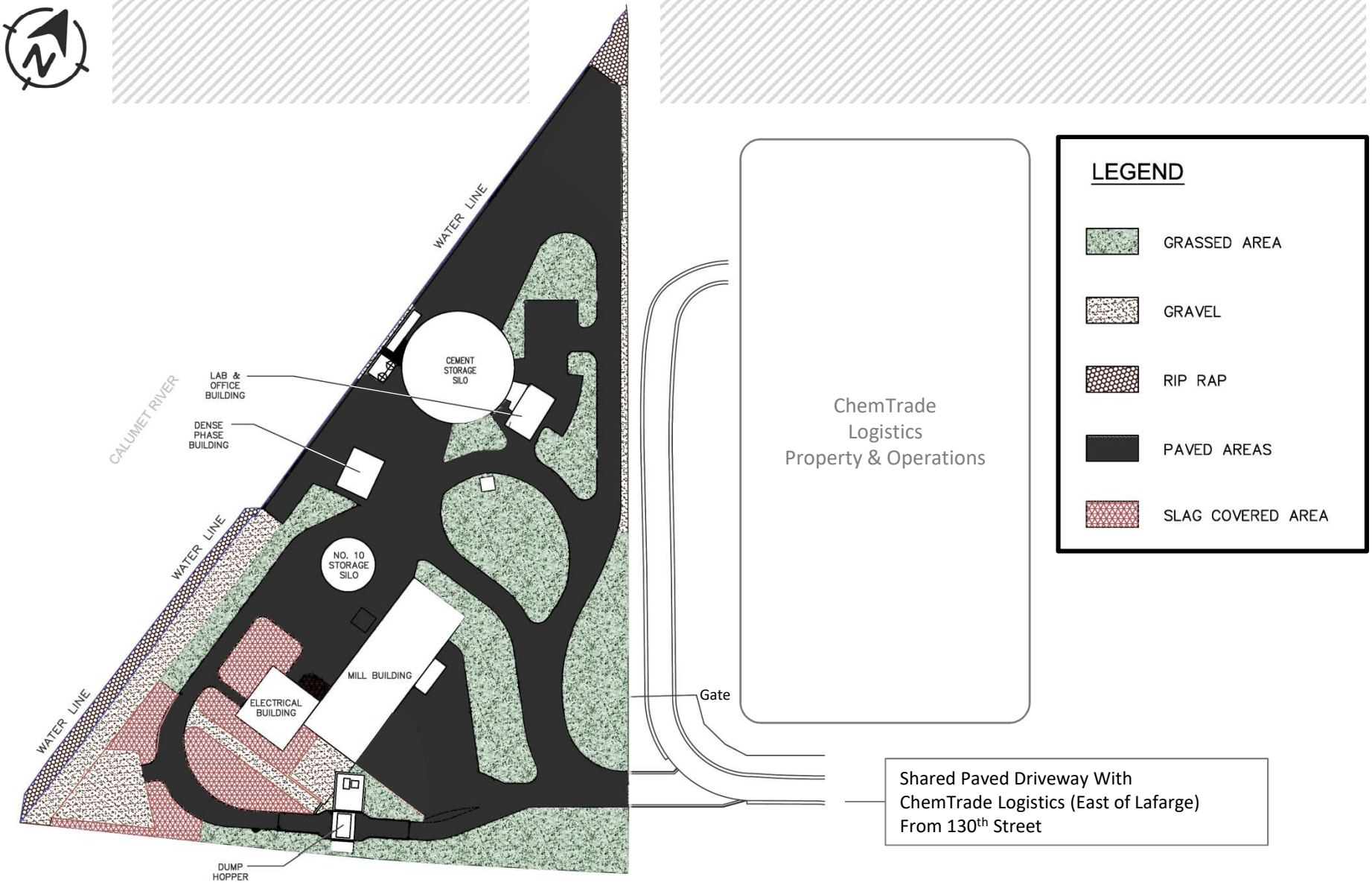

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FIGURE 5

SITE PERVIOUS AND IMPERVIOUS SURFACES

(Slag Covered Areas Indicated as Ground Surface Only)

Approved By: MGB	Figure 5
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	7 of 11
Title: **Fugitive Dust Plan**	

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FIGURE 6

TRUCK ROUTE FOR DELIVERING
AND UNLOADING WET SLAG AND LIME

Approved By: MGB	Figure 6
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	8 of 11
Title: Fugitive Dust Plan	

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FIGURE 7

TRUCK ROUTE FOR LOADING CEMENT/NEWCEM®
FROM MAIN SILO TRUCK BAYS

Approved By: MGB	Figure 7
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	9 of 11
Title: Fugitive Dust Plan	

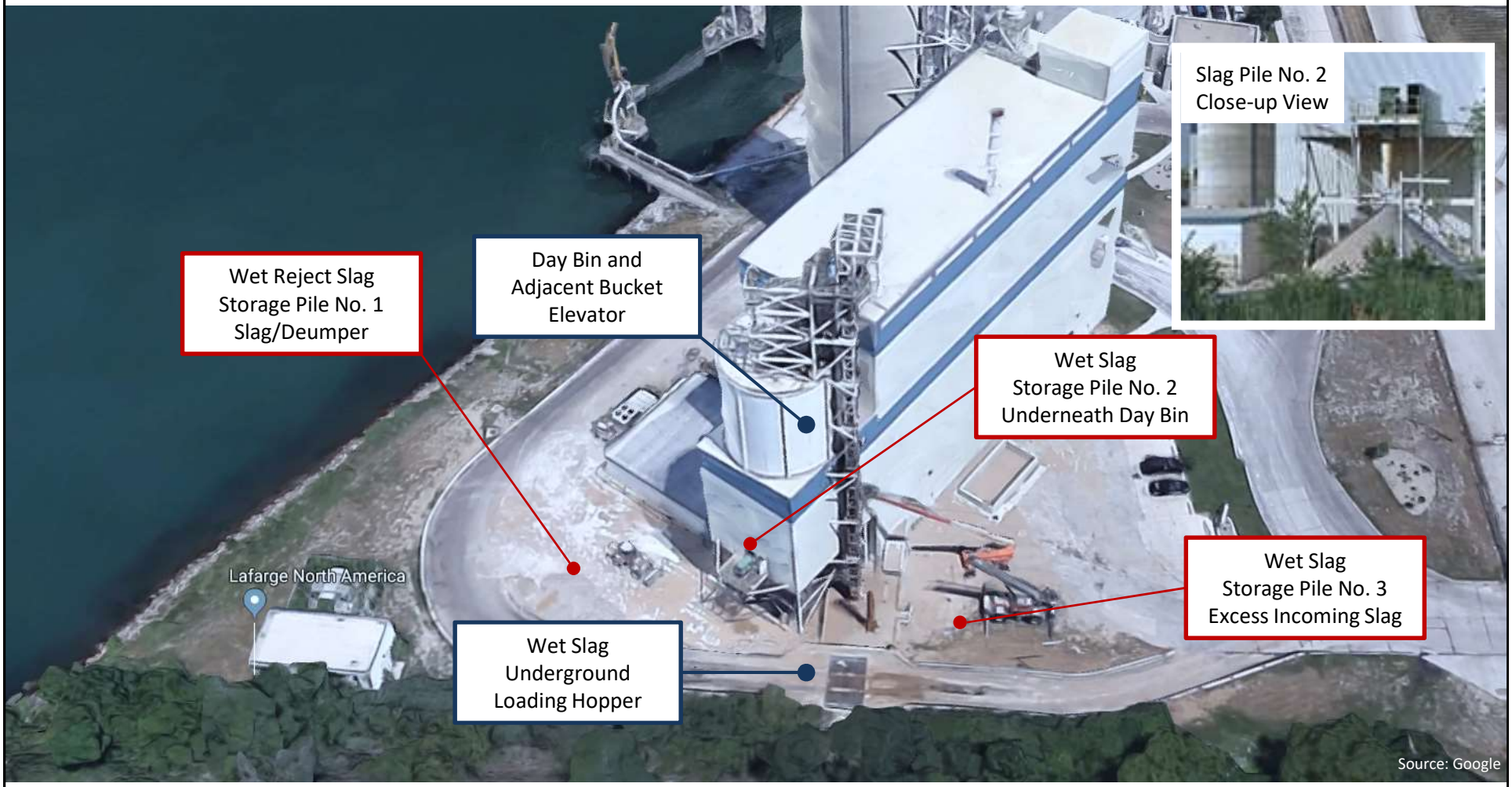

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FIGURE 8

SLAG PILES No. 1, 2, and 3

Approved By: MGB	Figure 8
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	10 of 11
Title: Fugitive Dust Plan	

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FIGURE 9

FUGITIVE DUST SOURCES

Approved By: MGB	Figure 9
Date Approved: 3/22/2019	
Date Drawn: 3/22/2019	11 of 11
Title: Fugitive Dust Plan	

Layman, Robb

From: James OPOLONY <james.opolony@lafargeholcim.com>
Sent: Tuesday, January 14, 2020 2:07 PM
To: Barria, German
Cc: Alyssa Makridakis; Peter Kossis; Sprague, Jeff; Bernoteit, Bob
Subject: Re: [External] Re: Holcim (US), Inc. - ID #031600FHQ

Hello German,

The surge bin directs material into one of the two bins while the other offloads. Everything is moved pneumatically, so while one bin is loading, the other is offloading. The material from these bins can be directed to either the main silo or shipping vessels. Barges are loaded out of the main silo, primarily via gravity. There is a dust collector in the dense phase building near the surge bin and the K1 & K2 bins (what we call kettles), as shown on the diagrams I provided.

The only dust collectors with traditional "stacks" are in the mill building, and the stacks are visible in the provided picture. DC01 on the main silo has a small, screened exhaust vent approximately 2' by 2' in size. This vent is located on the top of the silo, but due to inclement weather I was unable to a closer picture. 570/S08 is located in the dense phase building, and operates separately from DC01 on top of the main silo. 573/S11 is also separate, and is located near the dock by the barge loading equipment (see point 7 on slide 5 of the provided presentation). 574/S09 is separate as well, and can be see at point 8 on slide 5 of the presentation. DC01/S10 does provide dust collection for any material loaded into the main silo, either from the K1/K2 bins or from the vessels (P17).

I hope that helps answer your questions. If you need anything else, let me know.

Thanks,
Jim

On Tue, Jan 14, 2020 at 1:53 PM Barria, German <German.Barria@illinois.gov> wrote:

> Jim,
>
> The pictures were good, viewable, we still are uncertain about how the process of moving the NewCem (slag) from Surge Bin (P15A) through Bins (K1 & K2) to Main Silo (P23) and Loading NewCem to barge and shipping Vessels, as to where the emission points are , and are they dust collectors with exhaust screens or are there actual vents. It appears that DC01 has three pick-up points (570/S08, 573/S11, 574/S09, & top of P23 /S10).
>
> IT was not so clear from the pictures to see where DC01 exhaust. The diagram indicates that it is located in the duck, but it appears that there is also an exhaust stack on the top of Main distribution Silo P23.

German Barria

Enviromental Protection Specialist,

IEPA, Bureau of Air, Permit Section, FESOP/LOP Unit

Phone: 217-785-0767

Illinois Environmental Protection Agency

From: James OPOLONY <james.opolony@lafargeholcim.com>
Sent: Tuesday, January 14, 2020 7:59 AM
To: Barria, German <German.Barria@Illinois.gov>
Cc: Alyssa Makridakis <alyssa.makridakis@lafargeholcim.com>; Peter Kossis <peter.kossis@lafargeholcim.com>; Sprague, Jeff <Jeff.Sprague@Illinois.gov>; Bernoteit, Bob <Bob.Bernoteit@Illinois.gov>
Subject: Re: [External] Re: Holcim (US), Inc. - ID #031600FHQ

Should work this time, let me know if you have any further issues accessing the pictures.

On Mon, Jan 13, 2020 at 3:27 PM James OPOLONY <james.opolony@lafargeholcim.com> wrote:

> Files were too large to attach on one email, I'll see if I can change the sharing settings or send again.

On Mon, Jan 13, 2020, 3:21 PM Barria, German <German.Barria@illinois.gov> wrote:

> I wont be able to see the pictures since they are in your company network drive. See below:
>
> You might have to attach them differently.

German Barria

Enviromental Protection Specialist,

IEPA, Bureau of Air, Permit Section, FESOP/LOP Unit

Phone: 217-785-0767

From: James OPOLONY <james.opolony@lafargeholcim.com>
Sent: Monday, January 13, 2020 2:56 PM

To: Barria, German <German.Barria@Illinois.gov>; Alyssa Makridakis <alyssa.makridakis@lafargeholcim.com>
Cc: Peter Kossis <peter.kossis@lafargeholcim.com>; Sprague, Jeff <Jeff.Sprague@Illinois.gov>; Bernoteit, Bob <Bob.Bernoteit@Illinois.gov>
Subject: Re: [External] Re: Holcim (US), Inc. - ID #031600FHQ


Bucket Elevator (P03) and Day Bin (P04) .jpg


Hopper Belt (P02) with Truck Unloading Hopper (...


Main Distribution Silo (P23) .jpg


Truck Unloading Hopper (P01A) above ground .jpg


Truck Unloading Hopper (P01A) underground.jpg


Venting Stack S10 & Main Distrubution SIlo (P23...

Hello German,

I've attached some pictures, as well as the diagrams we submitted with our Fugitive Dust Plan, that I think will be helpful. P01-P04 is the process of moving the wet granulated slag from the truck into the storage silo we refer to as the Day Bin. There is no "stack" on the silo in the traditional sense, but small access doors do allow for some venting (this is referred to as a vent on the diagram provided). The material does indeed flow continuously until it arrives in the Day Bin, as you said.

The second emission unit you've inquired about refers to the system we use to transfer the finished cement. Once the wet granules are dried and ground in the mill process, the material ends in Silo 10 (P14). From here, the material moves via air slide into the surge bin (P15A) and then into the pipe (P21) running to the distribution silo (P23). The dust collector on this silo (DC01) has a small rectangular exhaust fan, listed as S10. This can be seen on slides 2 and 4 of the attached presentation.

If you'd like any additional information, diagrams, or pictures please let me know.

Thanks,

Jim

On Mon, Jan 13, 2020 at 11:24 AM James OPOLONY <james.opolony@lafargeholcim.com> wrote:

Hello German,

Thanks for sending me the list. We'll get to work and get back to you as soon as we can.

Thanks,
Jim

On Mon, Jan 13, 2020 at 11:21 AM Barria, German <German.Barria@illinois.gov> wrote:

Jim,

Per our phone conversation,

The emission points that we are wanting clarification are the following:

Truck Unloading Hopper (P01A) Venting to P02;

Hopper Belt (P02) Venting to P03;

Bucket Elevator (P03) Venting to P04;

Day Bin (P04) Venting to Stack 01;

It seems that there is a continuous flow of venting P01A to P02 to P03 to P04 and finally venting to stack 01, we would like you to provide us with a diagram, stack dimensions, and images of how that arrangement looks like.

The other emission unit that we would like the same sort of diagram and image will be the

Loading from Surge Bin (P15A/P21) to Main Distribution Silo (P23) Controlled by Dust Collector (DC01) Venting to Stack S10;

We would like this information as soon as possible. In the next couple of days if so.

I greatly appreciate your help with this matter.

Thank you,

German Barria

Enviromental Protection Specialist,

IEPA, Bureau of Air, Permit Section, FESOP/LOP Unit

Phone: 217-785-0767

From: Peter Kossis <peter.kossis@lafargeholcim.com>
Sent: Monday, January 13, 2020 10:51 AM
To: Barria, German <German.Barria@Illinois.gov>; James OPOLONY <james.opolony@lafargeholcim.com>
Subject: [External] Re: Holcim (US), Inc. - ID #031600FHQ

James Opolony

(847) 721-7753 (c)

(773) 646-3150 (o)

Pls call and Jim can help you with additional information.

On Mon, Jan 13, 2020 at 10:44 AM Peter Kossis <peter.kossis@lafargeholcim.com> wrote:

> Hello German:
>
> My mobile number is (312) 623-1658 - it should be on the emails.

Thx

Peter

On Mon, Jan 13, 2020 at 10:40 AM Barria, German <German.Barria@illinois.gov> wrote:

> Mr. Kossis,
>
> I'm contacting you in regard to the Holcim facility located at 2150 East 130th Street, Chicago, Cook County 60633,
>
> I try to call the couple of number that were in past emails when we were working on the FESOP for this location, but I wasn't able to get a hold of you.
>
> I would like to talk to you about a couple of emissions sources in the permit, and its related emissions. Please email when and the number that you can be reach at.
>
> Thank you.
>
> *German Barria*
>
> Enviromental Protection Specialis
>
> IEPA, Bureau of Air, Permit Section, FESOP/LOP Unit
>
> Phone: 217-785-0767
>
>

--

Peter Kossis

Plant Manager

Chicago Slag Operations

LafargeHolcim

(312) 623-1658 (C)

peter.kossis@lafargeholcim.com
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Lafarge East Chicago

3210 Watling Street

East Chicago, IN 46312

(219) 378-1193, ext 223 (O)

Lafarge South Chicago

2150 E 130th Street

Chicago, IL 60633

(773) 646-3186 (O)

"ZERO IS POSSIBLE"

--

Peter Kossis

Plant Manager

Chicago Slag Operations

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(773) 646-3186 (O)

"ZERO IS POSSIBLE"

--

James Opolony
Slag Production & Maintenance Manager

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--

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james.opolony@lafargeholcim.com
www.lafargeholcim.com

Layman, Robb

From: Sprague, Jeff
Sent: Thursday, January 16, 2020 7:10 AM
To: Bernoteit, Bob; Layman, Robb; German.Baria@Illinois.gov
Cc: Sprague, Jeff
Subject: FW: source inventory data
Attachments: Holcim_US.INP; Holcim_US.out; Holcim_US.sum

FYI (see below).

From: Sprague, Jeff
Sent: Wednesday, January 15, 2020 4:09 PM
To: John Pinion <jpinion@rka-inc.com>
Cc: Sprague, Jeff <Jeff.Sprague@Illinois.gov>
Subject: RE: source inventory data

John,

The basis for the lead (Pb) emission rates for the "Cement silo loading" and "Truck loading/unloading" slag processing emission sources at Holcim(US), Inc. are the SCC-specific, calculated values provided to USEPA for the 2017 NEI. The specific derivations are as follows:

Point 0001 - Lime addition process: Loading from surge bin (P15A and P21A) to main distribution silo (P23)

SCC = 30501107
Hours = 754 hr/yr
Operating rate = 500 tons processed/hr
Emission factor from WebFIRE = 7.4e-7 lb lead/ton material processed

Emissions = 500 x 754 x 7.4e-7 = 0.279 lb/yr

Point 0002 - Truck loading/unloading: Slag transfer from pile 3 to hopper

SCC = 30501107 (changed to 30510198 in 2019)
Hours = 765 hr/yr
Operating rate = 3000 tons processed/hr (note: reported 6,000,000 lb/hr but 300 tons/hr)
Emission factor from WebFIRE = 7.4e-7 lb lead/ton material processed

Emissions = 3000 x 765 x 7.4e-7 = 1.7 lb/yr

Additionally, I've investigated the location of these emission releases, revisited "stack" release parameters, and generated direction-specific building downwash inputs for these sources. The BPIP-PRIME input file and output files are attached. Updated and revised data for these sources are as follows (the exit temperatures are the same as previously):

Loading from surge bin to main distribution silo
"Stack" Height = 61.7728 meters
"Stack" Diameter = 0.6878 meter
Exit Velocity = 3.81 meters/second

Truck loading/unloading
"Stack" Height = 36.576 meters
"Stack" Diameter = 1.3757 meters
Exit Velocity = 0.9525 meter/second

Lastly, I've corrected the stack diameter and exit velocity for the #2 Kiln at American Zinc Recycling Corporation to reflect an enlargement of the topmost portion of the stack. The new values are as follows: Stack Diameter = 2.6416 meters; Exit Velocity = 0.3543 meter/second

Please incorporate the new data into your AERMOD modeling runs.

Best regards,

Jeff

Jeffrey Sprague
Modeling Unit, Manager
Air Quality Planning Section
Bureau of Air
Illinois Environmental Protection Agency

(217) 524-4692
Jeff.Sprague@Illinois.gov

From: John Pinion <jpinion@rka-inc.com>
Sent: Thursday, January 9, 2020 6:48 PM
To: Sprague, Jeff <Jeff.Sprague@Illinois.gov>
Subject: [External] source inventory data

RK & Associates, Inc.

Jeff,

I reviewed the source inventory for Holcim's cement terminal and prepared the summary in the attached Excel file. A copy of the facility FESOP is also attached.

It appears that the emission rates and the stack height (at least for the cement silo) are not consistent with what is in the facility's FESOP permit and what can be seen on Google Earth.

It appears that top of the filter on the roof of the cement silo is approximately 90 ft compared to 50 ft as identified in the inventory.

The FESOP permit does not include any metal emission limits for any source at the facility.

The cement silo emission rate in the inventory appears to be about 200 times greater that the calculated emission rate using the information in the FESOP permit (annual cement silo throughput x controlled Pb emission factor for silo loading and 5,840 hr/year) as summarized in the attached file.

Our contribution to the predicted concentration at the receptor that falls within Holcim's plant is zero.

If the Pb inventory data for this source is suspect (as it appears based on the information in the attached Excel file), we should consider removing this source from the Pb inventory.

I will call you in the morning to discuss your thoughts.

If you have any questions, please do not hesitate to contact me.

Regards,
John Pinion

RK & Associates, Inc.
2 South 631 Route 59, Suite B
Warrenville, Illinois 60555
Phone: 630-393-9000 x 208
Fax: 630-393-9111
Cell: 630-917-1455
E-mail: jpinion@rka-inc.com

Holcim_US.INP

```
'C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP'
'P'
'METERS'      1.0
'UTMY'        0
 6
'slagmill'     1            178.33
 4            36.576
452498.74     4612173.27
452484.82     4612184.44
452455.28     4612146.11
452469.02     4612135.25
'slag2'        1            181.6
 4            24.6126
452450.68     4612133.37
452460.76     4612125.21
452469.03     4612135.29
452458.57     4612143.48
'slag3'        1            178.34
 4            37.8968
452490.93     4612179.63
452485.33     4612172.37
452493.35     4612166.32
452498.77     4612173.3
'daysilo'     1            181.03
 32           36.576
452463.38     4612134.53
452463.31     4612135.28
452463.09     4612135.99
452462.74     4612136.65
452462.27     4612137.23
452461.69     4612137.7
452461.03     4612138.05
452460.32     4612138.27
452459.57     4612138.34
452458.83     4612138.27
452458.12     4612138.05
452457.46     4612137.7
452456.88     4612137.23
452456.41     4612136.65
452456.05     4612135.99
452455.84     4612135.28
452455.76     4612134.53
452455.84     4612133.79
452456.05     4612133.08
452456.41     4612132.42
452456.88     4612131.84
452457.46     4612131.37
452458.12     4612131.01
```

```
452458.83     4612130.8
452459.57     4612130.72
452460.32     4612130.8
452461.03     4612131.01
452461.69     4612131.37
452462.27     4612131.84
452462.74     4612132.42
452463.09     4612133.08
452463.31     4612133.79
'slagsilo'    1             178.29
 32           58.7248
452475.29     4612188.38
452475.15     4612189.74
452474.75     4612191.06
452474.11     4612192.27
452473.23     4612193.33
452472.17     4612194.21
452470.96     4612194.85
452469.65     4612195.25
452468.28     4612195.39
452466.91     4612195.25
452465.59     4612194.85
452464.38     4612194.21
452463.32     4612193.33
452462.45     4612192.27
452461.8      4612191.06
452461.4      4612189.74
452461.27     4612188.38
452461.4      4612187.01
452461.8      4612185.69
452462.45     4612184.48
452463.32     4612183.42
452464.38     4612182.55
452465.59     4612181.9
452466.91     4612181.5
452468.28     4612181.37
452469.65     4612181.5
452470.96     4612181.9
452472.17     4612182.55
452473.23     4612183.42
452474.11     4612184.48
452474.75     4612185.69
452475.15     4612187.01
'mainsilo'    1             178.32
 32           58.7248
452510.57     4612237.94
452510.3      4612240.67
452509.5      4612243.3
```

```
452508.21     4612245.73
452506.46     4612247.85
452504.34     4612249.6
452501.91     4612250.89
452499.28     4612251.69
452496.55     4612251.96
452493.81     4612251.69
452491.18     4612250.89
452488.76     4612249.6
452486.63     4612247.85
452484.89     4612245.73
452483.6      4612243.3
452482.8      4612240.67
452482.53     4612237.94
452482.8      4612235.2
452483.6      4612232.57
452484.89     4612230.15
452486.63     4612228.02
452488.76     4612226.28
452491.18     4612224.99
452493.81     4612224.19
452496.55     4612223.92
452499.28     4612224.19
452501.91     4612224.99
452504.34     4612226.28
452506.46     4612228.02
452508.21     4612230.15
452509.5      4612232.57
452510.3      4612235.2
 2
'0001        '              178.32         61.7728      452496.4     4612239.7
'0002        '              181.03         36.5760      452461.0     4612136.0
```

Holcim_US.out
C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP

BPIP (Dated: 04274)
DATE : 1/15/2020
TIME : 8:40:42
C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP

==========
BPIP PROCESSING INFORMATION:
==========

The P flag has been set for preparing downwash related data
for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using
a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in
UTM coordinates. BPIP will move the UTM origin to the first pair of
UTM coordinates read. The UTM coordinates of the new origin will
be subtracted from all the other UTM coordinates entered to form
this new local coordinate system.

Plant north is set to 0.00 degrees with respect to True North.

C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
0001	61.77	0.00	100.79	100.79
0002	36.58	2.71	98.07	98.07

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.
** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 1/15/2020
TIME : 8:40:42

C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP

BPIP output is in meters

```
    SO BUILDHGT 0001       58.72   58.72   58.72   58.72   58.72   58.72
    SO BUILDHGT 0001       58.72   58.72   58.72   58.72   58.72   58.72
    SO BUILDHGT 0001       58.72   58.72   58.72   58.72   58.72   58.72
    SO BUILDHGT 0001       58.72   58.72   58.72   58.72   58.72   58.72
    SO BUILDHGT 0001       58.72   58.72   58.72   58.72   58.72   58.72
    SO BUILDHGT 0001       58.72   58.72   58.72   58.72   58.72   58.72
    SO BUILDWID 0001       28.03   28.01   27.99   27.94   27.94   27.99
    SO BUILDWID 0001       28.01   28.03   28.04   28.03   28.01   27.99
    SO BUILDWID 0001       27.94   27.94   27.99   28.01   28.03   28.04
    SO BUILDWID 0001       28.03   28.01   27.99   27.94   27.94   27.99
    SO BUILDWID 0001       28.01   28.03   28.04   28.03   28.01   27.99
    SO BUILDWID 0001       27.94   27.94   27.99   28.01   28.03   28.04
    SO BUILDLEN 0001       28.03   28.01   27.99   27.94   27.94   27.99
    SO BUILDLEN 0001       28.01   28.03   28.04   28.03   28.01   27.99
    SO BUILDLEN 0001       27.94   27.94   27.99   28.01   28.03   28.04
    SO BUILDLEN 0001       28.03   28.01   27.99   27.94   27.94   27.99
    SO BUILDLEN 0001       28.01   28.03   28.04   28.03   28.01   27.99
    SO BUILDLEN 0001       27.94   27.94   27.99   28.01   28.03   28.04
    SO XBADJ    0001      -15.72  -15.61  -15.44  -15.23  -14.99  -14.74
    SO XBADJ    0001      -14.47  -14.17  -13.87  -13.56  -13.26  -12.98
    SO XBADJ    0001      -12.72  -12.52  -12.39  -12.30  -12.26  -12.26
    SO XBADJ    0001      -12.31  -12.40  -12.54  -12.71  -12.95  -13.24
    SO XBADJ    0001      -13.54  -13.86  -14.17  -14.47  -14.75  -15.00
    SO XBADJ    0001      -15.21  -15.41  -15.59  -15.71  -15.77  -15.78
    SO YBADJ    0001       -0.45   -0.74   -1.01   -1.25   -1.45   -1.60
    SO YBADJ    0001       -1.70   -1.76   -1.76   -1.71   -1.60   -1.45
    SO YBADJ    0001       -1.26   -1.02   -0.75   -0.46   -0.16    0.15
    SO YBADJ    0001        0.45    0.74    1.01    1.25    1.45    1.60
    SO YBADJ    0001        1.70    1.76    1.76    1.71    1.60    1.45
```

Holcim_US.out

SO	YBADJ	0001	1.26	1.02	0.75	0.46	0.16	-0.15
SO	BUILDHGT	0002	36.58	36.58	36.58	36.58	36.58	36.58
SO	BUILDHGT	0002	36.58	36.58	36.58	36.58	36.58	36.58
SO	BUILDHGT	0002	36.58	36.58	36.58	36.58	36.58	36.58
SO	BUILDHGT	0002	58.72	58.72	58.72	36.58	36.58	36.58
SO	BUILDHGT	0002	36.58	36.58	36.58	36.58	36.58	36.58
SO	BUILDHGT	0002	36.58	36.58	36.58	36.58	36.58	36.58
SO	BUILDWID	0002	38.08	40.81	40.94	41.70	48.16	53.38
SO	BUILDWID	0002	42.07	48.57	53.72	57.34	59.34	59.64
SO	BUILDWID	0002	58.64	58.70	57.08	53.86	49.10	43.46
SO	BUILDWID	0002	28.03	28.01	27.99	41.70	48.16	53.38
SO	BUILDWID	0002	42.07	48.57	53.72	57.34	59.34	59.64
SO	BUILDWID	0002	58.64	58.70	57.08	53.86	49.10	43.46
SO	BUILDLEN	0002	57.34	64.38	61.78	58.69	58.74	57.12
SO	BUILDLEN	0002	53.86	49.10	43.46	38.08	31.55	24.06
SO	BUILDLEN	0002	19.52	27.53	34.70	42.07	48.57	53.72
SO	BUILDLEN	0002	28.03	28.01	27.99	58.69	58.74	57.12
SO	BUILDLEN	0002	53.86	49.10	43.46	38.08	31.55	24.06
SO	BUILDLEN	0002	19.52	27.53	34.70	42.07	48.57	53.72
SO	XBADJ	0002	-5.50	-5.67	-5.78	-5.84	-5.83	-5.77
SO	XBADJ	0002	-5.65	-5.47	-5.72	-7.39	-8.83	-10.01
SO	XBADJ	0002	-12.89	-21.80	-30.04	-37.37	-43.57	-48.44
SO	XBADJ	0002	-120.58	-121.95	-120.05	-52.85	-52.91	-51.36
SO	XBADJ	0002	-48.21	-43.64	-37.74	-30.69	-22.72	-14.05
SO	XBADJ	0002	-6.63	-5.73	-4.66	-4.70	-5.00	-5.28
SO	YBADJ	0002	-11.65	-2.33	6.41	14.22	18.35	22.03
SO	YBADJ	0002	16.34	19.28	21.58	23.17	24.00	24.04
SO	YBADJ	0002	23.49	23.52	22.78	21.28	19.09	16.01
SO	YBADJ	0002	17.31	-1.46	-20.18	-14.22	-18.35	-22.03
SO	YBADJ	0002	-16.34	-19.28	-21.58	-23.17	-24.00	-24.04
SO	YBADJ	0002	-23.49	-23.52	-22.78	-21.28	-19.09	-16.01

Holcim_US.sum
C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP

BPIP (Dated: 04274)
DATE : 1/15/2020
TIME : 8:40:42
C:\Users\Jeff.Sprague\bpipprime\Holcim_Cement_Terminal\Holcim_US.INP

==========
BPIP PROCESSING INFORMATION:
==========

The P flag has been set for preparing downwash related data
for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using
a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in
UTM coordinates. BPIP will move the UTM origin to the first pair of
UTM coordinates read. The UTM coordinates of the new origin will
be subtracted from all the other UTM coordinates entered to form
this new local coordinate system.

The new local coordinates will be displayed in parentheses just below
the UTM coordinates they represent.

Plant north is set to 0.00 degrees with respect to True North.

==========
INPUT SUMMARY:
==========

Number of buildings to be processed : 6

slagmill has 1 tier(s) with a base elevation of 178.33 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER COORDINATES X	Y
slagmill	1	1	36.58	4	452498.74	4612173.27 meters
					(0.00	0.00) meters
					452484.82	4612184.44 meters
					(-13.92	11.17) meters

Holcim_US.sum

						452455.28	4612146.11 meters
					(	-43.46	-27.16) meters
						452469.02	4612135.25 meters
					(	-29.72	-38.02) meters

slag2 has 1 tier(s) with a base elevation of 181.60 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER	COORDINATES X	Y
slag2	1	2	24.61	4			
						452450.68	4612133.37 meters
					(	-48.06	-39.90) meters
						452460.76	4612125.21 meters
					(	-37.98	-48.06) meters
						452469.03	4612135.29 meters
					(	-29.71	-37.98) meters
						452458.57	4612143.48 meters
					(	-40.17	-29.79) meters

slag3 has 1 tier(s) with a base elevation of 178.34 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER	COORDINATES X	Y
slag3	1	3	37.90	4			
						452490.93	4612179.63 meters
					(	-7.81	6.36) meters
						452485.33	4612172.37 meters
					(	-13.41	-0.90) meters
						452493.35	4612166.32 meters
					(	-5.39	-6.95) meters
						452498.77	4612173.30 meters
					(	0.03	0.03) meters

daysilo has 1 tier(s) with a base elevation of 181.03 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER	COORDINATES X	Y
daysilo	1	4	36.58	32			
						452463.38	4612134.53 meters
					(	-35.36	-38.74) meters
						452463.31	4612135.28 meters
					(	-35.43	-37.99) meters
						452463.09	4612135.99 meters
					(	-35.65	-37.28) meters
						452462.74	4612136.65 meters

Holcim_US.sum

(	-36.00	-36.62)	meters
	452462.27	4612137.23	meters
(	-36.47	-36.04)	meters
	452461.69	4612137.70	meters
(	-37.05	-35.57)	meters
	452461.03	4612138.05	meters
(	-37.71	-35.22)	meters
	452460.32	4612138.27	meters
(	-38.42	-35.00)	meters
	452459.57	4612138.34	meters
(	-39.17	-34.93)	meters
	452458.83	4612138.27	meters
(	-39.91	-35.00)	meters
	452458.12	4612138.05	meters
(	-40.62	-35.22)	meters
	452457.46	4612137.70	meters
(	-41.28	-35.57)	meters
	452456.88	4612137.23	meters
(	-41.86	-36.04)	meters
	452456.41	4612136.65	meters
(	-42.33	-36.62)	meters
	452456.05	4612135.99	meters
(	-42.69	-37.28)	meters
	452455.84	4612135.28	meters
(	-42.90	-37.99)	meters
	452455.76	4612134.53	meters
(	-42.98	-38.74)	meters
	452455.84	4612133.79	meters
(	-42.90	-39.48)	meters
	452456.05	4612133.08	meters
(	-42.69	-40.19)	meters
	452456.41	4612132.42	meters
(	-42.33	-40.85)	meters
	452456.88	4612131.84	meters
(	-41.86	-41.43)	meters
	452457.46	4612131.37	meters
(	-41.28	-41.90)	meters
	452458.12	4612131.01	meters
(	-40.62	-42.26)	meters
	452458.83	4612130.80	meters
(	-39.91	-42.47)	meters
	452459.57	4612130.72	meters
(	-39.17	-42.55)	meters
	452460.32	4612130.80	meters
(	-38.42	-42.47)	meters
	452461.03	4612131.01	meters
(	-37.71	-42.26)	meters
	452461.69	4612131.37	meters

Holcim_US.sum

(	-37.05	-41.90) meters
	452462.27	4612131.84 meters
(	-36.47	-41.43) meters
	452462.74	4612132.42 meters
(	-36.00	-40.85) meters
	452463.09	4612133.08 meters
(	-35.65	-40.19) meters
	452463.31	4612133.79 meters
(	-35.43	-39.48) meters

slagsilo has 1 tier(s) with a base elevation of 178.29 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER	COORDINATES X	Y
slagsilo	1	5	58.72	32			
						452475.29	4612188.38 meters
					(	-23.45	15.11) meters
						452475.15	4612189.74 meters
					(	-23.59	16.47) meters
						452474.75	4612191.06 meters
					(	-23.99	17.79) meters
						452474.11	4612192.27 meters
					(	-24.63	19.00) meters
						452473.23	4612193.33 meters
					(	-25.51	20.06) meters
						452472.17	4612194.21 meters
					(	-26.57	20.94) meters
						452470.96	4612194.85 meters
					(	-27.78	21.58) meters
						452469.65	4612195.25 meters
					(	-29.09	21.98) meters
						452468.28	4612195.39 meters
					(	-30.46	22.12) meters
						452466.91	4612195.25 meters
					(	-31.83	21.98) meters
						452465.59	4612194.85 meters
					(	-33.15	21.58) meters
						452464.38	4612194.21 meters
					(	-34.36	20.94) meters
						452463.32	4612193.33 meters
					(	-35.42	20.06) meters
						452462.45	4612192.27 meters
					(	-36.29	19.00) meters
						452461.80	4612191.06 meters
					(	-36.94	17.79) meters
						452461.40	4612189.74 meters
					(	-37.34	16.47) meters

Holcim_US.sum

	452461.27	4612188.38 meters
(	-37.47	15.11) meters
	452461.40	4612187.01 meters
(	-37.34	13.74) meters
	452461.80	4612185.69 meters
(	-36.94	12.42) meters
	452462.45	4612184.48 meters
(	-36.29	11.21) meters
	452463.32	4612183.42 meters
(	-35.42	10.15) meters
	452464.38	4612182.55 meters
(	-34.36	9.28) meters
	452465.59	4612181.90 meters
(	-33.15	8.63) meters
	452466.91	4612181.50 meters
(	-31.83	8.23) meters
	452468.28	4612181.37 meters
(	-30.46	8.10) meters
	452469.65	4612181.50 meters
(	-29.09	8.23) meters
	452470.96	4612181.90 meters
(	-27.78	8.63) meters
	452472.17	4612182.55 meters
(	-26.57	9.28) meters
	452473.23	4612183.42 meters
(	-25.51	10.15) meters
	452474.11	4612184.48 meters
(	-24.63	11.21) meters
	452474.75	4612185.69 meters
(	-23.99	12.42) meters
	452475.15	4612187.01 meters
(	-23.59	13.74) meters

mainsilo has 1 tier(s) with a base elevation of 178.32 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER X	COORDINATES Y
mainsilo	1	6	58.72	32		
					452510.57	4612237.94 meters
				(	11.83	64.67) meters
					452510.30	4612240.67 meters
				(	11.56	67.40) meters
					452509.50	4612243.30 meters
				(	10.76	70.03) meters
					452508.21	4612245.73 meters
				(	9.47	72.46) meters
					452506.46	4612247.85 meters

Holcim_US.sum

(	7.72	74.58) meters
	452504.34	4612249.60 meters
(	5.60	76.33) meters
	452501.91	4612250.89 meters
(	3.17	77.62) meters
	452499.28	4612251.69 meters
(	0.54	78.42) meters
	452496.55	4612251.96 meters
(	-2.19	78.69) meters
	452493.81	4612251.69 meters
(	-4.93	78.42) meters
	452491.18	4612250.89 meters
(	-7.56	77.62) meters
	452488.76	4612249.60 meters
(	-9.98	76.33) meters
	452486.63	4612247.85 meters
(	-12.11	74.58) meters
	452484.89	4612245.73 meters
(	-13.85	72.46) meters
	452483.60	4612243.30 meters
(	-15.14	70.03) meters
	452482.80	4612240.67 meters
(	-15.94	67.40) meters
	452482.53	4612237.94 meters
(	-16.21	64.67) meters
	452482.80	4612235.20 meters
(	-15.94	61.93) meters
	452483.60	4612232.57 meters
(	-15.14	59.30) meters
	452484.89	4612230.15 meters
(	-13.85	56.88) meters
	452486.63	4612228.02 meters
(	-12.11	54.75) meters
	452488.76	4612226.28 meters
(	-9.98	53.01) meters
	452491.18	4612224.99 meters
(	-7.56	51.72) meters
	452493.81	4612224.19 meters
(	-4.93	50.92) meters
	452496.55	4612223.92 meters
(	-2.19	50.65) meters
	452499.28	4612224.19 meters
(	0.54	50.92) meters
	452501.91	4612224.99 meters
(	3.17	51.72) meters
	452504.34	4612226.28 meters
(	5.60	53.01) meters
	452506.46	4612228.02 meters

Holcim_US.sum
(7.72 54.75) meters
452508.21 4612230.15 meters
(9.47 56.88) meters
452509.50 4612232.57 meters
(10.76 59.30) meters
452510.30 4612235.20 meters
(11.56 61.93) meters

Number of stacks to be processed : 2

STACK NAME	STACK BASE	STACK HEIGHT	STACK COORDINATES X	Y
0001	178.32	61.77 METERS	452496.40	4612239.70 meters
			(-2.34	66.43) meters
0002	181.03	36.58 METERS	452461.00	4612136.00 meters
			(-37.74	-37.27) meters

The following lists the stacks that have been identified
as being atop the noted building-tiers.

STACK NAME	NO.	BUILDING NAME	NO.	TIER NO.
0001	1	mainsilo	6	1
0002	2	slag2	2	1
0002	2	daysilo	4	1

Overall GEP Summary Table
(Units: meters)

StkNo: 1 Stk Name:0001 Stk Ht: 61.77 Prelim. GEP Stk.Ht: 100.79
GEP: BH: 58.72 PBW: 28.05 *Eqn1 Ht: 100.79
*adjusted for a Stack-Building elevation difference of 0.00
No. of Tiers affecting Stk: 1 Direction occurred: 123.75
Bldg-Tier nos. contributing to GEP: 6

StkNo: 2 Stk Name:0002 Stk Ht: 36.58 Prelim. GEP Stk.Ht: 98.07
GEP: BH: 58.72 PBW: 28.04 *Eqn1 Ht: 98.07
*adjusted for a Stack-Building elevation difference of 2.71
No. of Tiers affecting Stk: 1 Direction occurred: 192.00
Bldg-Tier nos. contributing to GEP: 6

Holcim_US.sum

Summary By Direction Table
(Units: meters)

Dominate stand alone tiers:

Drtcn: 10.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Single tier MAX: BH: 58.72 PBW: 28.03 PBL: 28.03 *Wake Effect Ht: 100.77
Relative Coordinates of Projected Width Mid-point: XADJ: -15.72 YADJ: -0.45

*adjusted for a Stack-Building elevation difference of 0.00
BldNo: 6 Bld Name:mainsilo TierNo: 1
StkNo: 2 Stk Name:0002 Stack Ht: 36.58
GEP: BH: 58.72 PBW: 28.04 *Equation 1 Ht: 98.07
Single tier MAX: BH: 36.58 PBW: 38.08 PBL: 51.19 *Wake Effect Ht: 88.74
Relative Coordinates of Projected Width Mid-point: XADJ: 0.65 YADJ: -11.65

*adjusted for a Stack-Building elevation difference of 2.70
BldNo: 1 Bld Name:slagmill TierNo: 1

Drtcn: 20.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Single tier MAX: BH: 58.72 PBW: 28.01 PBL: 28.01 *Wake Effect Ht: 100.74
Relative Coordinates of Projected Width Mid-point: XADJ: -15.61 YADJ: -0.74

*adjusted for a Stack-Building elevation difference of 0.00
BldNo: 6 Bld Name:mainsilo TierNo: 1
StkNo: 2 Stk Name:0002 Stack Ht: 36.58
GEP: BH: 58.72 PBW: 28.04 *Equation 1 Ht: 98.07
Single tier MAX: BH: 36.58 PBW: 31.55 PBL: 51.63 *Wake Effect Ht: 81.20
Relative Coordinates of Projected Width Mid-point: XADJ: 2.04 YADJ: -6.94

*adjusted for a Stack-Building elevation difference of 2.70
BldNo: 1 Bld Name:slagmill TierNo: 1

Drtcn: 30.00

```
 StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.44  YADJ:   -1.01

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  24.06  PBL:  50.50  *Wake Effect Ht:
69.96
     Relative Coordinates of Projected Width Mid-point: XADJ:    3.36  YADJ:   -2.02

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn:  40.00

 StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.23  YADJ:   -1.25

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  19.52  PBL:  48.74  *Wake Effect Ht:
63.15
     Relative Coordinates of Projected Width Mid-point: XADJ:    4.07  YADJ:    3.13

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn:  50.00

 StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.99  YADJ:   -1.45

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
```

```
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  27.53  PBL:  50.75  *Wake Effect Ht:
75.16
     Relative Coordinates of Projected Width Mid-point: XADJ:    2.12  YADJ:    8.03

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn:  60.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.74  YADJ:   -1.60

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  34.70  PBL:  51.22  *Wake Effect Ht:
85.93
     Relative Coordinates of Projected Width Mid-point: XADJ:    0.10  YADJ:   12.69

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn:  70.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
100.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.47  YADJ:   -1.70

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  40.82  PBL:  50.13  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -1.92  YADJ:   16.96

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn:  80.00
```

```
 StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
100.77
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.17  YADJ:   -1.76

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  45.70  PBL:  47.52  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -3.88  YADJ:   20.72

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn:  90.00

 StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.04  PBL:  28.04  *Wake Effect Ht:
100.78
     Relative Coordinates of Projected Width Mid-point: XADJ:  -13.87  YADJ:   -1.76

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  49.19  PBL:  43.46  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -5.72  YADJ:   23.85

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 100.00

 StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
100.77
     Relative Coordinates of Projected Width Mid-point: XADJ:  -13.56  YADJ:   -1.71

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
```

```
     Single tier MAX:  BH:  36.58  PBW:  51.19  PBL:  38.08  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -7.39  YADJ:   26.25

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 110.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
100.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -13.26  YADJ:   -1.60

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  51.63  PBL:  31.55  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -8.83  YADJ:   27.85

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 120.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.98  YADJ:   -1.45

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  50.50  PBL:  24.06  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -10.01  YADJ:   28.61

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 130.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
```

```
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.72  YADJ:   -1.26

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  48.74  PBL:  19.52  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.89  YADJ:   28.44

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 140.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.52  YADJ:   -1.02

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  50.75  PBL:  27.53  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -21.80  YADJ:   27.49

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 150.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.39  YADJ:   -0.75

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  51.22  PBL:  34.70  *Wake Effect Ht:
```

88.74
Relative Coordinates of Projected Width Mid-point: XADJ: -30.04 YADJ: 25.71

*adjusted for a Stack-Building elevation difference of 2.70
BldNo: 1 Bld Name:slagmill TierNo: 1

Drtcn: 160.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Single tier MAX: BH: 58.72 PBW: 28.01 PBL: 28.01 *Wake Effect Ht:
100.74
Relative Coordinates of Projected Width Mid-point: XADJ: -12.30 YADJ: -0.46

*adjusted for a Stack-Building elevation difference of 0.00
BldNo: 6 Bld Name:mainsilo TierNo: 1
StkNo: 2 Stk Name:0002 Stack Ht: 36.58
GEP: BH: 58.72 PBW: 28.04 *Equation 1 Ht: 98.07
Single tier MAX: BH: 36.58 PBW: 50.13 PBL: 40.82 *Wake Effect Ht:
88.74
Relative Coordinates of Projected Width Mid-point: XADJ: -37.37 YADJ: 23.15

*adjusted for a Stack-Building elevation difference of 2.70
BldNo: 1 Bld Name:slagmill TierNo: 1

Drtcn: 170.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Single tier MAX: BH: 58.72 PBW: 28.03 PBL: 28.03 *Wake Effect Ht:
100.77
Relative Coordinates of Projected Width Mid-point: XADJ: -12.26 YADJ: -0.16

*adjusted for a Stack-Building elevation difference of 0.00
BldNo: 6 Bld Name:mainsilo TierNo: 1
StkNo: 2 Stk Name:0002 Stack Ht: 36.58
GEP: BH: 58.72 PBW: 28.04 *Equation 1 Ht: 98.07
Single tier MAX: BH: 36.58 PBW: 47.52 PBL: 45.70 *Wake Effect Ht:
88.74
Relative Coordinates of Projected Width Mid-point: XADJ: -43.57 YADJ: 19.88

*adjusted for a Stack-Building elevation difference of 2.70
BldNo: 1 Bld Name:slagmill TierNo: 1

Drtcn: 180.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79

```
     Single tier MAX:  BH:  58.72  PBW:  28.04  PBL:  28.04  *Wake Effect Ht:
100.78
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.26  YADJ:    0.15

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  43.46  PBL:  49.19  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -48.44  YADJ:   16.01

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 190.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
100.77
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.31  YADJ:    0.45

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
98.06
     Relative Coordinates of Projected Width Mid-point: XADJ: -120.58  YADJ:   17.31

          *adjusted for a Stack-Building elevation difference of    2.71
                BldNo:  6  Bld Name:mainsilo  TierNo:  1

 Drtcn: 200.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
100.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.40  YADJ:    0.74

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
98.03
```

```
     Relative Coordinates of Projected Width Mid-point: XADJ: -121.95  YADJ:   -1.46

          *adjusted for a Stack-Building elevation difference of    2.71
                BldNo:  6  Bld Name:mainsilo  TierNo:  1

 Drtcn: 210.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.54  YADJ:    1.01

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
97.99
     Relative Coordinates of Projected Width Mid-point: XADJ: -120.05  YADJ:  -20.18

          *adjusted for a Stack-Building elevation difference of    2.71
                BldNo:  6  Bld Name:mainsilo  TierNo:  1

 Drtcn: 220.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.71  YADJ:    1.25

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  19.52  PBL:  48.74  *Wake Effect Ht:
63.15
     Relative Coordinates of Projected Width Mid-point: XADJ:  -52.81  YADJ:   -3.13

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 230.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
```

```
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -12.95  YADJ:    1.45

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  27.53  PBL:  50.75  *Wake Effect Ht:
75.16
     Relative Coordinates of Projected Width Mid-point: XADJ:  -52.87  YADJ:   -8.03

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 240.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -13.24  YADJ:    1.60

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  34.70  PBL:  51.22  *Wake Effect Ht:
85.93
     Relative Coordinates of Projected Width Mid-point: XADJ:  -51.32  YADJ:  -12.69

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 250.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
100.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -13.54  YADJ:    1.70

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  40.82  PBL:  50.13  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -48.21  YADJ:  -16.96
```

```
          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 260.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
100.77
     Relative Coordinates of Projected Width Mid-point: XADJ:  -13.86  YADJ:    1.76

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  45.70  PBL:  47.52  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -43.64  YADJ:  -20.72

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 270.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.04  PBL:  28.04  *Wake Effect Ht:
100.78
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.17  YADJ:    1.76

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  49.19  PBL:  43.46  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -37.74  YADJ:  -23.85

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 280.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
100.77
```

```
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.47  YADJ:    1.71

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  51.19  PBL:  38.08  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -30.69  YADJ:  -26.25

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 290.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
100.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.75  YADJ:    1.60

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  51.63  PBL:  31.55  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -22.72  YADJ:  -27.85

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 300.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.00  YADJ:    1.45

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  50.50  PBL:  24.06  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -14.05  YADJ:  -28.61
```

```
          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 310.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.21  YADJ:    1.26

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  48.74  PBL:  19.52  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -6.63  YADJ:  -28.44

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 320.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.94  PBL:  27.94  *Wake Effect Ht:
100.63
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.41  YADJ:    1.02

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  50.75  PBL:  27.53  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -5.73  YADJ:  -27.49

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 330.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  27.99  PBL:  27.99  *Wake Effect Ht:
100.70
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.59  YADJ:    0.75
```

```
          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  51.22  PBL:  34.70  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -4.66  YADJ:  -25.71

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 340.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.01  PBL:  28.01  *Wake Effect Ht:
100.74
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.71  YADJ:    0.46

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  50.13  PBL:  40.82  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -3.45  YADJ:  -23.15

          *adjusted for a Stack-Building elevation difference of    2.70
                BldNo:  1  Bld Name:slagmill  TierNo:  1

 Drtcn: 350.00

 StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                 GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     Single tier MAX:  BH:  58.72  PBW:  28.03  PBL:  28.03  *Wake Effect Ht:
100.77
     Relative Coordinates of Projected Width Mid-point: XADJ:  -15.77  YADJ:    0.16

          *adjusted for a Stack-Building elevation difference of    0.00
                BldNo:  6  Bld Name:mainsilo  TierNo:  1
 StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                 GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
     Single tier MAX:  BH:  36.58  PBW:  47.52  PBL:  45.70  *Wake Effect Ht:
88.74
     Relative Coordinates of Projected Width Mid-point: XADJ:   -2.13  YADJ:  -19.88

          *adjusted for a Stack-Building elevation difference of    2.70
```

Holcim_US.sum
BldNo: 1 Bld Name:slagmill TierNo: 1

Drtcn: 360.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Single tier MAX: BH: 58.72 PBW: 28.04 PBL: 28.04 *Wake Effect Ht: 100.78
Relative Coordinates of Projected Width Mid-point: XADJ: -15.78 YADJ: -0.15

*adjusted for a Stack-Building elevation difference of 0.00
BldNo: 6 Bld Name:mainsilo TierNo: 1
StkNo: 2 Stk Name:0002 Stack Ht: 36.58
GEP: BH: 58.72 PBW: 28.04 *Equation 1 Ht: 98.07
Single tier MAX: BH: 36.58 PBW: 43.46 PBL: 49.19 *Wake Effect Ht: 88.74
Relative Coordinates of Projected Width Mid-point: XADJ: -0.75 YADJ: -16.01

*adjusted for a Stack-Building elevation difference of 2.70
BldNo: 1 Bld Name:slagmill TierNo: 1

Dominant combined buildings:

Drtcn: 10.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Combined tier MAX: BH: 36.58 PBW: 38.08 PBL: 57.34 *WE Ht: 94.15
Relative Coordinates of Projected Width Mid-point: XADJ: -113.77 YADJ: 5.20

*adjusted for a Stack-Building elevation difference of -2.71
No. of Tiers affecting Stk: 2
Bldg-Tier nos. contributing to MAX: 4 1
StkNo: 2 Stk Name:0002 Stack Ht: 36.58
GEP: BH: 58.72 PBW: 28.04 *Equation 1 Ht: 98.07
Combined tier MAX: BH: 36.58 PBW: 38.08 PBL: 57.34 *WE Ht: 91.44
Relative Coordinates of Projected Width Mid-point: XADJ: -5.50 YADJ: -11.65

*adjusted for a Stack-Building elevation difference of 0.00
No. of Tiers affecting Stk: 2
Bldg-Tier nos. contributing to MAX: 4 1

Drtcn: 20.00

StkNo: 1 Stk Name:0001 Stack Ht: 61.77
GEP: BH: 58.72 PBW: 28.05 *Equation 1 Ht: 100.79
Combined tier MAX: BH: 36.58 PBW: 40.81 PBL: 64.38 *WE Ht: 91.45

```
    Relative Coordinates of Projected Width Mid-point: XADJ: -115.23  YADJ:   -4.53

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  40.81  PBL:  64.38  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.67  YADJ:   -2.33

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn:  30.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  40.94  PBL:  61.78  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ: -113.29  YADJ:  -14.78

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  40.94  PBL:  61.78  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.78  YADJ:    6.41

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn:  40.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  41.70  PBL:  58.69  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ: -108.03  YADJ:  -25.32

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  41.70  PBL:  58.69  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.84  YADJ:   14.22
```

```
         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn:  50.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  48.16  PBL:  58.74  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ:  -99.61  YADJ:  -38.34

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  48.16  PBL:  58.74  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.83  YADJ:   18.35

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn:  60.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  53.38  PBL:  57.12  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.77  YADJ:   22.03

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn:  70.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  42.07  PBL:  53.86  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.65  YADJ:   16.34

         *adjusted for a Stack-Building elevation difference of    0.00
```

```
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn:  80.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  48.57  PBL:  49.10  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.47  YADJ:   19.28

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn:  90.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  53.72  PBL:  43.46  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.72  YADJ:   21.58

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 100.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  57.34  PBL:  38.08  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -7.39  YADJ:   23.17

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 110.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
```

```
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  59.34  PBL:  31.55  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -8.83  YADJ:   24.00

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 120.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  59.64  PBL:  24.06  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -10.01  YADJ:   24.04

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 130.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  58.64  PBL:  19.52  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -12.89  YADJ:   23.49

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 140.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  58.70  PBL:  27.53  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -21.80  YADJ:   23.52
```

```
         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 150.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  57.08  PBL:  34.70  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -30.04  YADJ:   22.78

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 160.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  53.86  PBL:  42.07  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -37.37  YADJ:   21.28

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 170.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  49.10  PBL:  48.57  *WE Ht:   94.15
    Relative Coordinates of Projected Width Mid-point: XADJ:   52.41  YADJ:  -33.78

         *adjusted for a Stack-Building elevation difference of   -2.71
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  49.10  PBL:  48.57  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -43.57  YADJ:   19.09
```

```
         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 180.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  43.46  PBL:  53.72  *WE Ht:   94.15
    Relative Coordinates of Projected Width Mid-point: XADJ:   55.26  YADJ:  -19.39

         *adjusted for a Stack-Building elevation difference of   -2.71
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  43.46  PBL:  53.72  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -48.44  YADJ:   16.01

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 190.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  38.08  PBL:  57.34  *WE Ht:   94.15
    Relative Coordinates of Projected Width Mid-point: XADJ:   56.43  YADJ:   -5.20

         *adjusted for a Stack-Building elevation difference of   -2.71
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  38.08  PBL:  57.34  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -51.84  YADJ:   11.65

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 200.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  40.81  PBL:  64.38  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ:   50.85  YADJ:    4.53
```

```
         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  40.81  PBL:  64.38  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:  -58.71  YADJ:    2.33

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn: 210.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  40.94  PBL:  61.78  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ:   51.51  YADJ:   14.78

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  40.94  PBL:  61.78  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:  -56.00  YADJ:   -6.41

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn: 220.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  41.70  PBL:  58.69  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ:   49.34  YADJ:   25.32

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  41.70  PBL:  58.69  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:  -52.85  YADJ:  -14.22

         *adjusted for a Stack-Building elevation difference of    2.70
```

```
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn: 230.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  48.16  PBL:  58.74  *WE Ht:   91.45
    Relative Coordinates of Projected Width Mid-point: XADJ:   40.87  YADJ:   38.34

         *adjusted for a Stack-Building elevation difference of   -0.01
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  48.16  PBL:  58.74  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:  -52.91  YADJ:  -18.35

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn: 240.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  53.38  PBL:  57.12  *WE Ht:   88.74
    Relative Coordinates of Projected Width Mid-point: XADJ:  -51.36  YADJ:  -22.03

         *adjusted for a Stack-Building elevation difference of    2.70
 No. of Tiers affecting Stk:  4
  Bldg-Tier nos. contributing to MAX:   1   3   4   5

Drtcn: 250.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  42.07  PBL:  53.86  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -48.21  YADJ:  -16.34

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
```

```
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 260.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  48.57  PBL:  49.10  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -43.64  YADJ:  -19.28

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 270.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  53.72  PBL:  43.46  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -37.74  YADJ:  -21.58

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 280.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  57.34  PBL:  38.08  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -30.69  YADJ:  -23.17

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 290.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
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```
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  59.34  PBL:  31.55  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -22.72  YADJ:  -24.00

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 300.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  59.64  PBL:  24.06  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:  -14.05  YADJ:  -24.04

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 310.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  58.64  PBL:  19.52  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -6.63  YADJ:  -23.49

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 320.00

StkNo:  1  Stk Name:0001                              Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                              Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  58.70  PBL:  27.53  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.73  YADJ:  -23.52
```

```
         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 330.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  57.08  PBL:  34.70  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -4.66  YADJ:  -22.78

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 340.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
     No combined tiers affect this stack for this direction.
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  53.86  PBL:  42.07  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -4.70  YADJ:  -21.28

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 350.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
                GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  49.10  PBL:  48.57  *WE Ht:   94.15
    Relative Coordinates of Projected Width Mid-point: XADJ: -100.98  YADJ:   33.78

         *adjusted for a Stack-Building elevation difference of   -2.71
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
                GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  49.10  PBL:  48.57  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.00  YADJ:  -19.09

         *adjusted for a Stack-Building elevation difference of    0.00
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 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1

Drtcn: 360.00

StkNo:  1  Stk Name:0001                                Stack Ht:   61.77
               GEP:  BH:  58.72  PBW:  28.05   *Equation 1 Ht:  100.79
  Combined tier MAX:  BH:  36.58  PBW:  43.46  PBL:  53.72  *WE Ht:   94.15
    Relative Coordinates of Projected Width Mid-point: XADJ: -108.98  YADJ:   19.39

         *adjusted for a Stack-Building elevation difference of   -2.71
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1
StkNo:  2  Stk Name:0002                                Stack Ht:   36.58
               GEP:  BH:  58.72  PBW:  28.04   *Equation 1 Ht:   98.07
  Combined tier MAX:  BH:  36.58  PBW:  43.46  PBL:  53.72  *WE Ht:   91.44
    Relative Coordinates of Projected Width Mid-point: XADJ:   -5.28  YADJ:  -16.01

         *adjusted for a Stack-Building elevation difference of    0.00
 No. of Tiers affecting Stk:  2
  Bldg-Tier nos. contributing to MAX:   4   1
```

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19090021

RK
& Associates, Inc.

January 24, 2020

R17421-7.1

Mr. Jeff Sprague
Illinois Environmental Protection Agency - Bureau of Air
1021 North Grand Avenue East
Springfield, IL 62702

Air Dispersion Modeling Report for Assessment of Metal Emission Impacts
Proposed Scrap Metal Recycling Facility
General III, LLC – 11600 South Burley - Chicago, Illinois
Construction Permit Application 19090021; Site ID No.: 031600SFX

Dear Mr. Sprague:

Please find attached a copy of the air dispersion modeling report for assessment of metal emission impacts for the proposed General III, LLC (GIII) Scrap Metal Recycling Facility located in Cook County at 11600 South Burley Avenue in Chicago, Illinois.

A copy of all AERMOD input and output files are included on a CD ROM included in Appendix E of the attached report.

Two copies of the report are attached, one containing information claimed as Trade Secret and one with the claimed Trade Secret information redacted.

A separate letter providing GIII's justification for the Claim of Trade Secret information is included with this submittal.

If you have any questions or need any additional information, please don't hesitate to contact me at 630-393-9000 or by e-mail at jpinion@hotmail.com.

Yours very truly,
RK & Associates

cc: Mr. Bob Bernoteit – IEPA Bureau of Air – Springfield, Illinois – (Hard Copies) ✓
Mr. Jim Kallas – General III, LLC – Chicago, Illinois (via e-mail)

2 South 631 Route 59, Suite B
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General Iron
1909 N. Clifton Avenue | Chicago, IL 60614-4803 | 773-327-9600

January 24, 2020

VIA OVERNIGHT DELIVERY

Mr. Jeff Sprague
Illinois Environmental Protect Agency
Division of Air Pollution Control
PO Box 19506 - 1021 North Grand Avenue East
Springfield, IL 62794-9506

Justification for Claim of TRADE SECRET Information
Air Dispersion Modeling Report for Assessment of Metal Emission Impacts
General III, LLC – 11600 South Burley Avenue – Chicago, Illinois
Construction Permit Application 19090021; Site ID No.: 031600SFX

Mr. Sprague:

Please find attached two copies of the Air Dispersion Modeling Report for Assessment of Metal Emission Impacts (Report) from the proposed General III, LLC (GIII) scrap metal recycling facility at 11600 South Burley Avenue in Chicago, Illinois. The Report includes detailed equipment layout drawings for the proposed scrap metal recycling facility described in the above-referenced construction permit application.

GIII is claiming the detailed equipment layout drawings for the Ferrous Material Processing System (Figures A-1 and A-2 included in Appendix A of the attached Report) and the Non-Ferrous Material Processing System (Figures B-1 and B-2 included in Appendix B of the attached Report) as Trade Secret information as defined in 35 IAC 101.202 and Section 3.490 of the Illinois Environmental Protection Act [415 ILCS 5/3.490].

The above referenced drawings included in the attached Report are claimed as Trade Secret information in accordance with 35 IAC 130 and are clearly marked with the words "Trade Secret" in red letters on each page of the drawings (total of four pages). Two copies of the Report are attached to this claim, one including the clearly marked drawings claimed as Trade Secret and one copy with the drawings redacted noting that they have been claimed as Trade Secret information.

Pursuant to 35 IAC 130.203, GIII is providing the following information as its statement of justification for the claim of Trade Secret information. Each specific element, identified in 35 IAC 130.203(a) through (e), required for a statement of justification for a claim of Trade Secret claim is identified below.

§130.203(a) *A detailed description of the procedures used by the owner to safeguard the article from becoming available to persons other than those selected by the owner to have access thereto for limited purposes*;

The equipment layout drawings, prepared under a strict confidentiality agreement between GIII and a prospective equipment manufacturer, have only been provided to select GIII management personnel and outside consultants as required for preparation of facility permit applications and other information required for local governmental approval. This information is maintained on a password protected server at GIII with limited access. All equipment drawings produced to date have been labeled as confidential to protect this information and prevent its public dissemination.

§130.203(b) *A detailed statement identifying the persons or class of persons to whom the article has been disclosed*;

This information has only been disclosed to the top management of GIII and select outside consultants.

§130.203(c) *A certification that the owner has no knowledge that the article has ever been published or disseminated or has otherwise become a matter of general public knowledge*;

GIII hereby certifies that it has no knowledge that these identified articles claimed as trade secret information have been published or disseminated or have otherwise become a matter of general public information.

§130.203(d) *A detailed discussion of why the owner believes the article to be of competitive value; and*

The equipment drawings claimed as trade secret information were produced at great expense to GIII and represent months of intense effort by GIII and a prospective equipment manufacturer. The final design is a product of GIII's over 60 years of experience recycling scrap metal in the Chicago market and the considerable technological expertise of the prospective equipment manufacturer and represents a state-of-the-art recycling process that will maximize recovery and production of high value ferrous and non-ferrous metals in a sustainable and economic manner. GIII believes that the specific design and equipment layout will provide GIII with a significant competitive advantage over its competitors by providing increased metal recovery at reduced operating expense.

§130.203(e) *Any other information that will support the claim.*

The equipment layout drawings represent a process design that is unique to GIII and is not available in any market.

We believe that the above information is sufficient to justify a claim of trade secret for the equipment layout drawings described herein. If you believe that additional information is required to approve this designation, please contact Mr. Adam Labkon of GIII at 773-868-3491 (adamlabkon@general-iron.com).

Yours very truly,
General III, LLC

Adam Labkon /SK

Mr. Adam Labkon

cc: Ms. Ann Zwick – Freeborn & Peters – Chicago, Illinois

R 010122

SID: 70491

Illinois EPA FOIA Exemption Reference Sheet

Agency ID: 170002390446
Bureau ID: 031600SFX
Site Name: General III LLC
Site Address1: 11600 S Burley Ave
Site Address2:
Site City: Chicago
Media File Type: AIR
State: IL
Zip: 60617-

This record has been determined to be partially or wholly exempt from public disclosure

Exemption Type:

Portion Removed

Exempt Doc #: 3
Document Date: 1 /27/2020
Staff: JMR

Document Description: AIR DISPERSION MODELING REPORT FOR ASSESSMENT OF METAL EMISSION IMPACTS (TRADE SECRET COPY)

Category ID: 03M
Category Description: AIR PERMIT - CONSTRUCTION/JOINT
Exempt Type: Portion Removed
Permit ID: 19090021
Date of Determination: 3 /13/2020

TRADE SECRET INFORMATION - REDACTED
Air Dispersion Modeling Report for Assessment of Metal Emission Impacts

General III, LLC – Chicago, Illinois

January 24 2020

R17421-7.1

Prepared for:

General III, LLC
1909 North Clifton Avenue
Chicago, Illinois 60614
Attn: Mr. Jim Kallas

This Document Contains Redacted TRADE SECRET Information

Figures A-1, A-2, B-1, and B-3 Contain Trade Secret Information and have been Redacted from this Document.

Prepared by:

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Principal Engineer
RK & Associates, Inc.

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RK & Associates, Inc.

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Facility Location and Contact Information 2

2.0 EMISSION SOURCES 5

2.1 Shredder Emissions 5
2.2 Ferrous Material Processing 6
2.3 Non-Ferrous Material Processing 6
2.4 Vehicle Traffic 7
2.5 Metal Emission Rates for Emission Units Other Than the Metal Shredder 8

3.0 DISPERSION MODELING 11

3.1 Meteorological Data 11
3.2 Terrain Data 11
3.3 Ambient Air Boundaries 11
3.4 Receptor Network 11
3.5 Building Downwash 12
3.6 Lead Modeling 12
3.7 Manganese Modeling 13
3.8 Modeling Other Metals 16

4.0 MODELING RESULTS 19

4.1 Predicted Lead Impacts 19
4.2 Predicted Manganese Impacts 19
4.3 Predicted Impacts for Other Metals 20

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Table of Contents

TABLES

Table 2-1	Summary of Metal Concentrations in Material Deposition at GII	8
Table 3-1	Offsite Lead Sources Identified by IEPA	12
Table 3-2	Lead Background Concentrations	13
Table 3-3	Offsite Manganese Sources Identified by IEPA	14
Table 3-4	Manganese Background Concentrations	15
Table 3-5	NR 445 Standards for Other Metals	16
Table 4-1	Summary of Predicted Impacts for Lead	19
Table 4-2	Summary of Predicted Impacts for Manganese	20
Table 4-3	Comparison of Predicted Maximum Metal Impacts to Identified Standards	21
Table A-1a	Ferrous Material Processing– Metal Emissions in Active Hours	Appendix A
Table A-1b	Ferrous Material Processing – Metal Emissions in Inactive Hours	Appendix A
Table A-2	Ferrous Material Processing – Particulate Emissions	Appendix A
Table A-3	Ferrous Plant Stockpile – Particulate Emissions	Appendix A
Table A-4	Ferrous Material Processing – PM Emission Summary	Appendix A
Table B-1	Non-Ferrous Material Processing – Particulate Emissions	Appendix B
Table B-2	Non-Ferrous Plant Stockpile – Particulate Emissions	Appendix B
Table B-3	Non-Ferrous Material Processing – PM Emission Summary	Appendix B
Table B-4a	Non-Ferrous Material Processing – Metal Emissions in Active Hours	Appendix B
Table B-4b	Non-Ferrous Material Processing – Metal Emissions in Inactive Hours	Appendix B

FIGURES

Figure 1-1	Site Location Map	3
Figure 1-2	Facility Map	4
Figure A-1	Ferrous Processing System Flow Diagram TRADE SECRET Redacted	Appendix A
Figure A-2	Ferrous Processing System Layout TRADE SECRET Redacted	Appendix A
Figure B-1	Non-Ferrous Processing System Flow Diagram TRADE SECRET Redacted	Appendix B
Figure B-2	Non-Ferrous Processing System Layout TRADE SECRET Redacted	Appendix B
Figure C-1	Anticipated Traffic Routes	Appendix C

APPENDICES

Appendix A	Ferrous Material Processing Figures and Tables
Appendix B	Non-Ferrous Material Processing Figures and Tables
Appendix C	Vehicle Traffic Routes
Appendix D	Laboratory Analytical Report for GII Material Deposition Samples
Appendix E	Modeling Input and Output Files (CD ROM)

RK & Associates, Inc.

1.0 INTRODUCTION

General III, LLC (GIII), is proposing to construct and operate a new scrap metal recycling facility (Facility) in Cook County at 11600 South Burley Avenue in Chicago, Illinois. A Site Location Map and Facility Layout Map are presented in Figures 1-1 and 1-2.

GIII's proposed facility will be a state-of-the-art metal recycling facility located in the heart of an industrial district well buffered from residential properties. The proposed new metal shredder and material processing operations will utilize the latest technology to create a clean, efficient, and environmentally sensitive plant.

GIII will receive and shred mixed recyclables in various forms to produce uniform grades of ferrous and non-ferrous metals. Proposed scrap handling and processing activities include receiving, sorting, shredding, metal separation, and recovery of ferrous and non-ferrous metals.

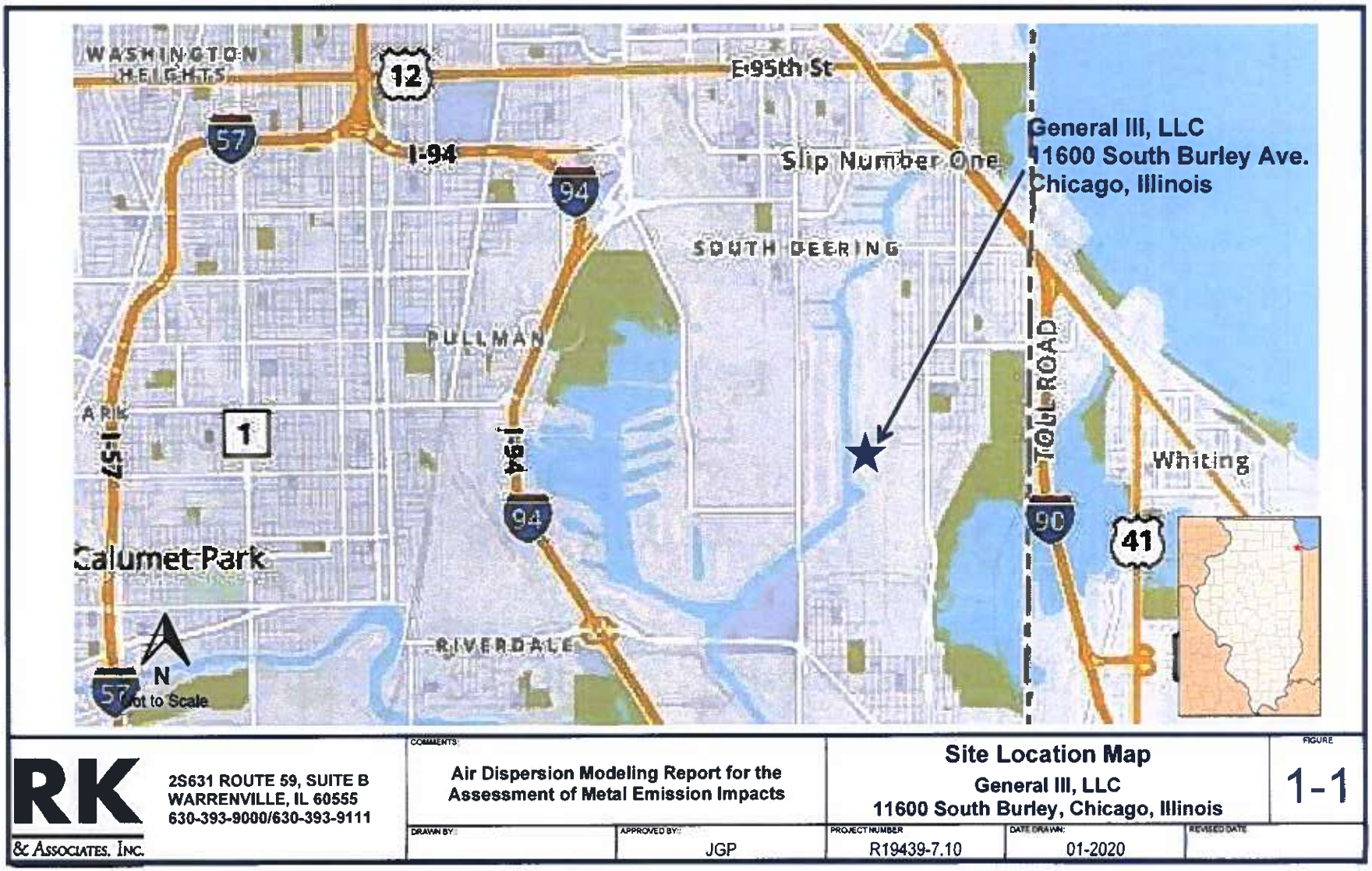
The proposed GIII facility will be a minor source with respect to federal and state nonattainment area new source review (NA NSR), prevention of significant deterioration (PSD) requirements and Title V permitting requirements. The proposed facility will also be an area source with respect to hazardous air pollutants (HAPs).

As part of the air permitting process, Illinois Environmental Protection Agency (IEPA) has requested that GIII perform an air dispersion modeling analysis for metal emissions from the proposed facility. Emission rates for the proposed GIII facility have been estimated based on data obtained from the existing GII, LLC (GII) metal recycling facility (formerly General Iron Industries, Inc.) located at 1909 N. Clifton Avenue in Chicago, Illinois.

With the exception of Lead (Pb), for which there is a National Ambient Air Quality Standard (NAAQS), there are no IEPA or USEPA regulations limiting emissions of other metals. In an effort to identify standards for metals, RKA reviewed the Wisconsin Department of Natural Resources (WDNR's) rule regulating the emissions of air toxic pollutants (including metals). WDNR's Air Toxics Rule (NR 445) sets health-based emission standards for about 550 air toxics, including metals. The standards in NR 445 are based on threshold limit values established by American Conference of Governmental Industrial Hygienists (ACGIH) and USEPA or California Air Resources Board risk factors. Wisconsin's NR 445 will be used to assess the potential off-site impacts from the estimated emissions of 17 metals as described in Section 3 of this report.

1.1 Facility Location and Contact Information

Business Name:	General III, LLC
Source Location:	11600 South Burley – Chicago, Illinois 60617 Hyde Park Township, Cook County Illinois
Latitude/Longitude	41.685201° N / -87.545847" W – Approximate Location of Front Gate
Office/Mailing Address:	1909 N. Clifton Avenue – Chicago, Illinois 60614
General III, LLC	Mr. Jim Kallas - Environmental Manager 847-508-9170 – jimkallas@general-iron.com
IEPA Site ID No.:	031600SFX
IEPA Draft Construction Permit:	19090021
SIC Code:	5093 – Scrap and Waste Materials
NAICS Code:	423930 – Recyclable Material Merchant Wholesalers
RKA Contact for Modeling Analysis	John Pinion - Principal Engineer 2S631 Route 59, Suite B - Warrenville, Illinois 60555 630-393-9000 - jpinion@rka-inc.com



RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS Air Dispersion Modeling Report for the Assessment of Metal Emission Impacts	Site Location Map General III, LLC 11600 South Burley, Chicago, Illinois		FIGURE 1-1
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER R19439-7.10	DATE DRAWN: 01-2020	REVISED DATE

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RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	Air Dispersion Modeling Report for the Assessment of Metal Emission Impacts	Facility Map General III, LLC 11600 South Burley, Chicago, IL		FIGURE 1-2
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER: R19439-7.10	DATE DRAWN: 01-2020	REVISED DATE

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2.0 EMISSION SOURCES

Emission sources, emission factors, and emission rates are described in detail in the Construction Permit Application 19010021 submitted to IEPA dated September 24, 2019 and as amended by updated emission estimates. The proposed GIII facility will consist of the following operations:

- Raw material receiving and handling;
- Hammermill shredder;
- Ferrous separation and material processing; and,
- Non-ferrous separation and material processing.

GIII emission sources will include:

- Metal shredder controlled by roll-media particulate filter, Regenerative Thermal Oxidizer (RTO), quench, and packed tower scrubber;
- Ferrous Material Processing System –conveyor transfer points, magnetic separators, stockpiles, and material loadout;
- Non-Ferrous Material Processing System - feed hopper, conveyor transfer points, magnetic separators, screens, vibratory feed tables, stockpiles and material loadout, and a baghouse for control of emission sources located in the fines processing building;
- Stockpiles (fugitive emissions); and,
- Vehicular emissions from Paved and Unpaved Areas (fugitive emissions)

2.1 Shredder Emissions

The existing metal shredder at GII is equipped with a roll-media particulate filter installed in 2014. A Regenerative Thermal Oxidizer (RTO), quench, and packed tower scrubber were added downstream of the roll-media particulate filter in 2019. The GII shredder emission control system (including an emission capture hood, cyclone, roll-media particulate filter, RTO, quench, and packed tower scrubber) will be moved from GII to the proposed GIII facility and will be used to control emissions from the new GIII metal shredder.

GIII shredder emissions will be discharged through the scrubber discharge stack and are modeled as a point source having the following parameters:

Stack Height:	41 ft
Stack Diameter:	6 ft
Exhaust Flow Rate:	73,500 acfm
Exhaust Temperature:	100°F

Metal emission rates from the proposed GIII shredder are estimated based upon the results of November 14, 2019, metal emission testing performed at the existing GII metal shredder controlled by the roll-media

particulate filter, RTO, quench and packed tower scrubber. Metal testing was performed pursuant to EPA Methods 1 through 4 and Method 29. Metal emission factors (in units of pounds of metal emitted per ton of shredder feed) were applied to the proposed shredder feed rate for the new GIII shredder. Metal emission rates for the proposed GIII shredder are presented in Appendix A, Table A-1a and A-1b.

2.2 Ferrous Material Processing

The Ferrous Material Processing System consists of multiple emission sources as described in the construction permit application. Emission sources include conveyors, magnetic separators, stockpiles and material loadout.

For the purpose of modeling, emission sources that are spatially close together are combined into separate volume sources. The Ferrous Material Processing System emission sources have been grouped into thirteen (13) volume sources, V-1 through V-13, as shown in Figure A-1 in Appendix A. A layout drawing of the Ferrous Material Processing System is presented in Figure A-2 in Appendix A. Figures A-1 and A-2 contain TRADE SECRET information.

Individual metal emission rates were estimated using the procedures described in Section 2.5 below. Table A-2, in Appendix A, identifies each emission unit, the emission unit identification number, and corresponding PM emissions.

Stockpile sources and their appropriate volume source group are shown in Table A-3. Emissions from stockpiles are different during the time piles are active and when piles are inactive. Table A-4 identifies the individual metal emission rates from material handling sources and stockpile sources. For the purpose of this modeling assessment, the stockpiles in the Ferrous Material Handling System are assumed to be active for 12 hours per day Monday through Saturday.

2.3 Non-Ferrous Material Processing

The Non-Ferrous Material Processing System consists of multiple emission sources as described in the construction permit application. Emission sources include feed hopper, conveyor transfer points, magnetic separators, screens, vibratory feed tables, stockpiles and material loadout. Emission sources have been grouped into six (6) volume sources, VN-1 through VN-6, as shown in Figure B-1 in Appendix B. A layout drawing of the Non-Ferrous Material Processing System is presented in Figure B-2 in Appendix B. Figures B-1 and B-2 contain TRADE SECRET information.

Individual metal emission rates were estimated using the procedures described in Section 2.5 below. Table B-1, in Appendix B, identifies each emission unit, the emission unit identification number, and corresponding PM emissions.

Stockpile sources and their appropriate volume source group are shown in Table B-2. Emissions from stockpiles are different during the time piles are active and when piles are inactive. Table B-3 contains combined emissions from material handling sources and stockpile sources. For the purpose of this modeling assessment, the stockpiles in the Non-Ferrous Material Handling System are assumed to be active for 24 hours per day Monday through Saturday.

Individual metal emission rates are shown in Table B-4a for active facility hours and in Table B-4b for inactive hours.

The Non-Ferrous Material Processing System includes a Fines Processing System that is located in a building. Emissions from the fines processing equipment are ducted to one of four identical dust collectors. Three of the dust collectors exhaust treated air back into the building and the fourth dust collector exhausts treated air to the outside atmosphere. Emissions from the single dust collector that exhausts to the atmosphere will be modeled as a point source with the following parameters:

Stack Height:	47 ft
Stack Diameter:	2 ft
Exhaust Flow Rate:	12,000 acfm
Exhaust Temperature:	Ambient

Metal emissions from the dust collector are shown in Table B-4 in Appendix B.

2.4 Vehicle Traffic

The vast majority of material received at the proposed facility will be delivered by semi-trailers and the remaining portion will enter the facility in pickup truck sized vehicles driven by peddlers. Vehicles will enter the facility through a controlled gate and travel over a weigh scale before being routed to a designated unloading area. Proposed vehicle routes are presented in Figure C-1 in Appendix C.

Roadways at the facility were divided into segments. Estimated PM emissions for each segment were calculated based on the number and type of vehicles on each segment each day. The estimated PM emission for segment were then combined with representative metals concentrations as described in Section 2.5 below. The resulting segment-specific metals emissions rates were then modeled as a line of adjacent volume sources distributed over each segment pursuant to applicable modeling guidelines.

2.5 Metal Emission Rates for Emission Units Other Than the Metal Shredder

There is no published data describing metal concentrations in various particulate emission streams associated with scrap recycling facilities. In order to develop representative metal emission factors for facility emission units and activities, samples of material deposition from five areas at the existing GII facility were collected, screened, and the resulting particulate matter analyzed for metals. The identified metal concentrations from the samples collected at GII were assigned to particulate matter emissions from corresponding areas and emission units proposed for GIII. A copy of the laboratory analytical report for these samples is presented in Appendix D.

A summary of the metal analyses described above is presented in Table 2-1 below.

Table 2-1 Summary of Metal Concentrations in Material Deposition[1] at GII

Metals (Method 29)	Ferrous Roadway mg/kg	ASR Roadway mg/kg	General Roadway mg/kg	Ferrous Transfer mg/kg	Non-Ferrous Transfer mg/kg
Lead	763	1,610	525	4,230	4,720
Manganese	960	1,030	729	2,210	1,760
Mercury	1.77	6.95	2.22	18.8	9.34
Nickel	125	463	106	304	311
Antimony	< 1.23	< 1.22	< 1.16	< 1.17	< 1.21
Arsenic	2.28	1.75	2.70	2.75	4.51
Beryllium	< 5.90	< 1.30	< 5.50	< 1.17	< 1.21
Cadmium	9.63	18.4	5.42	47.6	34.6
Chromium	220	991	173	402	425
Cobalt	15.7	38.5	10.7	52.0	55.8
Phosphorus	598	561	270	833	934
Selenium	< 1.23	< 1.22	< 1.16	< 1.17	< 1.21
Zinc	5,470	13,300	3,080	37,300	34,000
Barium	388	673	232	984	684
Copper	1,110	1,080	841	2,100	1,650
Silver	< 12.3	< 12.2	< 11.6	< 11.7	< 12.1
Thallium	< 1.23	< 1.22	< 1.16	< 1.17	< 1.21

1. Bulk material samples from designated areas were transported to Environmental Monitoring and Technologies, Inc. (EMT) and sieved to remove oversized material. The resulting materials were analyzed for metals using the analytical methods identified in USEPA Method 29 (Metals Emissions from Stationary Sources).

The following describes locations of the samples collected at GII and the areas and activities at GIII that each sample represents.

Sample Name	Sample Description
Ferrous Roadway	Sample collected at GII from the vehicle roadway adjacent to the shredded ferrous metal stockpile. Sample results represent anticipated metals content of fugitive particulate emissions from vehicular traffic near the shredded ferrous material stockpiles at GIII.
ASR Roadway	Sample collected at GII from the vehicle roadway adjacent to the ASR handling and stockpile area. Sample results represent anticipated metals content of fugitive particulate emissions from vehicular traffic near the bulk ASR handling and ASR stockpile areas at GIII.
General Roadway	Sample collected from the entrance to GII. Sample results represent anticipated metals content of fugitive particulate emissions from vehicular traffic between the facility entrance gate and the raw scrap unloading area at GIII.
Ferrous Transfer	Sample collected at GII from the pavement adjacent to ferrous material transfer conveyors. Sample results represent anticipated metals content of particulate emissions from the Ferrous Material Processing System from the outlet of the shredder to the ferrous material stockpiles and barge loading area at GIII.
Non-Ferrous Transfer	Sample collected at GII from fines deposited on horizontal surfaces (i.e. beams, pipes, etc.) inside the ASR processing building. Sample results represent anticipated metals content of particulate emissions from the Non-Ferrous Processing System at GIII.

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3.0 DISPERSION MODELING

Dispersion modeling was performed to predict the maximum impact from General III sources. AERMOD dispersion model Version 19191, AIRMET Version 19191, AERMINUTE Version 15272, AERMAP Version 18081, and AIRSURFACE Version 13016 was used in this modeling analysis.

3.1 Meteorological Data

Surface meteorological data used in the modeling was obtained from the National Weather Service at the Midway Airport Station for the years 2012 through 2016. Wind data was downloaded as 1-minute average ASOS data and processed using AERMINUTE. Upper air data for the same period was obtained from the coincident upper air sounding station at Davenport, Iowa. Surface and upper air data were preprocessed with AERMET using surface parameters from AIRSURFACE.

3.2 Terrain Data

Receptor elevations, source elevations, and building elevations were obtained by running AERMAP, using National Elevation Dataset (NED) files downloaded from USGS website.

3.3 Ambient Air Boundaries

There is security fencing on the north boundary and the northern part of the east boundary of the RMG industrial campus property that leads to a guard shack with gates (open when occupied or closed when unoccupied). The southern boundary of the RMG industrial campus property is a combination of fencing and berm, while the west boundary is the Calumet River. No Trespassing signs are posted around the boundary and no part of the boundary is adjacent to any public right away, which limits casual access to the site by the general public.

Based on the above, ambient air boundaries have been set at the RMG industrial campus property boundaries shown in Figure 1-2.

3.4 Receptor Network

A Cartesian receptor grid is placed around the property lines up to 5 km from the property line as follows:

- 50 m apart along the property line
- 100 m extending from the fence line to 2 km
- 500 m apart from 2 km to 5 km

3.5 Building Downwash

Downwash parameters were developed based on information provided by Reserve Management Group (RMG) for existing buildings and GIII for proposed buildings. Structure coordinates were obtained for existing buildings from Google Earth and for proposed buildings from GIII site plans. Building heights for existing buildings were obtained from direct measurements taken by RMG representatives and for the proposed building from facility site plans.

3.6 Lead Modeling

Lead modeling was performed to identify off site impacts for comparison to the National Ambient Air Quality Standard (NAAQS) for lead (Pb), which is 0.15 $\mu g/m^3$ on a rolling three-month average.

GIII Pb emission sources described in Section 2 of this report were modeled along with other, non-GIII offsite Pb emission sources identified by IEPA for inclusion in the assessment. A list of the offsite Pb emission sources and emission point characteristics identified by IEPA is presented in Table 3-1 below.

Table 3-1. Offsite Lead Emission Sources Identified by IEPA

Row #	ID Number	Stack Number	Stack ID	Stack Description	Lead Emissions (lb/hr)	Stack Diameter (ft)	Stack Height (ft)	Flow Rate (acfm)	Stack Temp (F)	UTM Zone	UTM Easting	UTM Northing
1	031600AAR	109	250881	4 Big foot air houses (19.4 million BTU/hr each)	0.00000335	1.76	37	3,000	442	16	453419	4612420
2	031600FGT	3	195877	Cement silo loading	0.000069	2.80	36	10,266	80	16	451809	4617532
3	031600FGT	6	195880	Mixer and/or truck loading	0.0002292	2.90	32	10,220	80	16	451809	4617532
4	031600FHQ	1	121260	Portland cement terminal: Cement silo loading	0.00037	2.25	203	3,000	70	16	452489	4612185
5	031600FHQ	2	121261	Portland cement terminal: Truck loading/unloading	0.00222	4.50	120	3,000	70	16	452489	4612185
6	031600GKE	9	222736	Backup generator EDG A	0.000277144	3.00	12	16,200	895	16	454708	4618584
7	031600GKE	10	222737	Backup generator EDG B	0.000277144	3.00	12	16,200	895	16	454708	4618571
8	031600GKE	11	222738	Backup generator EDG C	0.000277144	3.00	12	16,200	895	16	454708	4618559
9	031600AFV	5	118896	Kiln #1 & Kiln #2[a]	0.0465	8.67	102	4,114	181	16	453823	4615216
10	031600AFV	27	184788	Crude zinc oxide bin loadout[a] (bag collector 5)	0.000000	8.99	98	123,228	81	16	453823	4615216
11	031600AFV	30	184791	Feed handling system[a]	0.0018	1.51	75	4,101	82	16	453823	4615216
12	031600GWV	7	234365	Boiler	0.00019	3.77	74	19,740	416	16	454218	4613685

a. Above data for Site ID 031600AFV and Site ID 031600FHQ included updated emissions and stack characteristics provided by IEPA.

AERMOD was run with five years of meteorological data (See Section 3.1) to predict the first-high monthly average lead concentration. AERMOD post files were created and processed with LEADPOST, which converts the monthly average values to rolling three-month averages for direct comparison with the Lead NAAQS. LEADPOST identifies the receptor of maximum impact based on a three-month rolling average.

The background ambient Pb concentration was added to the predicted maximum rolling 3-month average concentration. The nearest statewide air monitoring site for Pb is located at Washington High School, AQS ID 17-031-0022. The three-month rolling mean for Pb measured at Washington High School during the past three years are shown in Table 3-2. The maximum three-month rolling mean from the latest three-year period was used as a background concentration.

Table 3-2 - Lead background concentrations

Year	Three-Month Rolling Mean Pb Concentration (ug/m^3)	Pb Design Value* (ug/m^3)
2018	0.01	0.02
2017	0.02	
2016	0.02	

* The design value is the maximum three-month rolling mean over the latest three-year period.

The maximum predicted rolling three-month average Pb concentration, plus a background concentration of 0.02 ug/m^3 was compared to the Pb NAAQS.

3.7 Manganese Modeling

There is no NAAQS for manganese. Modeling was performed to identify predicted offsite impacts for comparison to Wisconsin's NR 445 standard of 4.8 $\mu g/m^3$ on a 24-hour average basis and USEPA's chronic inhalation Minimal Risk Level (MRL) of 0.3 $\mu g/m^3$ on an annual average basis.

GIII manganese sources described in Section 2 of this protocol were modeled along with non- GIII offsite manganese sources identified by IEPA for inclusion in this assessment. The list of offsite manganese emission sources is presented in Table 3-3.

AERMOD was run for five years of meteorological data (see Section 3.1) to predict the first-high 24-hour average concentration (for comparison to the NR 445 standard) and the maximum annual concentration (for comparison the USEPA MRL).

Table 3-3 - Offsite Manganese Sources Identified by IEPA

ID Number	Stack Number	Stack Id	Stack Description	Mn Emissions (lb/hr)	Stack Diameter (ft)	Stack Height (ft)	Flow Rate (acfm)	Stack Temp (F)	UTM Zone	UTM Northing	UTM Easting
031036AAA	0003	115247	Boiler #3	0.00000152	2.00	25	2,752	300	16	4610011	454809
031036AAA	0004	115248	Boiler #2	0.000000589	2.00	25	2,752	300	16	4610011	454809
031036AAA	0002	115246	Boiler stack #1	0.000000589	3.50	95	2,600	220	16	4610011	454809
031600AAR	0046	118716	60 million BTU/hr boiler	0	3.30	117	19,319	300	16	4612420	453419
031600AAR	0055	118725	Air supply	0	2.30	55	8,000	225	16	4612420	453419
031600AAR	0056	118726	Air supply	0	1.00	45	2,000	245	16	4612420	453419
031600AAR	0088	156582	2 Natural gas fired hot water heaters	0.000001026	3.70	85	17,345	361	16	4612420	453419
031600AAR	0109	250881	4 Big foot air houses (19.4 million BTU/hr each)	0.000002546	1.76	37	3,000	442	16	4612420	453419
031600AAR	0110	250882	2 Hot water stations	0.000001026	1.84	37	3,300	430	16	4612420	453419
031600AAR	0111	250883	Paint line water heater	0.000000266	1.84	37	3,300	430	16	4612420	453419
031600AAR	0112	250884	Other natural gas combustion (curing ovens, oxidizers, space heaters)	0.000039976	1.92	39	4,860	258	16	4612420	453419
031600AAR	0114	250886	Emergency generator	7.4565E-06	2.02	36	12,960	692	16	4612420	453419
031600AFV	0005	118896	Kiln #2	0.033000178	6.40	52	4,115	181	16	4615216	453823
031600AFV	0005	118896	Kiln #2	0.032776655	6.40	52	4,115	181	16	4615216	453823
031600AFV	0035	184796	Engine	0	4.80	56	73,901	503	16	4615216	453823
031600ALC	0002	118971	Boiler	0.000009272	2.50	112	9,520	470	16	4613531	454085
031600AOL	0015	209976	Natural gas combustion	0.000002964	3.40	30	25,373	324	16	4617392	450256
031600BIY	0001	119521	Boiler #1	0.000001748	5.00	90	7,970	565	16	4613129	451612
031600BIY	0024	241900	Boiler #3	0.00000209	2.00	28	4,936	395	16	4613129	451612
031600BRA	0001	119770	Gas heater	0.00000171	2.50	35	700	350	16	4618594	454528
031600DPK	0001	120674	Silo loading	0.000505	2.20	32	12,424	113	16	4619060	454722
031600DQO	0021	173045	Centrifuge Boilers #1 and #2	1.38624E-06	1.83	46	2,050	450	16	4613049	450146
031600FDK	0002	121107	2 Steam generators	0.000001482	2.60	34	1	400	16	4617978	453577
031600FGT	0003	195877	Cement silo loading	0.0189375	2.80	36	10,266	80	16	4617532	451809
031600FGT	0006	195880	Mixer and/or truck loading	0.03672	2.90	32	10,220	80	16	4617532	451809
031600FGT	0007	195881	Natural gas combustion	0.00000342	2.70	50	8,859	341	16	4617532	451809
031600FHQ	0001	121260	Portland cement terminal: Cement silo loading	0.000101	5.30	50	3,000	70	16	4612185	452489
031600FHQ	0002	121261	Portland cement terminal: Truck loading/unloading	0.000606	7.92	20	3,000	70	16	4612185	452489
031600FHQ	0003	190764	Portland cement terminal: Barge unloader	0	2.80	36	10,266	80	16	4612185	452489
031600FHQ	0004	215253	Slag dryer	0	5.33	157	74,700	183	16	4612141	452468
031600FHQ	0004	215253	Slag dryer	0.000011704	5.33	157	74,700	183	16	4612141	452468
031600FLD	0017	188346	Product collector from shaft dryers (T51-HG1), Cyclone (T51-CN1), and Separator (T61-SR1)	6.65E-09	2.20	90	20,000	205	16	4617602	454330
031600FLD	0016	188345	Polymers (Y-Chutes, top of T61-RP2 bin and T61-RP2), and Aux. dryers (T71-HG2 and T71-HG7)	1.672E-09	2.20	90	3,336	205	16	4617602	454330
031600FWM	0023	233161	Natural gas combustion	0.000005852	3.40	58	15,060	436	16	4613979	453740
031600GFX	0003	193349	Natural gas combustion	0.000006194	2.47	49	9,240	331	16	4617336	450418
031600GHA	0001	219682	Turbine CT-01	0.106666	20.00	90	1,658,000	997	16	4614792	453654
031600GHA	0001	219682	Turbine CT-01	0	20.00	90	1,658,000	997	16	4614792	453654
031600GHA	0003	222391	Turbine CT-02	0.10025	20.00	90	1,658,000	997	16	4614792	453697
031600GHA	0003	222391	Turbine CT-02	0	20.00	90	1,658,000	997	16	4614792	453697
031600GHV	0005	189629	2 Boilers	0.000005434	1.50	35	4,700	330	16	4612395	452774
031600GHV	0005	189629	2 Boilers	0.000004712	1.50	35	4,700	330	16	4612395	452774
031600GKE	0001	219577	Turbine CTG-5	0.0429471	12.14	84	611,000	1050	16	4618643	454621
031600GKE	0009	222736	Backup generator EDG A	0.01563884	3.00	12	16,200	895	16	4618584	454708
031600GKE	0010	222737	Backup generator EDG B	0.01563884	3.00	12	16,200	895	16	4618571	454708
031600GKE	0011	222738	Backup generator EDG C	0.01563884	3.00	12	16,200	895	16	4618559	454708
031600GKE	0002	219591	Turbine CTG-6	0.04244986	12.14	84	611,000	1050	16	4618616	454621
031600GKE	0003	219592	Turbine CTG-7	0.04277066	12.14	84	611,000	1050	16	4618590	454621
031600GKE	0004	219593	Turbine CTG-8	0.04341226	12.14	84	611,000	1050	16	4618564	454621
031600GKE	0005	219594	Turbine CTG-9	0.04197668	12.14	84	611,000	1050	16	4618643	454672
031600GKE	0006	219595	Turbine CTG-10	0.0420248	12.14	84	611,000	1050	16	4618617	454672
031600GKE	0007	219596	Turbine CTG-11	0.04220926	12.14	84	611,000	1050	16	4618590	454672
031600GKE	0008	219597	Turbine CTG-12	0.04207292	12.14	84	611,000	1050	16	4618564	454672
031600GKU	0001	209195	Combined boilers stack	0.00000494	3.00	30	5,150	350	16	4617728	451623
031600GWV	0007	234365	Boiler	0.000127848	3.78	74	19,740	416	16	4613685	454218

The background ambient manganese concentrations were added to the modeled results for comparison with identified 24-hour and annual standards. The nearest statewide air monitoring site for manganese is located at Washington High School, AQS ID 17-031-0022. The maximum 24-hour and annual manganese concentrations measured at Washington High School during the past three years are shown in Table 3-4. The maximum 24-hour concentration among the last three years is 0.370 $\mu g/m^3$, which was used as a the 24-hour background concentration. The maximum annual average among the three years is 0.070 $\mu g/m^3$, which was used as the annual background concentration.

Table 3-4. Manganese Background Concentrations

Year	Measured 1st High 24-Hour Mn Concentration ($\mu g/m^3$)	Maximum 24-Hour Mn Concentration used as Background ($\mu g/m^3$)	Measured Annual Mean Mn Concentrations ($\mu g/m^3$)	Maximum Annual Mean Mn Concentration Used as Background ($\mu g/m^3$)
2018	0.197	0.370	0.048	0.07
2017	0.235		0.070	
2016	0.370		0.068	

3.8 Modeling Other Metals

There are no NAAQS for other metals. Wisconsin's Air Toxics Rule (NR 445) sets health-based emission standards. The metal impacts predicted by this modeling analysis are compared to the NR 445 standards.

Table 3-5 includes a list of the other metals and their corresponding NR 445 limits.

Table 3-5. NR 445 Standards for Other metals

Metal	NR445 Standard		ATSDR Minimal Risk Level[3] Annual (ug/m^3)	NAAQS 3-Month Rolling Average Value (ug/m^3)	USEPA's IRIS Database Unit Risk Factor	
	24-hr (ug/m^3)	Annual (ug/m^3)			(ug/m^3)	Source
Antimony	12.00	NA	0.30			
Arsenic	NA	Carcinogen			0.00430	USEPA IRIS
Barium	12.00	NA				
Beryllium		Carcinogen			0.00240	USEPA IRIS
		0.02				
Cadmium	NA	Carcinogen	0.01		0.00180	USEPA IRIS
Chromium[1]	12.00	NA				
Cobalt	0.48	NA	0.10			
Copper	24.00	NA				
Lead	NA	NA		0.15		
Manganese	4.80	NA	0.30			
Nickel	NA	Carcinogen	0.09		0.00026	CARB
Phosphorus	2.43	NA				
Selenium	4.80	NA				
Silver[2]	NA	Na				
Thallium	2.40	NA				
Zinc[2]	NA	NA				
Mercury	0.60	0.30	0.20			

1. Chromium (metal) and compounds other than Chromium VI.
2. NR 445does not identify standards for Silver and zinc compounds and no inhalation RfC is reported in the EPA Integrated Risk Information System (IRIS).
3. Chronic-duration inhalation exposure ≥ 1 year.

For other metals, AERMOD was run only with GIII sources described in Section 2 using five years of meteorological data (see Section 3.1).

For non-carcinogenic metals, the predicted first-high 24-hour average is compared to the NR 445 24-hour limit. For beryllium and mercury, the predicted maximum annual concentration is compared to the NR 445 annual limit. There is no NR 445 limit for silver and zinc and there is no inhalation exposure dose reported on the Integrated Risk Information System (IRIS). The predicted 24-hour average and predicted annual concentration for these two metals are reported but not compared to any limits.

Pursuant to NR 445.08(2)(c), emissions of carcinogenic air contaminants having a unit risk factor established by either the EPA or the California Air Resources Board, shall not result in an ambient air concentration off the source property corresponding to an inhalation impact (or risk) greater than 1 in 1,000,000 (1×10^{-6}).

The inhalation impact is determined by the following equation:

Inhalation impact = (Inhalation impact concentration annual average) x (Unit risk factor)

where:

the inhalation impact concentration is the annual average concentration of a contaminant in ($\mu g/m^3$); and,

the unit risk factor for the contaminant is the unit risk factor value established by either EPA or the California Air Resources Board and is expressed in $(\mu g/m^3)^{-1}$.

The predicted maximum annual concentrations are multiplied by the compounding unit risk factor. The result is then compared to a standard of 1 in 1,000,000.

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4.0 MODELING RESULTS

The results of this modeling assessment demonstrate that the predicted worst case off-site ambient impacts are below the identified standards.

4.1 Predicted Lead Impacts

Modeling was performed using the proposed Pb emission rates for GIII, as well as Pb emissions from other sources identified in IEPA's Pb emissions inventory data (see Section 3.7; Table 3-1).

IEPA provided updated allowable Pb emission rates, stack characteristics, and site-specific building downwash parameters for two of the background sources identified in the Agency's inventory (Site ID No. 031600GKE and 013600FHQ). The Agency identified the updated information from recent facility compliance activities (i.e., permitting and emission testing) and physical site data from the recent statewide modeling of sulfur dioxide.

Table 4-1 – Summary of Predicted Impacts for Lead

Pollutant	Maximum 3-Month Rolling Average Period	Predicted Monthly Average ($\mu g/m^3$)	Predicted Maximum 3-Month Rolling Average ($\mu g/m^3$)	Design Value (Background) ($\mu g/m^3$)	Total Predicted 3-Month Rolling Average (w/Background) ($\mu g/m^3$)	East (X) (m)	North (Y) (m)
Lead	Feb-16	0.0591	0.0678	0.0200	0.0878	452500	4612200
	Mar-16	0.0679				452500	4612200
	Apr-16	0.0764				452500	4612200

Comparison of Modeling Results to NAAQS Standard for Lead

Parameter	Units	3 Month Rolling Average
Pb NAAQS Standard (3-Month Rolling Avg)	ug/m^3	0.15
Maximum Predicted Pb Impact	ug/m^3	0.0878
Predicted Impact Meets Standard	Yes/No	Yes

4.2 Predicted Manganese Impacts

Modeling was performed using estimated Mn emission for GIII as well as Mn emissions from other emission sources identified by IEPA (see Section 3.7; Table 3-3).

The maximum predicted 24 hour and annual impacts (ug/m^3) for manganese are presented in Table 4-2 below. These data show that the maximum predicted impact is well below the identified 24 hour and annual standard for manganese.

Table 4-2 – Summary of Predicted Impacts for Manganese

Pollutant	Averaging Period	Year	AERMOD Predicted Conc. ($\mu g/m^3$)	Background Conc. ($\mu g/m^3$)	Total Predicted Conc. ($\mu g/m^3$)	East (X) (m)	North (Y) (m)	Time yy/mm/dd/hh
Mn	24-HR	2012	0.618	0.370	0.988	452500	4612200	12081524
		2013	**0.786**		**1.156**	452500	4612200	13090724
		2014	0.618		0.988	452500	4612200	14092024
		2015	0.724		1.094	452500	4612200	15090724
		2016	0.694		1.064	452500	4612200	16082724
	ANNUAL	2012	0.102	0.070	0.172	452500	4612200	1 YEARS
		2013	0.102		0.172	452500	4612200	1 YEARS
		2014	0.104		0.174	452500	4612200	1 YEARS
		2015	**0.113**		**0.183**	452500	4612200	1 YEARS
		2016	0.102		0.172	452500	4612200	1 YEARS

Comparison of Modeled Results to Identified Standards

Parameter	Units	24-hr Value	Annual Value
NR445 Standard	$\mu g/m^3$	4.80	0.30
ATSDR Minimal Risk Level	$\mu g/m^3$	NA	0.30
Total Predicted Impact	$\mu g/m^3$	1.156	0.183
Impact Meets Standard	Yes/No	**Yes**	**Yes**

4.3 Predicted Impacts for Other Metals

Modeling for other metals was performed using the proposed metal emissions for the identified GIII metal emission sources.

The maximum predicted 24-hour and annual impacts (ug/m^3) for other metals is presented in Table 4-3 below. Comparison of the maximum predicted 24 hour and annual impacts are compared to corresponding standards in Table 4-4. These data show that the maximum predicted impacts for each of the other metals modeled are well below the identified standards.

Table 4-3 - Comparison of Predicted Maximum Metal Impacts to Identified Standards

Pollutant	Averaging Period	Met Data Year	AERMOD Maximum Predicted Conc. ($\mu g/m^3$)	Identified Standard and Source (Pass/Fail)	East (X) (m)	North (Y) (m)	Elevation (m)	Time yy/mm/dd/hh
Antimony	24-HR	2012	0.00088	12.00 ug/m3 NR445 Pass	454209	4615133	178.19	12101624
		2013	**0.00109**		454089	4614966	176.92	13011024
		2014	0.00097		454209	4615133	178.19	14111024
		2015	0.00100		454126	4615088	178.19	15111724
		2016	0.00090		454089	4614966	176.92	16081524
	ANNUAL	2012	**0.00007**	0.30 ug/m3 ATSDR MRL Pass	454340	4615247	178.19	1 YEARS
		2013	**0.00007**		454596	4615041	178.19	1 YEARS
		2014	**0.00007**		454596	4615041	178.19	1 YEARS
		2015	0.00006		454377	4615267	178.19	1 YEARS
		2016	0.00006		454596	4615041	178.19	1 YEARS
Arsenic	24-HR	2012	0.00056	No Standard Identified	454596	4615041	178.19	12020224
		2013	**0.00065**		454596	4615041	178.19	13011524
		2014	**0.00065**		454600	4615000	178.19	14010824
		2015	0.00044		454596	4615041	178.19	15123024
		2016	0.00048		454596	4615041	178.19	16012024
	ANNUAL	2012	0.00008	Unit Risk Factor 0.0043 Inhalation Impact[a] 3.87E-07 Pass	454596	4615041	178.19	1 YEARS
		2013	**0.00009**		454596	4615041	178.19	1 YEARS
		2014	**0.00009**		454596	4615041	178.19	1 YEARS
		2015	0.00008		454596	4615041	178.19	1 YEARS
		2016	**0.00009**		454596	4615041	178.19	1 YEARS
Barium	24-HR	2012	0.05583	12.00 ug/m3 NR445 Pass	454099	4614767	178.14	12012624
		2013	0.06609		454099	4614767	178.14	13122124
		2014	0.06250		454099	4614767	178.14	14020424
		2015	**0.06909**		454099	4614767	178.14	15122524
		2016	0.04944		454000	4614800	175.37	16022324
	ANNUAL	2012	**0.00857**	No Standard Identified	454099	4614767	178.14	1 YEARS
		2013	0.00769		454596	4615041	178.19	1 YEARS
		2014	0.00781		454596	4615041	178.19	1 YEARS
		2015	0.00830		454099	4614767	178.14	1 YEARS
		2016	0.00834		454099	4614767	178.14	1 YEARS

Table 4-3 - Comparison of Predicted Maximum Metal Impacts to Identified Standards (cont'd)

Pollutant	Averaging Period	Met Data Year	AERMOD Maximum Predicted Conc. (µg/m³)	Identified Standard and Source (Pass/Fail)	East (X) (m)	North (Y) (m)	Elevation (m)	Time yy/mm/dd/hh
Beryllium	24-HR	2012	0.00105	No Standard Identified	454600	4615000	178.19	12010724
		2013	0.00122		454596	4615041	178.19	13011524
		2014	0.00131		454600	4615000	178.19	14010824
		2015	0.00080		454596	4615041	178.19	15012224
		2016	0.00092		454600	4615000	178.19	16021324
	ANNUAL	2012	0.00013	0.02 ug/m3 NR445 Pass	454596	4615041	178.19	1 YEARS
		2013	0.00014		454596	4615041	178.19	1 YEARS
		2014	0.00015	Unit Risk Factor 0.0024 Inhalation Impact[a] 3.60E-07 Pass	454596	4615041	178.19	1 YEARS
		2015	0.00013		454596	4615041	178.19	1 YEARS
		2016	0.00014		454596	4615041	178.19	1 YEARS
Cadmium	24-HR	2012	0.00259	No Standard Identified	454099	4614767	178.14	12012624
		2013	0.00313		454099	4614767	178.14	13122124
		2014	0.00282		454099	4614767	178.14	14020424
		2015	0.00321		454099	4614767	178.14	15122524
		2016	0.00236		454000	4614800	175.37	16022324
	ANNUAL	2012	0.00040	0.01 ug/m3 ATSDR MRL Pass	454099	4614767	178.14	1 YEARS
		2013	0.00036		454099	4614767	178.14	1 YEARS
		2014	0.00036	Unit Risk Factor 0.0018 Inhalation Impact[a] 7.20E-07 Pass	454099	4614767	178.14	1 YEARS
		2015	0.00039		454099	4614767	178.14	1 YEARS
		2016	0.00039		454099	4614767	178.14	1 YEARS
Chromium	24-HR	2012	0.05583	12.00 ug/m3 NR445 Standard Pass	454099	4614767	178.14	12012624
		2013	0.06609		454099	4614767	178.14	13122124
		2014	0.06250		454099	4614767	178.14	14020424
		2015	0.06909		454099	4614767	178.14	15122524
		2016	0.04944		454000	4614800	175.37	16022324
	ANNUAL	2012	0.00857	No Standard Identified	454099	4614767	178.14	1 YEARS
		2013	0.00769		454596	4615041	178.19	1 YEARS
		2014	0.00781		454596	4615041	178.19	1 YEARS
		2015	0.00830		454099	4614767	178.14	1 YEARS
		2016	0.00834		454099	4614767	178.14	1 YEARS

Table 4-3 - Comparison of Predicted Maximum Metal Impacts to Identified Standards (cont'd)

Pollutant	Averaging Period	Met Data Year	AERMOD Maximum Predicted Conc. ($\mu g/m^3$)	Identified Standard and Source (Pass/Fail)	East (X) (m)	North (Y) (m)	Elevation (m)	Time yy/mm/dd/hh
Cobalt	24-HR	2012	0.00313	0.48 ug/m3 NR445 Standard Pass	454092	4614916	177.28	12110724
		2013	0.00441		454092	4614916	177.28	13011024
		2014	0.00373		454596	4614644	178.19	14010824
		2015	0.00390		454092	4614916	177.28	15022124
		2016	0.00302		454102	4614718	178.19	16031224
	ANNUAL	2012	0.00053	0.10 ug/m3 NR445 Standard Pass	454099	4614767	178.14	1 YEARS
		2013	0.00048		454099	4614767	178.14	1 YEARS
		2014	0.00048		454099	4614767	178.14	1 YEARS
		2015	0.00052		454099	4614767	178.14	1 YEARS
		2016	0.00053		454099	4614767	178.14	1 YEARS
Copper	24-HR	2012	0.17066	24.00 ug/m3 NR445 Standard Pass	454596	4615041	178.19	12020224
		2013	0.20476		454596	4615041	178.19	13011524
		2014	0.20416		454600	4615000	178.19	14010824
		2015	0.14940		454099	4614767	178.14	15122524
		2016	0.15274		454596	4615041	178.19	16012024
	ANNUAL	2012	0.02321	No Standard Identified	454596	4615041	178.19	1 YEARS
		2013	0.02527		454596	4615041	178.19	1 YEARS
		2014	0.02575		454596	4615041	178.19	1 YEARS
		2015	0.02346		454596	4615041	178.19	1 YEARS
		2016	0.02484		454596	4615041	178.19	1 YEARS
Mercury	24-HR	2012	0.03414	2.40 ug/m3 NR445 Standard Pass	454209	4615133	178.19	12101624
		2013	0.04017		454089	4614966	176.92	13011024
		2014	0.03769		454209	4615133	178.19	14111024
		2015	0.03917		454126	4615088	178.19	15111724
		2016	0.03444		454089	4614966	176.92	16081524
	ANNUAL	2012	0.00262	0.20 ug/m3 NR445 Standard Pass	454340	4615247	178.19	1 YEARS
		2013	0.00217		454340	4615247	178.19	1 YEARS
		2014	0.00209		454251	4615156	178.19	1 YEARS
		2015	0.00232		454377	4615267	178.19	1 YEARS
		2016	0.00222		454303	4615228	178.19	1 YEARS

Table 4-3 - Comparison of Predicted Maximum Metal Impacts to Identified Standards (cont'd)

Pollutant	Averaging Period	Met Data Year	AERMOD Maximum Predicted Conc. ($\mu g/m^3$)	Identified Standard and Source (Pass/Fail)	East (X) (m)	North (Y) (m)	Elevation (m)	Time yy/mm/dd/hh
Nickel	24-HR	2012	0.02387	No Standard Identified	454596	4615041	178.19	12020224
		2013	**0.02857**		454092	4614916	177.28	13011024
		2014	0.02597		454600	4615000	178.19	14010824
		2015	0.02490		454092	4614916	177.28	15022124
		2016	0.02076		454596	4615041	178.19	16012024
	ANNUAL	2012	0.00345	0.09 ug/m3 NR445 Pass	454099	4614767	178.14	1 YEARS
		2013	0.00355		454596	4615041	178.19	1 YEARS
		2014	**0.00360**	Unit Risk Factor 0.0003 Inhalation Impact[a] 9.36E-07 Pass	454596	4615041	178.19	1 YEARS
		2015	0.00336		454099	4614767	178.14	1 YEARS
		2016	0.00348		454596	4615041	178.19	1 YEARS
Phosphorus	24-HR	2012	0.11755	2.43 ug/m3 NR445 Standard Pass	454089	4614966	176.92	12050124
		2013	**0.16445**		454089	4614966	176.92	13011024
		2014	0.11429		454209	4615133	178.19	14111024
		2015	0.11922		454126	4615088	178.19	15111724
		2016	0.12083		454126	4615088	178.19	16121624
	ANNUAL	2012	0.01193	No Standard Identified	454099	4614767	178.14	1 YEARS
		2013	**0.01269**		454596	4615041	178.19	1 YEARS
		2014	0.01268		454596	4615041	178.19	1 YEARS
		2015	0.01202		454596	4615041	178.19	1 YEARS
		2016	0.01224		454596	4615041	178.19	1 YEARS
Selenium	24-HR	2012	0.00463	4.80 ug/m3 NR445 Standard Pass	454209	4615133	178.19	12101624
		2013	**0.00545**		454089	4614966	176.92	13011024
		2014	0.00511		454209	4615133	178.19	14111024
		2015	0.00531		454126	4615088	178.19	15111724
		2016	0.00467		454089	4614966	176.92	16081524
	ANNUAL	2012	**0.00036**	No Standard Identified	454340	4615247	178.19	1 YEARS
		2013	0.00030		454340	4615247	178.19	1 YEARS
		2014	0.00028		454251	4615156	178.19	1 YEARS
		2015	0.00032		454377	4615267	178.19	1 YEARS
		2016	0.00030		454303	4615228	178.19	1 YEARS

Table 4-3 - Comparison of Predicted Maximum Metal Impacts to Identified Standards (cont'd)

Pollutant	Averaging Period	Met Data Year	AERMOD Maximum Predicted Conc. ($\mu g/m^3$)	Identified Standard and Source (Pass/Fail)	East (X) (m)	North (Y) (m)	Elevation (m)	Time yy/mm/dd/hh
Silver	24-HR	2012	0.00223	2.40 ug/m3 NR445 Standard Pass	454600	4615000	178.19	12010724
		2013	0.00271		454596	4615041	178.19	13011524
		2014	0.00280		454600	4615000	178.19	14010824
		2015	0.00180		454596	4615041	178.19	15123024
		2016	0.00196		454596	4615041	178.19	16012024
	ANNUAL	2012	0.00032	No Standard Identified	454596	4615041	178.19	1 YEARS
		2013	0.00035		454596	4615041	178.19	1 YEARS
		2014	0.00036		454596	4615041	178.19	1 YEARS
		2015	0.00032		454596	4615041	178.19	1 YEARS
		2016	0.00034		454596	4615041	178.19	1 YEARS
Thallium	24-HR	2012	0.00022	No Standard Identified	454596	4615041	178.19	12020224
		2013	0.00027		454596	4615041	178.19	13011524
		2014	0.00028		454600	4615000	178.19	14010824
		2015	0.00018		454596	4615041	178.19	15123024
		2016	0.00020		454596	4615041	178.19	16012024
	ANNUAL	2012	0.00003	No Standard Identified	454596	4615041	178.19	1 YEARS
		2013	0.00004		454596	4615041	178.19	1 YEARS
		2014	0.00004		454596	4615041	178.19	1 YEARS
		2015	0.00003		454596	4615041	178.19	1 YEARS
		2016	0.00003		454596	4615041	178.19	1 YEARS
Zinc	24-HR	2012	2.05738	No Standard Identified	454099	4614767	178.14	12012024
		2013	2.62604		454092	4614916	177.28	13011024
		2014	2.30367		454092	4614916	177.28	14010924
		2015	2.50381		454099	4614767	178.14	15122524
		2016	1.91458		454000	4614800	175.37	16022324
	ANNUAL	2012	0.32888	No Standard Identified	454099	4614767	178.14	1 YEARS
		2013	0.29975		454099	4614767	178.14	1 YEARS
		2014	0.29897		454099	4614767	178.14	1 YEARS
		2015	0.32042		454099	4614767	178.14	1 YEARS
		2016	0.32752		454099	4614767	178.14	1 YEARS

a. There are currently no state or federal ambient air quality standards for these metals. Predicted impacts are compared to a unit risk of $1x10^{-6}$. Unit risk is calculated by multiplying predicted impact by the published unit risk factor from USEPA's IRIS database.

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Air Dispersion Modeling Report for Assessment of Metal Emission Impacts

General III, LLC – Chicago, Illinois

January 24, 2020

Appendix A

Ferrous Material Processing

Figures A-1 and A-2 contain TRADE SECRET information and have been REDACTED from this document.

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Figure A-1 Redacted

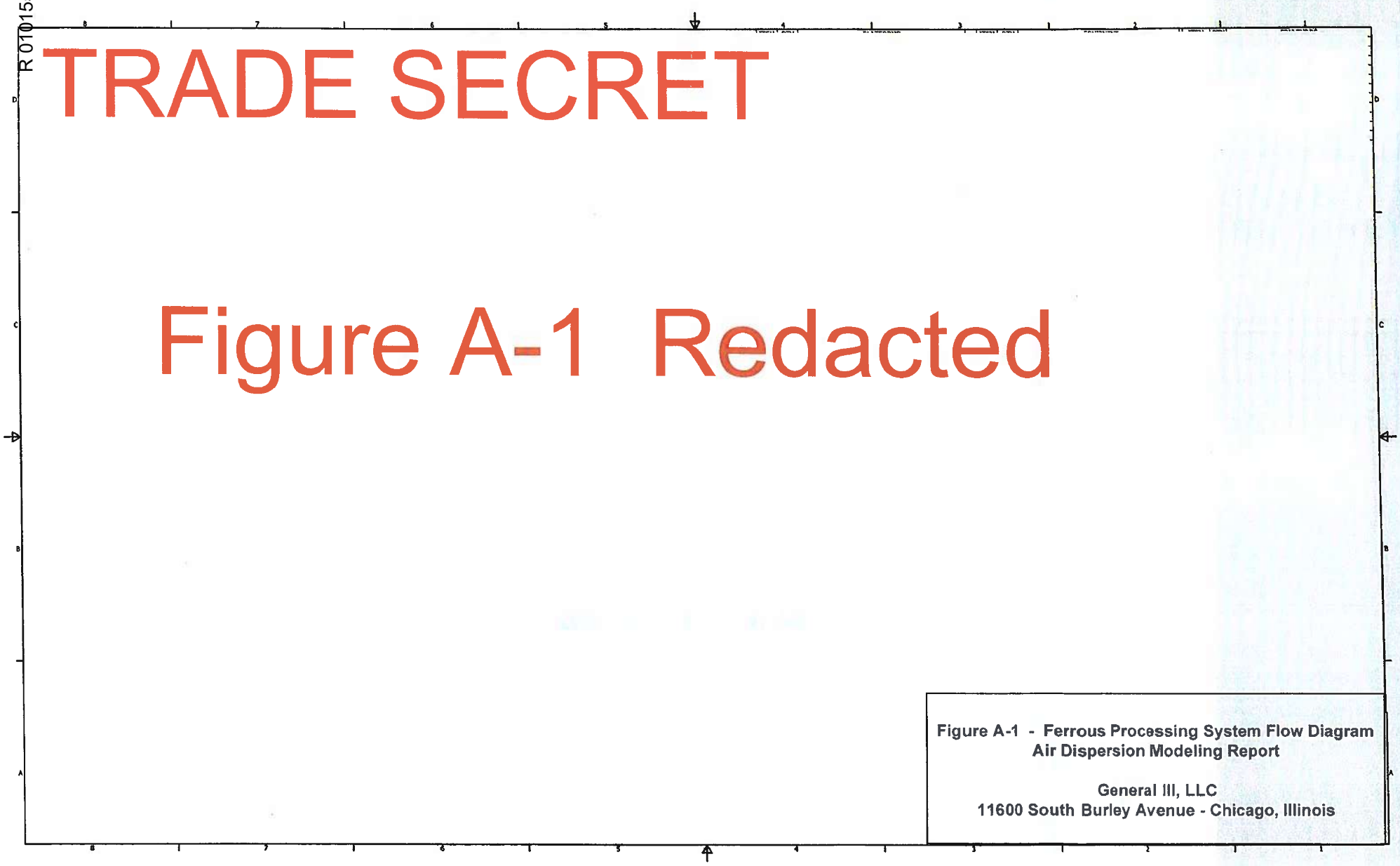

Figure A-1 - Ferrous Processing System Flow Diagram
Air Dispersion Modeling Report

General III, LLC
11600 South Burley Avenue - Chicago, Illinois

R010156

TRADE SECRET

Figure A-2 Redacted

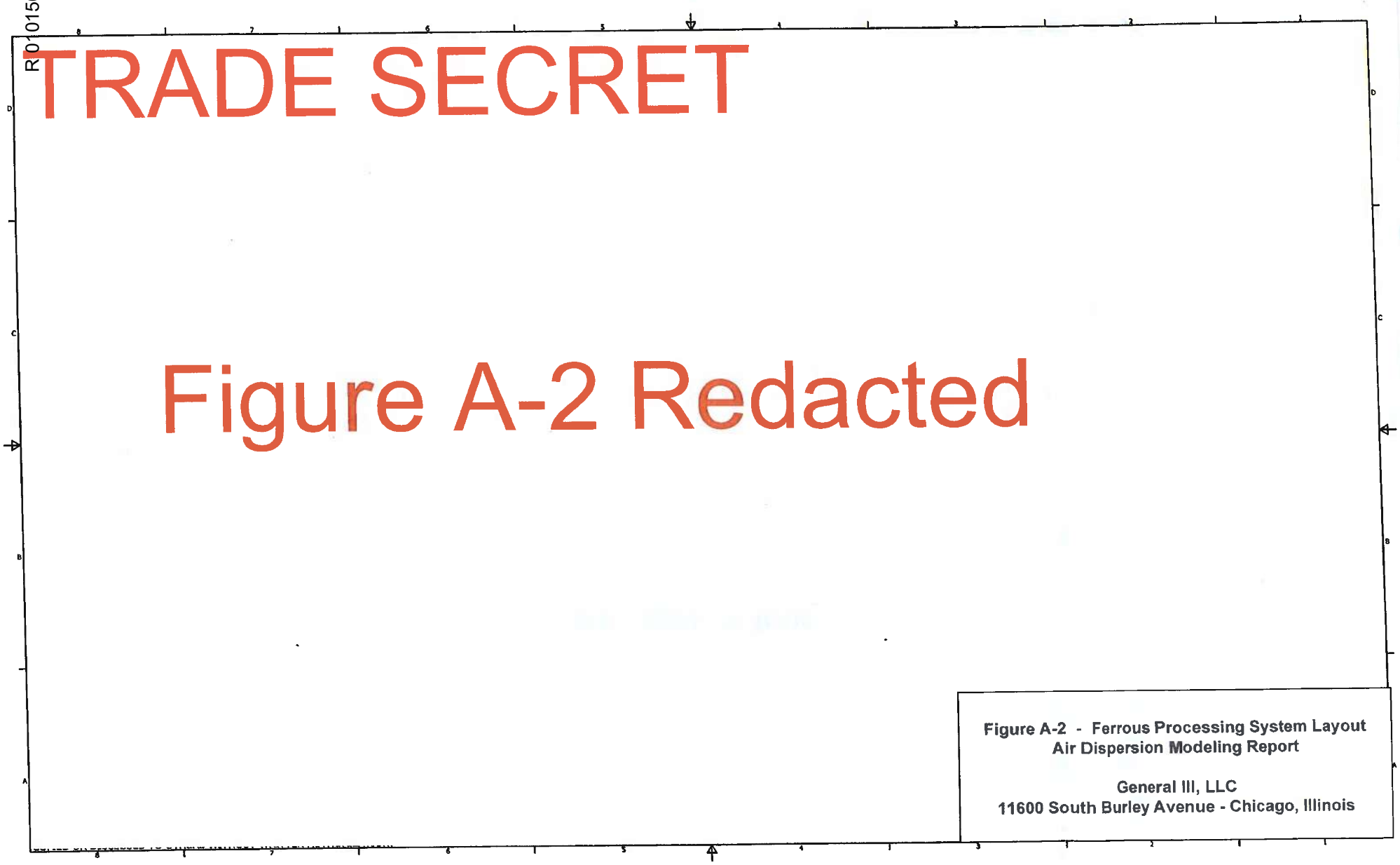

Figure A-2 - Ferrous Processing System Layout
Air Dispersion Modeling Report

General III, LLC
11600 South Burley Avenue - Chicago, Illinois

Table A-1a - Ferrous Material Processing - Metal Emissions in Active Hours (7 AM - 7 PM, Mon-Sat)
General III, LLC - Chicago, Illinois

Volume Source	Units	V-1	V-2	V-3	V-4	V-5	V-6	V-7	V-8	V-9	V-10	V-11	V-12	V-13	RTO
PM (Active)	lb/hr	1.161000	0.140000	0.140000	0.012000	0.188100	0.208700	0.145800	0.024400	0.041100	0.241200	0.199600	0.199600	0.567300	0.000000
Source of Metals Conc. Data	Sample No.	3	3	4	4	4	5	4	4	5	4	4	4	4	Nov 2019 Emission Test Data
	Sample	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	
Lead	lb/hr	0.000610	0.000074	0.000592	0.000051	0.000796	0.000985	0.000617	0.000103	0.000194	0.001020	0.000844	0.000844	0.002400	0.002766
Manganese	lb/hr	0.000846	0.000102	0.000309	0.000027	0.000416	0.000367	0.000322	0.000054	0.000072	0.000533	0.000441	0.000441	0.001254	0.003981
Mercury	lb/hr	0.000003	0.000000	0.000003	0.000000	0.000004	0.000002	0.000003	0.000000	0.000000	0.000005	0.000004	0.000004	0.000011	0.089273
Nickel	lb/hr	0.000123	0.000015	0.000043	0.000004	0.000057	0.000065	0.000044	0.000007	0.000013	0.000073	0.000061	0.000061	0.000172	0.006592
Antimony	lb/hr	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001	0.002247
Arsenic	lb/hr	0.000003	0.000000	0.000000	0.000000	0.000001	0.000001	0.000000	0.000000	0.000000	0.000001	0.000001	0.000001	0.000002	0.000794
Beryllium	lb/hr	0.000006	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001	0.000178
Cadmium	lb/hr	0.000006	0.000001	0.000007	0.000001	0.000009	0.000007	0.000007	0.000001	0.000001	0.000011	0.000010	0.000010	0.000027	0.000851
Chromium [c]	lb/hr	0.000201	0.000024	0.000056	0.000005	0.000076	0.000089	0.000059	0.000010	0.000017	0.000097	0.000080	0.000080	0.000228	0.006903
Cobalt	lb/hr	0.000012	0.000001	0.000007	0.000001	0.000010	0.000012	0.000008	0.000001	0.000002	0.000013	0.000010	0.000010	0.000029	0.000213
Phosphorus	lb/hr	0.000313	0.000038	0.000117	0.000010	0.000157	0.000195	0.000121	0.000020	0.000038	0.000201	0.000166	0.000166	0.000473	0.242907
Selenium	lb/hr	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001	0.012093
Zinc	lb/hr	0.003576	0.000431	0.005222	0.000448	0.007016	0.007096	0.005438	0.000910	0.001397	0.008997	0.007445	0.007445	0.021160	0.053460
Barium	lb/hr	0.000269	0.000032	0.000138	0.000012	0.000185	0.000143	0.000143	0.000024	0.000028	0.000237	0.000196	0.000196	0.000558	0.007682
Copper	lb/hr	0.000976	0.000118	0.000294	0.000025	0.000395	0.000344	0.000306	0.000051	0.000068	0.000507	0.000419	0.000419	0.001191	0.007785
Silver	lb/hr	0.000013	0.000002	0.000002	0.000000	0.000002	0.000003	0.000002	0.000000	0.000000	0.000003	0.000002	0.000002	0.000007	0.002003
Thallium	lb/hr	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001	0.000239

a. Percentage of metal as % of total PM caculated based on measured metal emission rates from hammermill shredder controlled by cyclone and a roll media filter from June 2018.

b. Uncontrolled organic compound emission rates, as presented in ISRI Title V Applicability Workbook, Table D-11F, adjusted for RTO with 98% destruction efficiency.

c. Chromium (metal) and compounds other than Chromium VI

Table A-1b - Ferrous Material Processing - Metal Emissions in Inactive Hours (7 PM - 7 AM, Mon-Sat, All Day, Sun)
General III, LLC - Chicago, Illinois

Volume Source	Units	V-1	V-2	V-3	V-4	V-5	V-6	V-7	V-8	V-9	V-10	V-11	V-12	V-13	RTO
PM (Inactive)	lb/hr	0.079400	-	-	0.001200	-	0.037100	-	-	0.000800	-	0.052900	0.052900	-	-
Source of Metals Conc. Data	Sample No.	3	3	4	4	4	5	4	4	5	4	4	4	4	
	Sample Name	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	Nov 2019 Emission Test
Lead	lb/hr	0.000042			0.000005		0.000175			0.000004		0.000224	0.000224		
Manganese	lb/hr	0.000058			0.000003		0.000065			0.000001		0.000117	0.000117		
Mercury	lb/hr	-			-		-			-		0.000001	0.000001		
Nickel	lb/hr	0.000008			-		0.000012			-		0.000016	0.000016		
Antimony	lb/hr	-			-		-			-		-	-		
Arsenic	lb/hr	-			-		-			-		-	-		
Beryllium	lb/hr	-			-		-			-		-	-		
Cadmium	lb/hr	-			-		0.000001			-		0.000003	0.000003		
Chromium [c]	lb/hr	0.000014			-		0.000016			-		0.000021	0.000021		
Cobalt	lb/hr	0.000001			-		0.000002			-		0.000003	0.000003		
Phosphorus	lb/hr	0.000021			0.000001		0.000035			0.000001		0.000044	0.000044		
Selenium	lb/hr	-			-		-			-		-	-		
Zinc	lb/hr	0.000245			0.000045		0.001261			0.000027		0.001973	0.001973		
Barium	lb/hr	0.000018			0.000001		0.000025			0.000001		0.000052	0.000052		
Copper	lb/hr	0.000067			0.000003		0.000061			0.000001		0.000111	0.000111		
Silver	lb/hr	0.000001			-		-			-		0.000001	0.000001		
Thallium	lb/hr	-			-		-			-		-	-		

a. Percentage of metal as % of total PM caculated based on measured metal emission rates from hammermill shredder controlled by cyclone and a roll media filter from June 2018.

b. Uncontrolled organic compound emission rates, as presented in ISRI Title V Applicability Workbook, Table D-11F, adjusted for RTO with 98% destruction efficiency.

c. Chromium (metal) and compounds other than Chromium VI

Table A-2 - Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

1	2	3	6	7	8	9	10	11	12	13	18	19	22	#	24
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N		Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM Emissions lb/ton	Filterable PM Emissions lb/hr
V-1	55		Truck Dumping of Raw Feed	Unprepared	5.4	a2	Outside	N	-	0%	0%	Drop	300	0.00127 [c]	0.3797
V-1	56		Raw Feed from Ground after Truck Dumping	Unprepared	5.4	a2	Outside	N	-	0%	0%	Drop	300	0.00127 [c]	0.3797
V-1	59	Magnet/ Clam	Drop Raw Scrap to Infeed Conveyor	Unprepared	N	a4	Outside	N	-	NA	0%	D	500	0.00020 [f]	0.1022
														Total Filterable PM Emissions	**0.8616**
V-2	37	E-01	Drop Raw Scrap onto Shredder Feed Chute	Unprepared	Y	a4	Outside	N	-	NA	0%	A	500	0.00014 [d]	0.0700
V-2	40	E-05	Shredder Under Mill Vibratory Conveyor	Shred	Y	a	Inside	N	-	NA	0%	A	500	0.00014 [d]	0.0700
V-2	79	E-02	Shredder Bottom Discharge	Shred	Y	a	shredder emissions	0	-	0%	0%	A	500	Emissions captured and controlled by shredder emission	
V-2	81	E-02	Shredder Chute	Unprepared	Y	a	shredder emissions	0	-	0%	0%	A	500	Emissions captured and controlled by shredder emission	
														Total Filterable PM Emissions	**0.1400**
V-3	4	C-001	Shredded Material Transfer Conveyor	Shred	Y	a	Outside	N	-	NA	0%	A	500	0.00014 [d]	0.0700
V-3	5	C-002	Shredded Material Transfer Conveyor	Shred	Y	a	Outside	N	-	NA	0%	A	1	0.00014 [d]	0.0001
V-3	6	C-002	Mat'l Not Removed by Poker Picker	Shred	Y	a	Outside	N	-	NA	0%	A	499	0.00014 [d]	0.0699
														Total Filterable PM Emissions	**0.1400**
V-4	58	-	Poker Loadout	Pokers	N	a	Outside	N	-	0%	0%	D	1	0.00020 [f]	0.0002
V-4	62	E-06	Poker Picker Chute to Stockpile	Shred	1.5%	a1	Outside	N	-	0%	0%	Drop	1	0.00761 [c]	0.0076
														Total Filterable PM Emissions	**0.0078**

Table A-2 - Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

1	2	3	6	7 8	9	10	11	12	13	18	19	22 #	24
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM Emissions lb/ton	Filterable PM Emissions lb/hr
V-5	7	C-003	Ferrous Transfer Conveyor	Residue	Y [b]	Outside	N	-	NA	0%	A	130	0.00014 [d]	0.0182
V-5	8	C-003	Ferrous Transfer Conveyor	Ferrous	Y [b]	Outside	N	-	NA	0%	A	369	0.00014 [d]	0.0517
V-5	31	C-032	ASR Transfer Conveyor	Residue	Y [b]	Outside	N	-	NA	0%	A	4	0.00014 [d]	0.0006
V-5	32	C-033	Magnetic Material	Shred	Y [b]	Outside	N	-	NA	0%	A	5	0.00014 [d]	0.0007
V-5	33	C-033	ASR Not Removed by Magnet E-12	Residue	Y [b]	Outside	N	-	NA	0%	A	129	0.00014 [d]	0.0181
V-5	34	C-034	Ferrous Transfer Conveyor	Shred	Y [b]	Outside	N	-	NA	0%	A	5	0.00014 [d]	0.0007
V-5	35	C-035	Ferrous Transfer Conveyor	Shred	Y [b]	Outside	N	-	NA	0%	A	5	0.00014 [d]	0.0007
V-5	36	C-036	ASR Transfer Conveyor	Residue	Y [b]	Outside	N	-	NA	0%	A	129	0.00014 [d]	0.0181
V-5	41	E-07	Magnet Discharge to Chute	Shred	Y [b]	Outside	N	-	NA	0%	A	187	0.00014 [d]	0.0262
V-5	42	E-07	Magnet Discharge to Chute	Shred	Y [b]	Outside	N	-	NA	0%	A	187	0.00014 [d]	0.0262
V-5	49	E-12	Ferrous Removed by Magnet	Ferrous	Y [b]	Outside	N	-	NA	0%	A	5	0.00014 [d]	0.0007
V-5	53	E-7	ASR Not Removed by Magnet	Shred	Y [a3]	Outside	N	-	NA	0%	A	2	0.00014 [d]	0.0003
V-5	54	E-7	Ferrous Removed by Magnet E-7	Residue	Y [b]	Outside	N	-	NA	0%	A	185	0.00014 [d]	0.0259
												Total Filterable PM Emissions		0.1881
V-6	61	C-037	ASR Transfer Conveyor to Stockpile	Residue	10 [a3]	Outside	N	-	0%	0%	Drop	129	0.00053 [c]	0.0689

R 010160

Table A-2 - Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

1	2	3	6	7	8	9	10	11	12	13	18	19	22	#	24
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N		Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM Emissions lb/ton		Filterable PM Emissions lb/hr
V-7	9	C-006	Ferrous Transfer Conveyor	Shred	Y	[c]	Outside	Y	Z-Box Air Loop	100%	100%	A	183	0.00014	[d]	0.0000
V-7	10	C-007	Ferrous Transfer Conveyor	Shred	Y	[c]	Outside	Y	Z-Box Air Loop	100%	100%	A	183	0.00014	[d]	0.0000
V-7	21	C-022	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	55	0.00014	[d]	0.0077
V-7	22	C-023	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	55	0.00014	[d]	0.0077
V-7	23	C-024	Non-metallic transfer conveyor	Ferrous	Y	[c]	Outside	N	-	NA	0%	A	4	0.00014	[d]	0.0006
V-7	30	C-031	ASR Transfer Conveyor	Residue	Y	[c]	Outside	N	-	NA	0%	A	4	0.00014	[d]	0.0006
V-7	38	E-015	Z-Box Separator Cyclone	Ferrous	Y	[c]	Outside	N	-	NA	0%	A	2	0.00014	[d]	0.0003
V-7	39	E-016	Z-Box Separator Cyclone	Ferrous	Y	[c]	Outside	N	-	NA	0%	A	2	0.00014	[d]	0.0003
V-7	43	E-08	ASR Not Removed by Magnet	Shred	Y	[c]	Outside	N	-	NA	0%	A	2	0.00014	[d]	0.0003
V-7	44	E-08	Ferrous Removed by Magnet E-7	Residue	Y	[c]	Outside	N	-	NA	0%	A	185	0.00014	[d]	0.0259
V-7	45	E-10	Ferrous Removed by Magnet	Shred	Y	[a2]	Outside	N	-	NA	0%	A	128	0.00014	[d]	0.0179
V-7	46	E-11	Ferrous Removed by Magnet	Shred	Y	[a2]	Outside	N	-	NA	0%	A	128	0.00014	[d]	0.0179
V-7	47	E-11	Ferrous Removed by Magnet	Shred	Y	[a2]	Outside	N	-	NA	0%	A	55	0.00014	[d]	0.0077
V-7	48	E-11	Ferrous Removed by Magnet	Shred	Y	[a2]	Outside	N	-	NA	0%	A	55	0.00014	[d]	0.0077
V-7	64	SC-001	Supplemental Conveyor	Shred	Y	[c]	Outside	N	-	NA	0%	A	183	0.00014	[d]	0.0256
V-7	66	SC-002	Supplemental Conveyor	Shred	Y	[c]	Outside	N	-	NA	0%	A	183	0.00014	[d]	0.0256
V-7	70	C-004	Ferrous Transfer Conveyor	Shred	Y	[c]	Outside	N	-	NA	0%	A	185	Emissions captured by inward air flow at inlet to Z-Box separator		
V-7	72	C-005	Ferrous Transfer Conveyor	Shred	Y	[c]	Outside	N	-	NA	0%	A	185	Emissions captured by inward air flow at inlet to Z-Box separator		
													Total Filterable PM Emissions			0.1458

R 010161

Table A-2 - Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

1	2	3	6	7	8	9	10	11	12	13	18	19	22	#	24
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N		Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM Emissions lb/ton	Filterable PM Emissions lb/hr
V-8	24	C-025	Non-metallic not removed by magnet E-13	Ferrous	Y	[b]	Outside	N	-	NA	0%	A	2	0.00014 [d]	0.0003
V-8	25	C-025	material removed by first magnet to second magnet	Ferrous	Y	[a2]	Outside	N	-	NA	0%	A	1	0.00014 [d]	0.0001
V-8	26	C-026	Ferrous Transfer Conveyor	Ferrous	Y	[a2]	0	0	-	0%	0%	A	1	0.00014 [d]	0.0001
V-8	27	C-027	Ferrous Transfer Conveyor	Ferrous	Y	[a2]	Outside	N	-	NA	0%	A	1	0.00014 [d]	0.0001
V-8	28	C-028	Non-metallic Transfer Conveyor	Ferrous	Y	[b]	Outside	N	-	NA	0%	A	1	0.00014 [d]	0.0001
V-8	29	C-029	Non-metallic Transfer Conveyor	Ferrous	Y	[b]	0	0	-	0%	0%	A	1	0.00014 [d]	0.0001
V-8	50	E-13	Ferrous Removed by E-13	Ferrous	Y	[a2]	Outside	N	-	NA	0%	A	1	0.00014 [d]	0.0001
V-8	51	E-13	Ferrous Removed by E-13	Ferrous	Y	[b]	Outside	N	-	NA	0%	A	1	0.00014 [d]	0.0001
V-8	52	E-14	Mat'l Not removed by Separator	Ferrous	Y	[b]	Outside	N	-	NA	0%	A	0.25	0.00014 [d]	0.0000
V-8	60	C-030	Mat'l not Removed by Separator	Ferrous	1.5	[a1]	Outside	Y	Cover	0%	0%	Drop	2.25	0.00761 [c]	0.0171
V-8	63	E-14	Final Discharge from Mat'l Separator	Ferrous	1.5	[a1]	Outside	N	-	0%	0%	Drop	0.75	0.00761 [c]	0.0057
V-8	65	SC-009	Supplemental Conveyor	Ferrous	Y	[b]	Outside	N	-	NA	0%	A	2	0.00014 [d]	0.0003
V-8	67	SC-010	Supplemental Conveyor	Ferrous	Y	[b]	Outside	N	-	NA	0%	A	2	0.00014 [d]	0.0003
													Total Filterable PM Emissions		0.0244
V-9	57	-	Non-metallic Loadout	Non-metallic	N	[b]	Outside	N	-	0%	0%	D	187	0.00020 [f]	0.0382

Table A-2 - Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

1	2	3	6	7	8	9	10	11	12	13	18	19	22	#	24
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N		Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM Emissions lb/ton	Filterable PM Emissions lb/hr
V-10	11	C-008	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	56	0.00014 [d]	0.0078
V-10	12	C-009	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	128	0.00014 [d]	0.0179
V-10	13	C-010	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	128	0.00014 [d]	0.0179
V-10	14	C-011	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	55	0.00014 [d]	0.0077
V-10	15	C-012	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	56	0.00014 [d]	0.0078
V-10	16	C-013	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	128	0.00014 [d]	0.0179
V-10	17	C-014	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	128	0.00014 [d]	0.0179
V-10	18	C-015	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	55	0.00014 [d]	0.0077
V-10	19	C-016	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	0.00014 [d]	0.0514
V-10	20	C-020	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	0.00014 [d]	0.0514
V-10	68	SC-005	Supplemental Conveyor	Shred	Y	[c]	Outside	N	-	NA	0%	A	128	0.00014 [d]	0.0179
V-10	69	SC-008	Supplemental Conveyor	Shred	Y	[c]	Outside	N	-	NA	0%	A	128	0.00014 [d]	0.0179
V-10	71	C-014	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-014 to C-016. Emissions from 100% of material	
V-10	73	C-012	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-012 to C-016. Emissions from 100% of material	
V-10	74	C-015	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-015 to C-016. Emissions from 100% of material	
V-10	75	C-019	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-016 top C-017. Emissions from 100% of material	
V-10	76	C-013	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-013 to C-016. Emissions from 100% of material	
V-10	77	C-017	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-020/C-021 or C-017/C-018.	
V-10	78	C-020	Ferrous Transfer Conveyor	Shred	Y	[a2]	Outside	N	-	NA	0%	A	367	Alternate to C-017 to C-018. Emissions from 100% of material	
													Total Filterable PM Emissions		0.2412

R 010163

Table A-2 - Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

1	2	3	6	7 8	9	10	11	12	13	18	19	22 #	24
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM Emissions lb/ton	Filterable PM Emissions lb/hr
V-11	82	C-018	Ferrous Transfer Conveyor to stockpile	Shred	5.4% [a2]	Outside	N	-	NA	0%	Drop	367	Alternate to C-021 to S Ferrous Stockpile or Barge 2 to Barge.	
V-12	80	C-21	Ferrous Transfer Conveyor to stockpile	Shred	5.4% [a2]	Outside	N	-	NA	0%	Drop	367	Alternate to C-018 to N Ferrous Stockpile or Barge 2 to Barge.	
V-13	1	Barge 1	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N	-	NA	0%	A	367	0.00014 [d]	0.0514
V-13	2	Barge 2	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N	-	NA	0%	A	367	0.00014 [d]	0.0514
V-13	3	Barge 3	Ferrous Transfer Conveyor to barge (stockpile)	Shred	5.4% [a2]	Outside	N	-	0%	0%	Drop	367	0.00127 [c]	0.4645
												Total Filterable PM Emissions		0.5673

a1 Controlled particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying used based on conservative assumption that moisture content is greater than 1.5% due to water added in the shredder.

a2 Material moisture was assumed to be the mean of material moisture contents identified in AP42, Table 13.2.4-1.

a3 Northern Metals (Minneapolis, MN) found moisture content of ASR in the range of 20 to 30%, from MPCA Construction Permit Technical Support Document for Northern Metals In Becker MN, Stream COMG-2. Calculations for the ASR stacking conveyor drop point conservatively assumes 10% moisture.

a4 Moisture content of raw materials is assumed to be >1.5% based on application of water from water atomization cannons used for fugitive dust control.

b Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3. Emissions calculated with control Eff. factor included for source being inside of a building.

c Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3.

d Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying. If moisture content is greater than 1.5% by weight, controlled emission factors are used.

e Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for screening. If moisture content is greater than 1.5% by weight, controlled emission factors are used.

f Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for truck loading of curshed stone. Use uncontrolled emisson factor to be conservative.

g Particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying. For sources controlled by a dust collector the emission factor is multiplied by the identified capture Eff. and then by the quantity of 1-control Eff.. Dust collectors vent back into to the building. These emission calculations conservatively assume dust collector emission are vented to the atmosphere.

h Metal HAPs as percent of total PM measured at the discharge of the existing roll media filter in June 2018.

Table A-3 Ferrous Plant Stockpile - Particulate Emissions
General III, LLC - Chicago, Illinois

Volume Source Grouping	Stock Pile	Stock Pile Area Acres	Control Factor[b]	Inactive Emissions[a,d] PM lb/hr	Active Emissions[a,d] PM lb/hr
V-1	Raw Material Truck Dumping (Drop 1)	0.3630	1.00	0.0529	0.1996
V-1	Raw Material Movement from Truck Dumping Area to Stockpile (Drop 2)	0.1815	1.00	0.0265	0.0998
			Total	0.0794	0.2994
V-4	Poker North	0.0115	0.33	0.0006	0.0021
V-4	Poker South	0.0115	0.33	0.0006	0.0021
			Total	0.0012	0.0042
V-6	ASR	0.2541	1.00	0.0371	0.1398
V-9	Fluff (Bin)	0.0161	0.33	0.0008	0.0029
V-11	Ferrous North	0.3630	1.00	0.0529	0.1996
V-12	Ferrous South	0.3630	1.00	0.0529	0.1996

a. Stockpile emissions calculation from TCEQ for crushed stone downloaded August 2019.
https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss-calc-rock1.xlsx

b. Control Factor of 0.33 (67.5% control) for partial enclosure consisting of walls on three sides of bin. Control Factor of 1.0 for no control.

c. Assume number of active days to be 6 days per week and 52 weeks per year and inactive days to be 1 day per week and 52 weeks per year.

d. From TCEQ Guidance

Stockpile emission calculation:

PM Emission Rate (tpy) = [(inactive day PM EF x No. of inactive days) x stockpile area/2000 x control factor] +
[(active day PM EF x No. of active days) x (stockpile area/2000) x control factor]

Inactive Day PM Emission Factor = 3.50 lb-PM/acre-day

Active Day PM Emission Factor = 13.20 lb-PM/acre-day

Table A-4 - Ferrous Material Processing - PM Emission Summary
General III, LLC - Chicago, Illinois

	Filterable PM Emissions					
	Matl Handling		Stockpile		Total	
Volume Source	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr
V-1	0.8616		0.2994	0.0794	1.1610	0.0794
V-2	0.1400				0.1400	
V-3	0.1400				0.1400	
V-4	0.0078		0.0042	0.0012	0.0120	0.0012
V-5	0.1881				0.1881	
V-6	0.0689		0.1398	0.0371	0.2087	0.0371
V-7	0.1458				0.1458	
V-8	0.0244				0.0244	
V-9	0.0382		0.0029	0.0008	0.0411	0.0008
V-10	0.2412				0.2412	
V-11	0.0000		0.1996	0.0529	0.1996	0.0529
V-12	0.0000		0.1996	0.0529	0.1996	0.0529
V-13	0.5673				0.5673	
Totals	**2.4233**		**0.8455**	**0.2243**	**3.2688**	**0.2243**

RK
& Associates, Inc.

Air Dispersion Modeling Report
for Assessment of Metal Emission Impacts

General III, LLC – Chicago, Illinois

January 24, 2020

Appendix B

Non-Ferrous Material Processing Figures and Tables

Figures B-1 and B-2 contain TRADE SECRET information and have been REDACTED from this document.

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Figure B-1 Redacted

Figure B-1 - Non-Ferrous Processing System Flow Diagram
Air Dispersion Modeling Report

General III, LLC
11600 South Burley Avenue - Chicago, Illinois

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TRADE SECRET

Figure B-2 Redacted

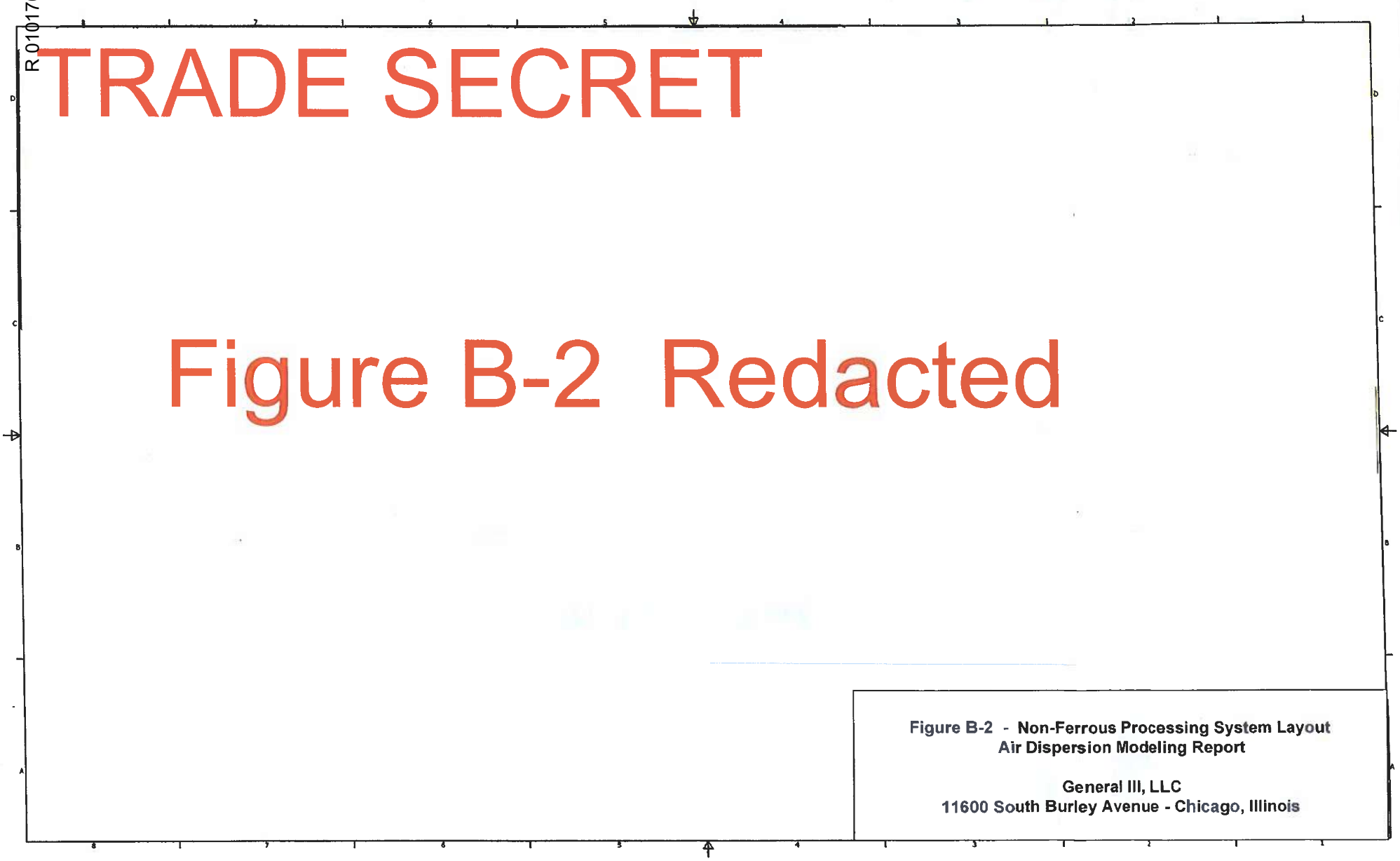

Figure B-2 - Non-Ferrous Processing System Layout
Air Dispersion Modeling Report

General III, LLC
11600 South Burley Avenue - Chicago, Illinois

Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

	A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-1	113	C-001	Conveyor	Residue	Y [b]	Outside	Y	N	NA		0%	70	0.000140 [d]	0.0098
VN-1	114	C-002	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	68	0.003000 [b]	0.2037
VN-1	115	C-002	Conveyor	Ferrous	N [b]	Outside	Y	N	NA		0%	2	0.003000 [b]	0.0063
VN-1	116	C-003	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	67.90	0.003000 [b]	0.2037
VN-1	117	C-004	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	60.90	0.003000 [b]	0.1827
VN-1	118	C-005	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	30.45	0.003000 [b]	0.0914
VN-1	119	C-006	Conveyor	Residue	N [b]	Outside		N	NA		0%	30.45	0.003000 [b]	0.0914
VN-1	122	C-009	Conveyor	Residue	N [b]	Outside		N	NA		0%	9.14	0.003000 [b]	0.0274
VN-1	123	C-010	Conveyor	Residue	N [b]	Outside		N	NA		0%	9.14	0.003000 [b]	0.0274
VN-1	124	C-011	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	8.40	0.003000 [b]	0.0252
VN-1	129	C-016	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	2.7	0.003000 [b]	0.0081
VN-1	174	E-01	Vibratory Batch Feeder	Residue	Y [b]	Outside		N	NA		0%	70	0.000140 [d]	0.0098
VN-1	175	E-03	Screener	Residue	Y [b]	Outside		N	NA		0%	60.90	0.002200 [e]	0.1340
VN-1	176	E-03	Screener	Residue	Y [b]	Outside		N	NA		0%	6.80	0.002200 [e]	0.0150
VN-1	177	E-03	Screener	Residue	Y [b]	Outside		N	NA		0%	2.70	0.002200 [e]	0.0059
VN-1	178	E-04	Screener	Residue	Y [b]	Outside		N	NA		0%	15.75	0.002200 [e]	0.0347
VN-1	179	E-04	Screener	Residue	Y [b]	Outside		N	NA		0%	9.14	0.002200 [e]	0.0201
VN-1	180	E-04	Screener	Residue	Y [b]	Outside		N	NA		0%	4.20	0.002200 [e]	0.0092
VN-1	190	E-11	Screener	Residue	N [b]	Outside		N	NA		0%	15.75	0.025000 [d]	0.3938
VN-1	191	E-11	Screener	Residue	N [b]	Outside		N	NA		0%	9.14	0.025000 [d]	0.2285
VN-1	192	E-11	Screener	Residue	N [b]	Outside		N	NA		0%	4.20	0.025000 [d]	0.1050
VN-1	244	End Loader	Drop ASR into feed hopper	Residue into Hopper	N [b]	Outside		Y	Cover		0%	70.00	0.000204 [d]	0.0143
VN-1	246	SC-001	Supplemental Conveyor	Residue	0 [b]	0		0	0		0%	15.75	0.003000	0.0473
VN-1	247	SC-002	Supplemental Conveyor	Residue	0 [b]	0		0	0		0%	16	0.003000	0.0473
												Total Filterable PM Emissions		1.9420

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Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

	A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-2	120	C-007	Conveyor	Residue	N [b]	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	15.75	0.003000 [b]	0.0095
VN-2	121	C-008	Conveyor	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	15.75	0.003000 [b]	0.0095
VN-2	125	C-012	Conveyor	Residue	N [b]	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	9.14	0.003000 [b]	0.0055
VN-2	126	C-013	Conveyor	Residue	N [b]	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	9.14	0.003000 [b]	0.0055
VN-2	127	C-014	Conveyor	Residue	N [b]	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	8.40	0.003000 [b]	0.0050
VN-2	128	C-015	Conveyor	Ferrous	N [b]	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	.25	0.003000 [b]	0.0002
VN-2	130	C-017	Conveyor	Ferrous	N [b]	Outside		N	NA		0%	1.75	0.003000 [b]	0.0053
VN-2	131	C-018	Conveyor	Ferrous	N [b]	Outside	Y	N	NA		0%	1.75	0.003000 [b]	0.0053
VN-2	132	C-019	Conveyor	Lights	N [b]	Outside	Y	N	NA		0%	0.25	0.003000 [b]	0.0008
VN-2	133	C-020	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	11.12	0.003000 [b]	0.0334
VN-2	134	C-021	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	11.12	0.003000 [b]	0.0334
VN-2	135	C-022	Conveyor to Wind Sifter	Mixed Non-Ferrous	N [b]	Outside	Y	Y	Wind Sifter	100%	100%	0.80	0.003000 [b]	0.0024
VN-2	136	C-023	Conveyor to Wind Sifter	Residue	N [b]	Outside	Y	Y	Wind Sifter	100%	100%	7.29	0.000140 [b]	0.0010
VN-2	137	C-024	Conveyor to Wind Sifter	Residue	N [b]	Outside	Y	Y	Wind Sifter	100%	100%	7.29	0.000140 [b]	0.0010
VN-2	139	C-035	Conveyor	Residue	N [b]	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	2.7	0.003000 [b]	0.0016
VN-2	147	C-044	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	24.87	0.003000 [b]	0.0746
VN-2	181	E-05	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	14.87	0.003000	0.0089
VN-2	182	E-05	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	9.87	0.003000	0.0059
VN-2	183	E-05	Magnetic Separation	Ferrous	N [b]	Inside		N	NA		0%	0.88	0.003000	0.0026
VN-2	184	E-05	Magnetic Separation	Ferrous	N [b]	Inside		N	NA		0%	5.00	0.003000	0.0150
VN-2	185	E-06	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	6.12	0.003000 [d]	0.0184
VN-2	186	E-06	Eddy Current Separator	Mids	N [b]	Outside		N	NA		0%	3.50	0.003000 [d]	0.0105
VN-2	187	E-06	Eddy Current Separator	Zorba	N [b]	Outside		N	NA		0%	0.25	0.003000 [d]	0.0008
VN-2	188	E-07	Wind Sifter	Lights	N [b]	Outside		Y	Cover		0%	0.25	0.002200 [d]	0.0006
VN-2	189	E-07	Wind Sifter	Heavies	1.5 [a]	Outside		Y	Wind Sifter	90%	100%	1.50	0.007606 [c]	0.0103

Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

	A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-2	193	E-12	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	14.87	0.003000	0.0089
VN-2	194	E-12	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	9.87	0.003000	0.0059
VN-2	195	E-12	Magnetic Separation	Ferrous	N [b]	Inside		N	NA		0%	0.88	0.003000	0.0026
VN-2	196	E-12	Magnetic Separation	Ferrous	N [b]	Inside		N	NA		0%	5.00	0.003000	0.0150
VN-2	197	E-12	Magnetic Separation	Zorba	N [b]	Outside		N	NA		0%	0.25	0.003000 [d]	0.0008
VN-2	198	E-13	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	6.12	0.003000 [d]	0.0184
VN-2	199	E-13	Eddy Current Separator	Mids	N [b]	Outside		N	NA		0%	3.50	0.003000 [d]	0.0105
VN-2	200	E-14	Wind Sifter	Lights	N [b]	Outside		Y	Cover		0%	0.20	0.002200 [d]	0.0004
VN-2	201	E-14	Wind Sifter	Heavies	1.5 [a]	Outside		Y	Wind Sifter	100%	100%	0.60	0.007606 [c]	0.0046
VN-2	202	E-15	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	9.09	0.003000	0.0055
VN-2	203	E-15	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.29	0.003000	0.0050
VN-2	204	E-15	Magnetic Separation	Ferrous	N [b]	Outside		N	NA		0%	0.05	0.003000 [d]	0.0002
VN-2	205	E-15	Magnetic Separation	Mixed Non-Ferrous	N [b]	Outside		N	NA		0%	0.40	0.003000 [d]	0.0012
VN-2	206	E-16	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	7.29	0.003000 [d]	0.0219
VN-2	207	E-16	Eddy Current Separator	Zorba	N [b]	Outside		N	NA		0%	1.00	0.003000 [d]	0.0030
VN-2	208	E-17	Wind Sifter	Lights	N [b]	Outside		Y	Cover		0%	1.09	0.002200 [d]	0.0024
VN-2	209	E-17	Wind Sifter	Residue	N [b]	Outside		Y	Wind Sifter	100%	100%	6.20	0.002200 [d]	0.0136
VN-2	210	E-21	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.29	0.003000	0.0050
VN-2	211	E-21	Magnetic Separation	Ferrous	N [b]	Outside		N	NA		0%	0.05	0.003000 [d]	0.0002
VN-2	212	E-21	Magnetic Separation	Mixed Non-Ferrous	N [b]	Outside		N	NA		0%	0	0.003000 [d]	0.0012
VN-2	213	E-22	Eddy Current Separator	Zorba	N [b]	Outside		N	NA		0%	1.00	0.003000 [d]	0.0030
VN-2	214	E-22	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	7.29	0.003000 [d]	0.0219
VN-2	215	E-23	Wind Sifter	Lights	N [b]	Outside		Y	Cover		0%	1	0.002200 [d]	0.0024
VN-2	216	E-23	Wind Sifter	Residue	N [b]	Outside		Y	Wind Sifter	100%	100%	6.20	0.002200 [d]	0.0136
VN-2	217	E-27	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.15	0.003000	0.0049

Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-2	219	E-28	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	7.15	0.003000 [d]	0.0215
VN-2	221	E-34	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	6.55	0.003000	0.0039
VN-2	222	E-34	Magnetic Separation	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	6.55	0.003000	0.0039
VN-2	224	E-35	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	5.05	0.003000 [d]	0.0152
VN-2	231	E-43	Vibratory Feeder	Residue	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	2.70	0.003000	0.0016
VN-2	232	E-44	Eddy Current Separator drop to stockpile	Zorba	1.5 [a]	Inside		N	NA		0%	0.50	0.007600	0.0038
VN-2	240	E-49	Transfer Conveyor	Residue onto ECS	N [b]	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.15	0.003000	0.0049
VN-2	242	ECS	Eddy Current Separator drop to container	Zorba	1.5 [a]	Inside		N	NA		0%	0.04	0.007600	0.0003
VN-2	243	ECS	Eddy Current Separator drop to container	Zorba	1.5 [a]	Inside		N	NA		0%	0.18	0.007600	0.0014
VN-2	248	SC-003	Supplemental Conveyor	Residue	0 [c]	0		0	0		0%	7.34	0.003000	0.0220
VN-2	249	SC-004	Supplemental Conveyor	Residue	0 [c]	0		0	0		0%	7.34	0.003000	0.0220
												Total Filterable PM Emissions		0.5395

Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

	A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-3	138	C-034	Conveyor	Material Separator	N [b]	Outside	Y	N	NA		0%	0.55	0.003000 [b]	0.0017
VN-3	140	C-039	Conveyor	Mixed Non-Ferrous	N [b]	Outside		N	NA		0%	0.80	0.003000 [b]	0.0024
VN-3	141	C-040	Conveyor	Residue	N [b]	Outside		N	NA		0%	2.80	0.003000 [b]	0.0084
VN-3	142	C-040	Conveyor	Mids	N [b]	Outside		N	NA		0%	7	0.003000 [b]	0.0210
VN-3	143	C-040	Conveyor	Residue	N [b]	Outside		N	NA		0%	4.20	0.003000 [b]	0.0126
VN-3	144	C-041	Conveyor	Zorba	N [b]	Outside		N	NA		0%	0.50	0.003000 [b]	0.0015
VN-3	145	C-042	Conveyor	Zorba	N [b]	Outside		N	NA		0%	1.50	0.003000 [b]	0.0045
VN-3	146	C-043	Conveyor	Zorba	N [b]	Outside		N	NA		0%	3	0.003000 [b]	0.0090
VN-3	148	C-044	Conveyor	Lights Zuric	N [b]	Outside	Y	N	NA		0%	0.30	0.003000 [b]	0.0009
VN-3	149	C-045	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	24.87	0.003000 [b]	0.0746
VN-3	150	C-047	Conveyor	To SSI	N [b]	Outside		N	NA		0%	0.55	0.003000 [b]	0.0017
VN-3	151	C-048	Conveyor	Out of SSI	N [b]	Outside		N	NA		0%	0.55	0.003000 [b]	0.0017
VN-3	152	C-050	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	25.07	0.003000 [b]	0.0752
VN-3	153	C-052	Conveyor	Residue	N [b]	Outside		N	NA		0%	2	0.003000 [b]	0.0068
VN-3	154	C-055	Conveyor	Wire	N [b]	Outside	Y	N	NA		0%	1.00	0.003000 [b]	0.0030
VN-3	155	C-058	Conveyor	Zuric drops	N [b]	Outside	Y	N	NA		0%	0.30	0.003000 [b]	0.0009
VN-3	156	C-060	Conveyor	Zone	N [b]	Outside	Y	N	NA		0%	1.20	0.003000 [b]	0.0036
VN-3	162	C-064	Conveyor drop to container	Zorba	1.5 [a]	Outside		N	NA		0%	0.70	0.007606 [c]	0.0053
VN-3	163	C-065	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	2.2	0.003000 [d]	0.0066
VN-3	164	C-066	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	54.39	0.003000 [d]	0.1632
VN-3	165	C-067	Conveyor	Residue	N [b]	Outside	Y	N	NA		0%	54.39	0.003000 [d]	0.1632
VN-3	168	C-071	Conveyor	Lights	N [b]	Outside	Y	Y	Cover		0%	0.03	0.000140 [d]	0.0000
VN-3	169	C-072	Conveyor	Lights	N [b]	Outside	Y	Y	Cover		0%	0	0.000140 [d]	0.0000
VN-3	170	DC-01 Cyc	DC-01 fines discharge to covered conveyor	Lights	N [b]	Outside		Y	Cover		0%	0.01	0.000140 [d]	0.0000
VN-3	171	DC-02 Cyc	DC-02 fines discharge to covered conveyor	Lights	N [b]	Outside		Y	Cover		0%	0.01	0.000140 [d]	0.0000

Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

	A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-3	172	DC-03 Cyc	DC-03 fines discharge to covered conveyor	Lights	N [b]	Outside		Y	Cover		0%	0.01	0.000140 [d]	0.0000
VN-3	173	DC-04 Cyc	DC-04 fines discharge to covered conveyor	Lights	N [b]	Outside		Y	Cover		0%	0.01	0.000140 [d]	0.0000
VN-3	218	E-27	Magnetic Separation	Ferrous	N [b]	Outside		N	NA		0%	0.25	0.003000 [d]	0.0008
VN-3	220	E-28	Eddy Current Separator	Zorba	N [b]	Outside		N	NA		0%	1.00	0.003000 [d]	0.0030
VN-3	223	E-35	Eddy Current Separator	Zorba	N [b]	Outside		N	NA		0%	1.50	0.003000 [d]	0.0045
VN-3	225	E-40	Separator	Lights Zuric	N [b]	Outside		N	NA		0%	0.24	0.025000 [d]	0.0060
VN-3	226	E-40	Separator	Heavies Zuric	N [b]	Outside		N	NA		0%	0.96	0.025000 [d]	0.0240
VN-3	227	E-40	Separator	Lights Zuric	N [b]	Outside		N	NA		0%	0.35	0.025000 [d]	0.0088
VN-3	228	E-41	Separator	Lights	N [b]	Outside		N	NA		0%	0.95	0.025000 [d]	0.0238
VN-3	229	E-41	Separator drop to container	Heavies	1.5 [a]	Outside		N	NA		0%	0.05	0.007606 [c]	0.0004
VN-3	230	E-42	Low speed shredder for size reduction	Out of SSI	N [b]	Outside		N	NA		0%	0.55	0.003000 [d]	0.0017
VN-3	234	E-46	Separator	Heavier Zorba	N [b]	Outside		N	NA		0%	1.25	0.02500 [d]	0.0313
VN-3	235	E-46	Separator	Lights Zorba	N [b]	Outside		N	NA		0%	0.25	0.02500 [d]	0.0063
VN-3	236	E-47	Separator	Zorba	N [b]	Outside		N	NA		0%	2.70	0.02500 [d]	0.0675
VN-3	237	E-47	Separator	Heavies Zorba	N [b]	Outside		N	NA		0%	0.85	0.02500 [d]	0.0213
VN-3	238	E-47	Separator	Lights Zorba	N [b]	Outside		N	NA		0%	0.15	0.02500 [d]	0.0038
VN-3	239	E-47	Separator	Light Zorba	N [b]	Outside		N	NA		0%	0.30	0.02500 [d]	0.0075
VN-3	241	E-50	Air Vibe	To Infeed SSI	N [b]	Outside		Y	Cover		0%	0.55	0.00014 [d]	0.0001
VN-3	250	SC-005	Supplemental Conveyor	Residue	0.0% [b]	0		0	0		0%	54.39	0.00300	0.1632
VN-3	251	SC-006	Supplemental Conveyor	Residue	0.0% [b]	0		0	0		0%	54.39	0.00300	0.1632
													Total Filterable PM Emissions	1.1050

R 010176

Table B-1 - Non-Ferrous Material Processing - Particulate Emissions
General III, LLC - Chicago, Illinois

	A	B	C	F	G	H	I	J	K	L	M	O	Q	R
Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM Emissions Factor lb/ton	Filterable PM Emissions lb/hr
VN-4	159	C-062	Conveyor	Heavier Zorba	N [b]	Outside		N	NA		0%	1.25	0.003000 [d]	0.0038
VN-4	160	C-063	Conveyor drop to stockpile	Zorba	1.5 [a]	Outside		N	NA		0%	2.70	0.007606 [c]	0.0205
VN-4	161	C-063	Conveyor drop to stockpile	Heavies Zorba	1.5% [a]	Outside		N	NA		0%	0.85	0.00761 [c]	0.0065
VN-4	233	E-44	Eddy Current Separator	Residue	N [b]	Outside		N	NA		0%	2.2	0.00300 [d]	0.0066
													Total Filterable PM Emissions	0.0374
VN-5	157	C-061	Conveyor drop to stockpile	Heavies Zuric	1.5% [a]	Outside		N	NA		0%	0.96	0.00761 [c]	0.0073
VN-5	158	C-061	Conveyor drop to stockpile	Heavies Zuric	1.5% [a]	Outside		N	NA		0%	0.30	0.00761 [c]	0.0023
VN-5	167	C-070	Conveyor drop to stockpile	Waste to Stockpile	1.5% [a]	Outside		N	NA		0%	0.55	0.00761 [c]	0.0042
													Total	0.0138
VN-6	166	C-068	Conveyor drop to stockpile	Residue	1.5 [a]	Outside	Y	N	NA		0%	54.39	0.007606 [c]	0.4137
VN-6	245	End Loader	load waste to truck	Waste	N [b]	Outside		N	NA		0%	54.39	0.00020 [b]	0.0111
													Total	0.4248

a Material moisture content (%) for light materials - AP-42, Table 13.2.4-1 for crushed limestone -

b Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3.
Emissions calculated with control Eff. factor included for source being inside of a building.

c Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3.

d Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying. If moisture is greater than 1.5% by weight, use controlled emission factors.

e Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for screening. If moisture is greater than 1.5% by weight, use controlled emission factors.

f Sources located inside the Fines Building emit to the atmosphere through Dust Collection DC-01. Emissions are estimated by 12,000

g Metal HAPs as percent of total PM measured at the discharge of the existing roll media filter in June 2018.

Table B-2 - Non-Ferrous Plant Stockpile - Particulate Emissions
General III, LLC - Chicago, Illinois

Volume Source Grouping	Stock Pile	Stock Pile Area Acres	Control Factor[b]	Inactive Emissions[a,d] PM lb/hr	Active Emissions[a,d] PM lb/hr
VN-1	FE from E-02	0.0047	0.33	0.0002	0.0009
VN-4	5" + Zorba	0.0189	0.33	0.0009	0.0034
VN-4	2-1/2" - 5" Zorba	0.0189	0.33	0.0009	0.0034
VN-4	5/8" - 2-1/2" Zorba	0.0189	0.33	0.0009	0.0034
			Total	0.0027	0.0102
VN-5	Tailings	0.0195	0.33	0.0009	0.0035
VN-5	Open	0.0195	0.33	0.0009	0.0035
VN-5	Wire	0.0195	0.33	0.0009	0.0035
VN-5	Wire Rich Solids	0.0195	0.33	0.0009	0.0035
VN-5	Zurick	0.0195	0.33	0.0009	0.0035
			Total	0.0045	0.0175
VN-6	Waste	0.0868	0.33	0.0042	0.0158

a. Stockpile emissions calculation from TCEQ for crushed stone downloaded August 2019.
https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss-calc-rock1.xlsx

b. Control Factor of 0.1 (90% control) for partial enclosure consisting of walls on three sides of bin. Control Factor of 1.0 for no control.

c. Assume number of active days to be 6 days per week and 52 weeks per year and inactive days to be 1 day per week and 52 weeks per year.

d. From TCEQ Guidance

Stockpile emission calculation:

PM Emission Rate (tpy) = [(inactive day PM EF x No. of inactive days) x stockpile area/2000 x control factor] +
[(active day PM EF x No. of active days) x (stockpile area/2000) x control factor]

Inactive Day PM Emission Factor = 3.50 lb-PM/acre-day

Active Day PM Emission Factor = 13.20 lb-PM/acre-day

Table B-3 - Non-Ferrous Material Processing - PM Emission Summary
General III, LLC - Chicago, Illinois

Srouces	PM Emission					
	Matl Handling		Stockpile		Tot	
	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr
VN-1	1.9420	1.9420	0.0009	0.0002	1.9429	1.9422
VN-2	0.5395	0.5395			0.5395	0.5395
VN-3	1.1050	1.1050			1.1050	1.1050
VN-4	0.0374	0.0374	0.0102	0.0027	0.0476	0.0401
VN-5	0.0138	0.0138	0.0175	0.0045	0.0313	0.0183
VN-6	0.4248	0.4248	0.0158	0.0042	0.4406	0.4290

Table B-4a - Non-Ferrous Material Processing - Metal Emissions in Active Hours
(7 AM - 7 PM, Mon-Sat)
General III, LLC - Chicago, Illinois

Volume Source	Units	VN-1	VN-2	VN-3	VN-4	VN-5	VN-6	DC-1
PM (Active)	lb/hr	1.942900	0.539528	1.105000	0.047600	0.031300	0.440600	0.514300
Source of Metals Conc. Data	Sample No.	5	5	5	5	5	5	5
	Sample Name	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	lb/hr	0.009170	0.002547	0.005216	0.000225	0.000148	0.002080	0.002427
Manganese	lb/hr	0.003420	0.000950	0.001945	0.000084	0.000055	0.000775	0.000905
Mercury	lb/hr	0.000018	0.000005	0.000010	0.000000	0.000000	0.000004	0.000005
Nickel	lb/hr	0.000604	0.000168	0.000344	0.000015	0.000010	0.000137	0.000160
Antimony	lb/hr	0.000002	0.000001	0.000001	0.000000	0.000000	0.000001	0.000001
Arsenic	lb/hr	0.000009	0.000002	0.000005	0.000000	0.000000	0.000002	0.000002
Beryllium	lb/hr	0.000002	0.000001	0.000001	0.000000	0.000000	0.000001	0.000001
Cadmium	lb/hr	0.000067	0.000019	0.000038	0.000002	0.000001	0.000015	0.000018
Chromium[c]	lb/hr	0.000826	0.000229	0.000470	0.000020	0.000013	0.000187	0.000219
Cobalt	lb/hr	0.000108	0.000030	0.000062	0.000003	0.000002	0.000025	0.000029
Phosphorus	lb/hr	0.001815	0.000504	0.001032	0.000044	0.000029	0.000412	0.000480
Selenium	lb/hr	0.000002	0.000001	0.000001	0.000000	0.000000	0.000001	0.000001
Zinc	lb/hr	0.066059	0.018344	0.037570	0.001618	0.001064	0.014980	0.017486
Barium	lb/hr	0.001329	0.000369	0.000756	0.000033	0.000021	0.000301	0.000352
Copper	lb/hr	0.003206	0.000890	0.001823	0.000079	0.000052	0.000727	0.000849
Silver	lb/hr	0.000024	0.000007	0.000013	0.000001	0.000000	0.000005	0.000006
Thallium	lb/hr	0.000002	0.000001	0.000001	0.000000	0.000000	0.000001	0.000001

a. Percentage of metal as % of total PM caculated based on measured metal emission rates from hammermill shredder controlled by cyclone and a roll media filter from June 2018.

b. Uncontrolled organic compound emission rates, as presented in ISRI Title V Applicability Workbook, Table D-11F, adjusted for RTO with 98% destruction efficiency.

c. Chromium (metal) and compounds other than Chromium VI

Table B-4b - Non-Ferrous Material Processing - Metal Emissions in Inactive Hours
(7 PM - 7 AM, Mon-Sat, All Day, Sun)
General III, LLC - Chicago, Illinois

Volume Source	Units	VN-1	VN-2	VN-3	VN-4	VN-5	VN-6	DC-1
PM (Inactive)	lb/hr	1.942200	0.539528	1.105000	0.040100	0.018300	0.429000	0.514300
Source of Metals Conc. Data	Sample No.	5	5	5	5	5	5	5
	Sample Name	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	lb/hr	0.009167	0.002547	0.005216	0.000189	0.000086	0.002025	0.002427
Manganese	lb/hr	0.003418	0.000950	0.001945	0.000071	0.000032	0.000755	0.000905
Mercury	lb/hr	0.000018	0.000005	0.000010	-	-	0.000004	0.000005
Nickel	lb/hr	0.000604	0.000168	0.000344	0.000012	0.000006	0.000133	0.000160
Antimony	lb/hr	0.000002	0.000001	0.000001	-	-	0.000001	0.000001
Arsenic	lb/hr	0.000009	0.000002	0.000005	-	-	0.000002	0.000002
Beryllium	lb/hr	0.000002	0.000001	0.000001	-	-	0.000001	0.000001
Cadmium	lb/hr	0.000067	0.000019	0.000038	0.000001	0.000001	0.000015	0.000018
Chromium [c]	lb/hr	0.000825	0.000229	0.000470	0.000017	0.000008	0.000182	0.000219
Cobalt	lb/hr	0.000108	0.000030	0.000062	0.000002	0.000001	0.000024	0.000029
Phosphorus	lb/hr	0.001814	0.000504	0.001032	0.000037	0.000017	0.000401	0.000480
Selenium	lb/hr	0.000002	0.000001	0.000001	-	-	0.000001	0.000001
Zinc	lb/hr	0.066035	0.018344	0.037570	0.001363	0.000622	0.014586	0.017486
Barium	lb/hr	0.001328	0.000369	0.000756	0.000027	0.000013	0.000293	0.000352
Copper	lb/hr	0.003205	0.000890	0.001823	0.000066	0.000030	0.000708	0.000849
Silver	lb/hr	0.000024	0.000007	0.000013	-	-	0.000005	0.000006
Thallium	lb/hr	0.000002	0.000001	0.000001	-	-	0.000001	0.000001

a. Percentage of metal as % of total PM caculated based on measured metal emission rates from hammermill shredder controlled by cyclone and a roll media filter from June 2018.

b. Uncontrolled organic compound emission rates, as presented in ISRI Title V Applicability Workbook, Table D-11F, adjusted for RTO with 98% destruction efficiency.

c. Chromium (metal) and compounds other than Chromium VI

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RK
& Associates, Inc.

Air Dispersion Modeling Report for Assessment of Metal Emission Impacts

General III, LLC – Chicago, Illinois

January 24, 2020

Appendix C

Vehicle Traffic Routes

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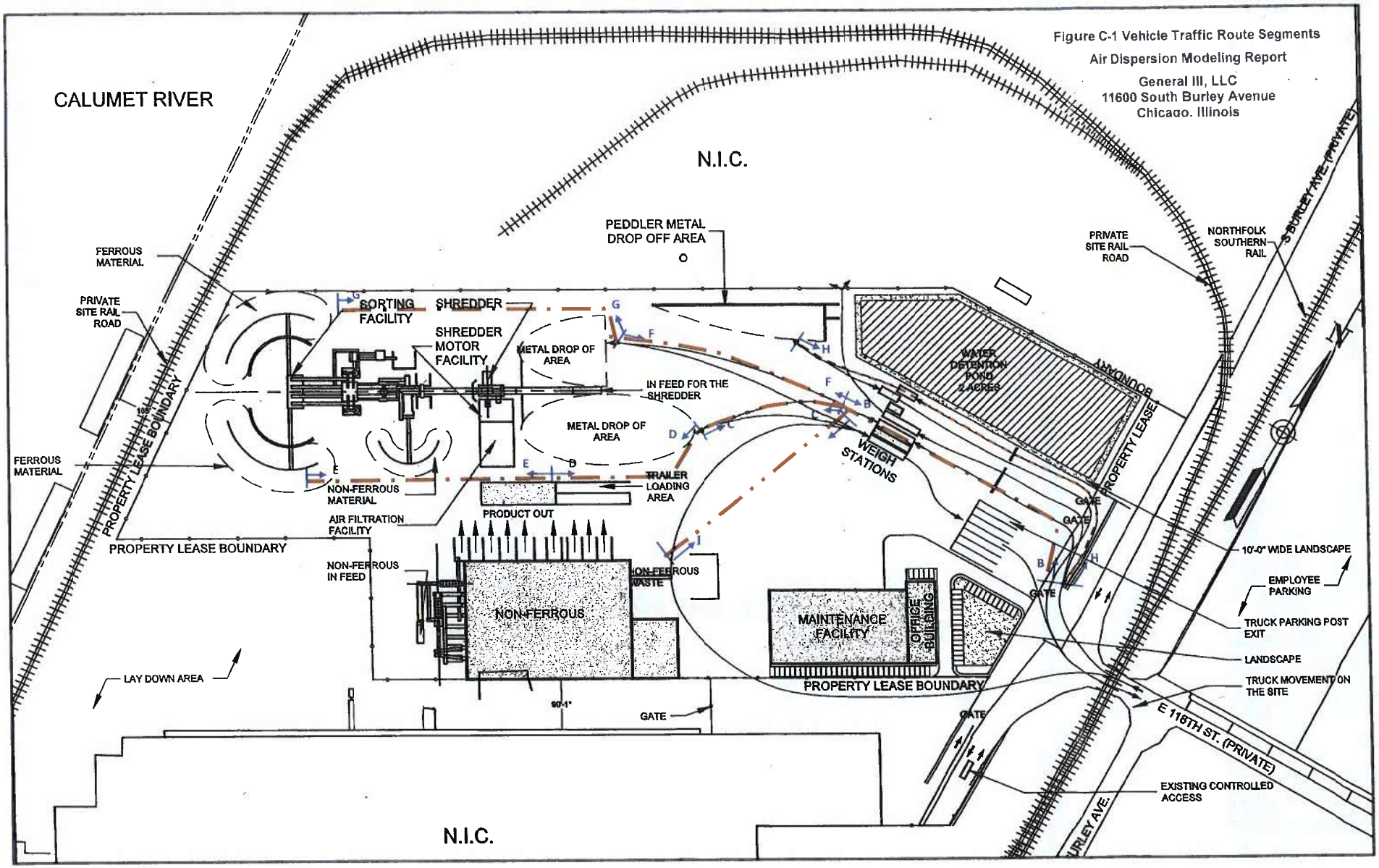

Figure C-1 Vehicle Traffic Route Segments

Air Dispersion Modeling Report

General III, LLC
11600 South Burley Avenue
Chicago, Illinois

RK
& Associates, Inc.

Air Dispersion Modeling Report for Assessment of Metal Emission Impacts

General III, LLC – Chicago, Illinois

January 24, 2020

Appendix D

Laboratory Report for Metals Analyses of GII Material Deposition Samples

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Environmental Monitoring and Technologies, Inc.

509 N. 3rd Avenue Des Plaines, Illinois 60016 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

Analytical Report

Mark Weintraub
Reserve Management Group
4550 Darrow Road
Stow, OH 44224

December 13, 2019

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

RE: Residential Soil Analysis

Dear Mark Weintraub:

Enclosed are the analytical reports for the EMT Work Order listed. Also included with this analytical report is a copy of the chain of custody associated with these samples. If you have any questions, please contact me.

Sincerely,

Mark Steuer
Project Manager
847.967.6666
MSteuer@emt.com
Approved for release: 12/13/2019 4:08:41PM

Approved by,

Nathan Fey
Laboratory Operations Manager

State of Illinois, NELAP Accredited Lab No. 100256, Cert No. 004524

Table of Contents

Cover Letter	*1*
Sample Summary	*3*
Case Narrative	*4*
Client Sample Results	*6*
Dates Report	*11*
Quality Control	*14*
Certified Analyses	*19*
List of Certifications	*19*
Qualifiers and Definitions	*20*
Chain of Custody	*21*

Environmental Monitoring and Technologies, Inc.

509 N. 3rd Avenue Des Plaines, Illinois 60016 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

Sample Summary

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FERDWY	19L0295-01	Soil	12/05/19 00:00	12/05/19 15:20
ASRRDWY	19L0296-01	Soil	12/05/19 00:00	12/05/19 15:20
FETP	19L0297-01	Soil	12/05/19 00:00	12/05/19 15:20
RDWY	19L0298-01	Soil	12/05/19 00:00	12/05/19 15:20
NFETP	19L0299-01	Soil	12/05/19 00:00	12/05/19 15:20

Environmental Monitoring and Technologies, Inc.

509 N. 3rd Avenue Des Plaines, Illinois 60016 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

Case Narrative

Client: Reserve Management Group **Date:** 12/13/2019
Project: Residential Soil Analysis

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

Sample results only relate to the sample(s) received at the laboratory and analytes of interest tested.

Work Order: 19L0295
The samples were received on 12/05/19 15:20. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was:

Cooler	Temp C°
Default Cooler	20.0

COC missing sample time.

R1) This is a revised report to include 6010_TI

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.

Work Order: 19L0296
The samples were received on 12/05/19 15:20. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was:

Cooler	Temp C°
Default Cooler	20.0

COC missing sample time.

R1) This is a revised report to include 6010_TI

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.

Environmental Monitoring and Technologies, Inc.

509 N. 3rd Avenue Des Plaines, Illinois 60016 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

Work Order: 19L0297
The samples were received on 12/05/19 15:20. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was:

Cooler	Temp C°
Default Cooler	20.0

COC missing sample time.

R1) This is a revised report to include 6010_TI

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.

Work Order: 19L0298
The samples were received on 12/05/19 15:20. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was:

Cooler	Temp C°
Default Cooler	20.0

COC missing sample time.

R1) This is a revised report to include 6010_TI

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.

Work Order: 19L0299
The samples were received on 12/05/19 15:20. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was:

Cooler	Temp C°
Default Cooler	20.0

COC missing sample time.

R1) This is a revised report to include 6010_TI

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.

Environmental Monitoring and Technologies, Inc.

509 N. 3rd Avenue Des Plaines, Illinois 60016 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

Client Sample Results

Client: Reserve Management Group
Project: Residential Soil Analysis
Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Client Sample ID: FERDWY
Report Date: 12/13/2019
Collection Date: 12/05/2019 00:00
Matrix: Soil
Lab ID: 19L0295-01

Analyses	Result	EMT Reporting Limit	Qual	Units	Date/Time Analyzed	Batch	Analyst
Metals by ICP-AES							
Method: SW6010C / SW3050							
Antimony	< 1.23	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Arsenic	**2.28**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Barium	**388**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Beryllium	< 5.90	5.90		mg/Kg	12/12/19 13:13	B9L0408	KJ1
Cadmium	**9.63**	0.123		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Chromium	**220**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Cobalt	**15.7**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Copper	**1110**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Lead	**763**	12.3	Q, S3	mg/Kg	12/12/19 13:13	B9L0408	KJ1
Manganese	**960**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Nickel	**125**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Phosphorus	**698**	6.16	Q, S3	mg/Kg	12/12/19 14:03	B9L0408	KJ1
Selenium	< 1.23	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Silver	< 12.3	12.3		mg/Kg	12/12/19 13:13	B9L0408	KJ1
Thallium	< 1.23	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Titanium	**137**	1.23		mg/Kg	12/12/19 14:03	B9L0408	KJ1
Zinc	**5470**	12.3		mg/Kg	12/12/19 13:13	B9L0408	KJ1
Mercury by CVAA							
Method: SW7471B							
Mercury	**1.77**	0.098		mg/Kg	12/11/19 13:53	B9L0421	GSB

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Client Sample Results

(Continued)

Client: Reserve Management Group
Project: Residential Soil Analysis
Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Client Sample ID: ASRRDWY
Report Date: 12/13/2019
Collection Date: 12/05/2019 00:00
Matrix: Soil
Lab ID: 19L0296-01

Analyses	Result	EMT Reporting Limit	Qual	Units	Date/Time Analyzed	Batch	Analyst
Metals by ICP-AES							
Method: SW6010C / SW3050							
Antimony	< 1.22	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Arsenic	**1.76**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Barium	**673**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Beryllium	< 1.30	1.30		mg/Kg	12/12/19 13:17	B9L0408	KJ1
Cadmium	**18.4**	0.122		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Chromium	**991**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Cobalt	**38.5**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Copper	**1080**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Lead	**1610**	12.2	Q, S3	mg/Kg	12/12/19 13:17	B9L0408	KJ1
Manganese	**1030**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Nickel	**463**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Phosphorus	**561**	6.12	Q, S3	mg/Kg	12/12/19 14:08	B9L0408	KJ1
Selenium	< 1.22	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Silver	< 12.2	12.2		mg/Kg	12/12/19 13:17	B9L0408	KJ1
Thallium	< 1.22	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Titanium	**162**	1.22		mg/Kg	12/12/19 14:08	B9L0408	KJ1
Zinc	**13300**	122		mg/Kg	12/12/19 12:53	B9L0408	KJ1
Mercury by CVAA							
Method: SW7471B							
Mercury	**6.96**	0.972		mg/Kg	12/11/19 14:24	B9L0421	GSB

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Client Sample Results

(Continued)

Client:	Reserve Management Group	**Client Sample ID:**	FETP
Project:	Residential Soil Analysis	**Report Date:**	12/13/2019
		Collection Date:	12/05/2019 00:00
Work Order:	19L0295, 19L0296, 19L0297, 19L0298, 19L0299	**Matrix:**	Soil
		Lab ID:	19L0297-01

Analyses	Result	EMT Reporting Limit	Qual	Units	Date/Time Analyzed	Batch	Analyst
Metals by ICP-AES							
Method: SW6010C / SW3050							
Antimony	< 1.17	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Arsenic	**2.75**	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Barium	**984**	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Beryllium	< 1.17	1.17		mg/Kg	12/12/19 13:21	B9L0408	KJ1
Cadmium	**47.6**	0.117		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Chromium	**402**	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Cobalt	**52.0**	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Copper	**2100**	11.7		mg/Kg	12/12/19 13:21	B9L0408	KJ1
Lead	**4230**	117	Q, S3	mg/Kg	12/12/19 12:57	B9L0408	KJ1
Manganese	**2210**	11.7		mg/Kg	12/12/19 13:21	B9L0408	KJ1
Nickel	**304**	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Phosphorus	**833**	5.87	Q, S3	mg/Kg	12/12/19 14:13	B9L0408	KJ1
Selenium	< 1.17	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Silver	< 11.7	11.7		mg/Kg	12/12/19 13:21	B9L0408	KJ1
Thallium	< 1.17	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Titanium	**199**	1.17		mg/Kg	12/12/19 14:13	B9L0408	KJ1
Zinc	**37300**	117		mg/Kg	12/12/19 12:57	B9L0408	KJ1
Mercury by CVAA							
Method: SW7471B							
Mercury	**18.8**	9.89		mg/Kg	12/11/19 14:18	B9L0421	GSB

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Client Sample Results

(Continued)

Client: Reserve Management Group
Project: Residential Soil Analysis
Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Client Sample ID: RDWY
Report Date: 12/13/2019
Collection Date: 12/05/2019 00:00
Matrix: Soil
Lab ID: 19L0298-01

Analyses	Result	EMT Reporting Limit	Qual	Units	Date/Time Analyzed	Batch	Analyst
Metals by ICP-AES							
Method: SW6010C / SW3050							
Antimony	< 1.16	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Arsenic	**2.70**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Barium	**232**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Beryllium	< 5.50	5.50		mg/Kg	12/12/19 13:26	B9L0408	KJ1
Cadmium	**5.42**	0.116		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Chromium	**173**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Cobalt	**10.7**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Copper	**841**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Lead	**525**	11.6	Q, S3	mg/Kg	12/12/19 13:26	B9L0408	KJ1
Manganese	**729**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Nickel	**106**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Phosphorus	**270**	5.78	Q, S3	mg/Kg	12/12/19 14:18	B9L0408	KJ1
Selenium	< 1.16	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Silver	< 11.6	11.6		mg/Kg	12/12/19 13:26	B9L0408	KJ1
Thallium	< 1.16	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Titanium	**112**	1.16		mg/Kg	12/12/19 14:18	B9L0408	KJ1
Zinc	**3080**	11.6		mg/Kg	12/12/19 13:26	B9L0408	KJ1
Mercury by CVAA							
Method: SW7471B							
Mercury	**2.22**	0.965		mg/Kg	12/11/19 14:20	B9L0421	GSB

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Client Sample Results

(Continued)

Client:	Reserve Management Group	**Client Sample ID:**	NFETP
Project:	Residential Soil Analysis	**Report Date:**	12/13/2019
		Collection Date:	12/05/2019 00:00
Work Order:	19L0295, 19L0296, 19L0297, 19L0298, 19L0299	**Matrix:**	Soil
		Lab ID:	19L0299-01

Analyses	Result	EMT Reporting Limit	Qual	Units	Date/Time Analyzed	Batch	Analyst
Metals by ICP-AES							
Method: SW6010C / SW3050							
Antimony	< 1.21	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Arsenic	**4.51**	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Barium	**684**	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Beryllium	< 1.21	1.21		mg/Kg	12/12/19 13:39	B9L0408	KJ1
Cadmium	**34.6**	0.121		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Chromium	**425**	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Cobalt	**55.8**	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Copper	**1650**	12.1		mg/Kg	12/12/19 13:39	B9L0408	KJ1
Lead	**4720**	121	Q, S3	mg/Kg	12/12/19 13:05	B9L0408	KJ1
Manganese	**1760**	12.1		mg/Kg	12/12/19 13:39	B9L0408	KJ1
Nickel	**311**	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Phosphorus	**934**	6.03	Q, S3	mg/Kg	12/12/19 14:31	B9L0408	KJ1
Selenium	< 1.21	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Silver	< 12.1	12.1		mg/Kg	12/12/19 13:39	B9L0408	KJ1
Thallium	< 1.21	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Titanium	**221**	1.21		mg/Kg	12/12/19 14:31	B9L0408	KJ1
Zinc	**34000**	121		mg/Kg	12/12/19 13:05	B9L0408	KJ1
Mercury by CVAA							
Method: SW7471B							
Mercury	**9.34**	9.00		mg/Kg	12/11/19 14:22	B9L0421	GSB

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Dates Report

Client: Reserve Management Group **Report Date:** 12/13/2019
Project: Residential Soil Analysis

Work Order: 19L0295,19L0296,19L0297,19L0298,19L0299

Sample ID	Client Sample ID	Collection	Matrix	Test Name	Leached Prep Date	Prep Date	Analysis Date	Batch ID	Sequence
19L0295-01	FERDWY	12/05/19	Soil	Antimony, Total ICP-AES		12/11/19 09:53	12/12/19 14:03	B9L0408	S9L0269
				Silver, Total ICP-AES		12/11/19 09:53	12/12/19 13:13		
				Zinc, Total ICP-AES		12/11/19 09:53	12/12/19 13:13		
				Thallium, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Selenium, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Lead, Total ICP-AES		12/11/19 09:53	12/12/19 13:13		
				Phosphorus, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Nickel, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Barium, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Titanium, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Arsenic, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Manganese, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Beryllium, Total ICP-AES		12/11/19 09:53	12/12/19 13:13		
				Cadmium, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Cobalt, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Chromium, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Copper, Total ICP-AES		12/11/19 09:53	12/12/19 14:03		
				Mercury, Total CVAA		12/11/19 10:35	12/11/19 13:53	B9L0421	S9L0229
19L0296-01	ASRRDWY			Nickel, Total ICP-AES		12/11/19 09:53	12/12/19 14:08	B9L0408	S9L0269
				Beryllium, Total ICP-AES		12/11/19 09:53	12/12/19 13:17		
				Zinc, Total ICP-AES		12/11/19 09:53	12/12/19 12:53		
				Thallium, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Titanium, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Selenium, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Antimony, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Lead, Total ICP-AES		12/11/19 09:53	12/12/19 13:17		
				Phosphorus, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Copper, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Chromium, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Silver, Total ICP-AES		12/11/19 09:53	12/12/19 13:17		
				Cadmium, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Barium, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Arsenic, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Manganese, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Cobalt, Total ICP-AES		12/11/19 09:53	12/12/19 14:08		
				Mercury, Total CVAA		12/11/19 10:35	12/11/19 14:24	B9L0421	S9L0229
19L0297-01	FETP			Chromium, Total ICP-AES		12/11/19 09:53	12/12/19 14:13	B9L0408	S9L0269
				Cobalt, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Cadmium, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Beryllium, Total ICP-AES		12/11/19 09:53	12/12/19 13:21		
				Barium, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Silver, Total ICP-AES		12/11/19 09:53	12/12/19 13:21		

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Dates Report

(Continued)

Client: Reserve Management Group

Project: Residential Soil Analysis

Report Date: 12/13/2019

Work Order: 19L0295,19L0296,19L0297,19L0298,19L0299

Sample ID	Client Sample ID	Collection	Matrix	Test Name	Leached Prep Date	Prep Date	Analysis Date	Batch ID	Sequence
19L0297-01	FETP	12/05/19	Soil	Nickel, Total ICP-AES		12/11/19 09:53	12/12/19 14:13	B9L0408	S9L0269
				Manganese, Total ICP-AES		12/11/19 09:53	12/12/19 13:21		
				Arsenic, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Zinc, Total ICP-AES		12/11/19 09:53	12/12/19 12:57		
				Phosphorus, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Lead, Total ICP-AES		12/11/19 09:53	12/12/19 12:57		
				Antimony, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Selenium, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Titanium, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Thallium, Total ICP-AES		12/11/19 09:53	12/12/19 14:13		
				Copper, Total ICP-AES		12/11/19 09:53	12/12/19 13:21		
				Mercury, Total CVAA		12/11/19 10:35	12/11/19 14:18	B9L0421	S9L0229
19L0298-01	RDWY			Manganese, Total ICP-AES		12/11/19 09:53	12/12/19 14:18	B9L0408	S9L0269
				Thallium, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Antimony, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Selenium, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Lead, Total ICP-AES		12/11/19 09:53	12/12/19 13:26		
				Phosphorus, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Nickel, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Zinc, Total ICP-AES		12/11/19 09:53	12/12/19 13:26		
				Silver, Total ICP-AES		12/11/19 09:53	12/12/19 13:26		
				Chromium, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Cobalt, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Cadmium, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Titanium, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Beryllium, Total ICP-AES		12/11/19 09:53	12/12/19 13:26		
				Barium, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Arsenic, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Copper, Total ICP-AES		12/11/19 09:53	12/12/19 14:18		
				Mercury, Total CVAA		12/11/19 10:35	12/11/19 14:20	B9L0421	S9L0229
19L0299-01	NFETP			Nickel, Total ICP-AES		12/11/19 09:53	12/12/19 14:31	B9L0408	S9L0269
				Titanium, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Selenium, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Beryllium, Total ICP-AES		12/11/19 09:53	12/12/19 13:39		
				Antimony, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Zinc, Total ICP-AES		12/11/19 09:53	12/12/19 13:05		
				Lead, Total ICP-AES		12/11/19 09:53	12/12/19 13:05		
				Phosphorus, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Thallium, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Manganese, Total ICP-AES		12/11/19 09:53	12/12/19 13:39		
				Copper, Total ICP-AES		12/11/19 09:53	12/12/19 13:39		
				Chromium, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		

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Dates Report

(Continued)

Client: Reserve Management Group
Project: Residential Soil Analysis

Report Date: 12/13/2019

Work Order: 19L0295,19L0296,19L0297,19L0298,19L0299

Sample ID	Client Sample ID	Collection	Matrix	Test Name	Leached Prep Date	Prep Date	Analysis Date	Batch ID	Sequence
19L0299-01	NFETP	12/05/19	Soil	Cadmium, Total ICP-AES		12/11/19 09:53	12/12/19 14:31	B9L0408	S9L0269
				Barium, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Arsenic, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Silver, Total ICP-AES		12/11/19 09:53	12/12/19 13:39		
				Cobalt, Total ICP-AES		12/11/19 09:53	12/12/19 14:31		
				Mercury, Total CVAA		12/11/19 10:35	12/11/19 14:22	B9L0421	S9L0229

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Quality Control

Client: Reserve Management Group
Project: Residential Soil Analysis

Report Date: 12/13/2019
Matrix: Solid

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Metals by ICP-AES

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch: B9L0408 - SW3050										
Blank (B9L0408-BLK1)				*Prepared: 12/11/2019 09:53 Analyzed: 12/12/2019 12:25*						
Antimony	< 2.50	2.50	mg/Kg							
Arsenic	< 2.50	2.50	mg/Kg							
Barium	< 2.50	2.50	mg/Kg							
Beryllium	< 0.250	0.250	mg/Kg							
Cadmium	< 0.250	0.250	mg/Kg							
Chromium	< 2.50	2.50	mg/Kg							
Cobalt	< 2.50	2.50	mg/Kg							
Copper	< 2.50	2.50	mg/Kg							
Lead	< 2.50	2.50	mg/Kg							
Manganese	< 2.50	2.50	mg/Kg							
Nickel	< 2.50	2.50	mg/Kg							
Phosphorus	< 12.5	12.5	mg/Kg							
Selenium	< 2.50	2.50	mg/Kg							
Silver	< 2.50	2.50	mg/Kg							
Thallium	< 2.50	2.50	mg/Kg							
Titanium	< 2.50	2.50	mg/Kg							
Zinc	< 2.50	2.50	mg/Kg							
LCS (B9L0408-BS1)				*Prepared: 12/11/2019 09:53 Analyzed: 12/12/2019 12:29*						
Antimony	51.5	2.50	mg/Kg	50.00		103	80-105			
Arsenic	47.6	2.50	mg/Kg	50.00		95.1	80-107			
Barium	50.4	2.50	mg/Kg	50.00		101	80-109			
Beryllium	4.90	0.250	mg/Kg	5.000		98.1	81.9-112			
Cadmium	5.10	0.250	mg/Kg	5.000		102	80-110			
Chromium	49.8	2.50	mg/Kg	50.00		99.5	80-111			
Cobalt	51.2	2.50	mg/Kg	50.00		102	85-110			
Copper	52.0	2.50	mg/Kg	50.00		104	84.8-108			
Lead	47.3	2.50	mg/Kg	50.00		94.6	80-111			
Manganese	50.0	2.50	mg/Kg	50.00		100	82.3-108			
Nickel	48.3	2.50	mg/Kg	50.00		96.6	83.5-107			
Phosphorus	249	12.5	mg/Kg	250.0		99.6	80-120			
Selenium	47.6	2.50	mg/Kg	50.00		95.2	80-106			
Silver	4.90	2.50	mg/Kg	5.000		98.0	80-116			
Thallium	49.9	2.50	mg/Kg	50.00		99.8	80-112			
Titanium	48.1	2.50	mg/Kg	50.00		96.2	80-120			
Zinc	49.5	2.50	mg/Kg	50.00		98.9	80-110			
Serial Dilution (B9L0408-DUP1)		**Source: 19L0334-04RE1**		*Prepared: 12/11/2019 09:53 Analyzed: 12/12/2019 13:59*						
Beryllium	3.23	5.76	mg/Kg		3.53			8.87	10	
Copper	19.8	57.6	mg/Kg		18.4			7.48	10	
Manganese	428	57.6	mg/Kg		423			1.25	10	
Silver	< 6.91	57.6	mg/Kg		ND				10	

Environmental Monitoring and Technologies, Inc.

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Quality Control

(Continued)

Client: Reserve Management Group
Project: Residential Soil Analysis

Report Date: 12/13/2019
Matrix: Solid

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Metals by ICP-AES

(Continued)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch: B9L0408 - SW3050 *(Continued)*										
Serial Dilution (B9L0408-DUP1) (Continued)		**Source: 19L0334-04RE1**		*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 13:59*			
Zinc	44.4	57.6	mg/Kg		44.0			0.730	10	
Serial Dilution (B9L0408-DUP2)		**Source: 19L0334-04RE2**		*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 14:54*			
Antimony	< 2.30	5.76	mg/Kg		ND				10	
Arsenic	3.50	5.76	mg/Kg		3.19			9.22	10	
Barium	48.1	5.76	mg/Kg		45.1			6.44	10	
Cadmium	< 0.161	0.576	mg/Kg		ND				10	
Chromium	31.1	5.76	mg/Kg		27.2			13.3	10	P
Cobalt	10.0	5.76	mg/Kg		8.80			13.1	10	P
Lead	14.1	5.76	mg/Kg		13.4			4.96	10	
Nickel	23.7	5.76	mg/Kg		20.7			13.6	10	P
Phosphorus	231	28.8	mg/Kg		213			7.96	10	
Selenium	< 2.26	5.76	mg/Kg		ND				10	
Thallium	< 1.96	5.76	mg/Kg		ND				10	
Titanium	46.5	5.76	mg/Kg		42.2			9.79	10	
MRL Check (B9L0408-MRL1)				*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 12:33*			
Antimony	2.52	2.50	mg/Kg	2.500		101	70-130			
Arsenic	2.52	2.50	mg/Kg	2.500		101	70-130			
Barium	2.63	2.50	mg/Kg	2.500		105	70-130			
Beryllium	0.245	0.250	mg/Kg	0.2500		98.0	70-130			
Cadmium	0.260	0.250	mg/Kg	0.2500		104	70-130			
Chromium	2.66	2.50	mg/Kg	2.500		107	70-130			
Cobalt	2.10	2.50	mg/Kg	2.000		105	70-130			
Copper	2.68	2.50	mg/Kg	2.500		107	70-130			
Lead	2.46	2.50	mg/Kg	2.500		98.6	70-130			
Manganese	2.62	2.50	mg/Kg	2.500		105	70-130			
Nickel	2.44	2.50	mg/Kg	2.500		97.8	70-130			
Phosphorus	14.0	12.5	mg/Kg	12.50		112	70-130			
Selenium	2.89	2.50	mg/Kg	2.500		116	70-130			
Silver	0.270	2.50	mg/Kg	0.2500		108	70-130			
Thallium	2.60	2.50	mg/Kg	2.500		104	70-130			
Titanium	2.50	2.50	mg/Kg	2.500		100	70-130			
Zinc	3.10	2.50	mg/Kg	2.500		124	70-130			
Matrix Spike (B9L0408-MS1)		**Source: 19L0334-04RE1**		*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 13:47*			
Beryllium	5.83	1.20	mg/Kg	2.408	3.53	95.6	75-125			
Copper	41.9	12.0	mg/Kg	24.08	18.4	97.7	75-125			
Manganese	332	12.0	mg/Kg	24.08	423	NR	75-125			S
Silver	< 1.44	12.0	mg/Kg	2.408	ND		75-125			S
Zinc	63.7	12.0	mg/Kg	24.08	44.0	81.7	75-125			

Environmental Monitoring and Technologies, Inc.

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Quality Control
(Continued)

Client: Reserve Management Group **Report Date:** 12/13/2019
Project: Residential Soil Analysis **Matrix:** Solid

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Metals by ICP-AES
(Continued)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch: B9L0408 - SW3050 *(Continued)*										
Matrix Spike (B9L0408-MS2)	**Source: 19L0334-04RE2**			*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 14:40*			
Antimony	0.508	1.20	mg/Kg	24.08	ND	2.11	75-125			S
Arsenic	22.0	1.20	mg/Kg	24.08	3.19	78.2	75-125			
Barium	63.5	1.20	mg/Kg	24.08	45.1	76.7	75-125			
Cadmium	1.69	0.120	mg/Kg	2.408	ND	70.3	75-125			S
Chromium	46.6	1.20	mg/Kg	24.08	27.2	80.7	75-125			
Cobalt	24.2	1.20	mg/Kg	24.08	8.80	64.1	75-125			S
Lead	28.9	1.20	mg/Kg	24.08	13.4	64.4	75-125			S
Nickel	34.2	1.20	mg/Kg	24.08	20.7	56.4	75-125			S
Phosphorus	306	6.02	mg/Kg	120.4	213	77.4	75-125			
Selenium	14.9	1.20	mg/Kg	24.08	ND	61.9	75-125			S
Thallium	15.4	1.20	mg/Kg	24.08	ND	64.1	75-125			S
Titanium	46.2	1.20	mg/Kg	24.08	42.2	16.5	75-125			S
Matrix Spike Dup (B9L0408-MSD1)	**Source: 19L0334-04RE1**			*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 13:51*			
Beryllium	5.43	1.22	mg/Kg	2.436	3.53	78.3	75-125	7.02	20	
Copper	39.2	12.2	mg/Kg	24.36	18.4	85.3	75-125	6.79	20	
Manganese	436	12.2	mg/Kg	24.36	423	55.1	75-125	27.2	20	P, S
Silver	< 1.46	12.2	mg/Kg	2.436	ND		75-125		20	S
Zinc	62.8	12.2	mg/Kg	24.36	44.0	76.9	75-125	1.48	20	
Matrix Spike Dup (B9L0408-MSD2)	**Source: 19L0334-04RE2**			*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 14:45*			
Antimony	1.12	1.22	mg/Kg	24.36	ND	4.60	75-125	75.2	20	P, S
Arsenic	21.5	1.22	mg/Kg	24.36	3.19	74.9	75-125	2.70	20	S
Barium	65.1	1.22	mg/Kg	24.36	45.1	82.3	75-125	2.44	20	
Cadmium	1.73	0.122	mg/Kg	2.436	ND	71.2	75-125	2.43	20	S
Chromium	45.2	1.22	mg/Kg	24.36	27.2	73.8	75-125	3.17	20	S
Cobalt	25.7	1.22	mg/Kg	24.36	8.80	69.5	75-125	6.01	20	S
Lead	28.2	1.22	mg/Kg	24.36	13.4	60.7	75-125	2.57	20	S
Nickel	36.4	1.22	mg/Kg	24.36	20.7	64.8	75-125	6.23	20	S
Phosphorus	295	6.09	mg/Kg	121.8	213	67.0	75-125	3.84	20	S
Selenium	15.6	1.22	mg/Kg	24.36	ND	64.2	75-125	4.80	20	S
Thallium	16.1	1.22	mg/Kg	24.36	ND	66.1	75-125	4.15	20	S
Titanium	67.9	1.22	mg/Kg	24.36	42.2	105	75-125	38.0	20	P, S
Post Spike (B9L0408-PS1)	**Source: 19L0334-04RE1**			*Prepared: 12/11/2019 09:53*			*Analyzed: 12/12/2019 13:55*			
Beryllium	120	1.15	mg/Kg	115.2	3.53	101	80-120			
Copper	143	11.5	mg/Kg	115.2	18.4	108	80-120			
Manganese	531	11.5	mg/Kg	115.2	423	94.0	80-120			
Silver	3.73	11.5	mg/Kg	115.2	ND	3.24	80-120			S
Zinc	161	11.5	mg/Kg	115.2	44.0	101	80-120			

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Quality Control
(Continued)

Client: Reserve Management Group
Project: Residential Soil Analysis

Report Date: 12/13/2019
Matrix: Solid

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Metals by ICP-AES
(Continued)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch: B9L0408 - SW3050 *(Continued)*										
Post Spike (B9L0408-PS2)		**Source: 19L0334-04RE2**		*Prepared: 12/11/2019 09:53*		*Analyzed: 12/12/2019 14:49*				
Antimony	8.53	1.28	mg/Kg	12.80	ND	66.6	80-120			S
Arsenic	15.2	1.28	mg/Kg	12.80	3.19	94.1	80-120			
Barium	59.6	1.28	mg/Kg	12.80	45.1	114	80-120			
Cadmium	10.8	0.128	mg/Kg	12.80	ND	84.2	80-120			
Chromium	39.7	1.28	mg/Kg	12.80	27.2	97.4	80-120			
Cobalt	20.2	1.28	mg/Kg	12.80	8.80	88.7	80-120			
Lead	23.6	1.28	mg/Kg	12.80	13.4	80.0	80-120			
Nickel	31.9	1.28	mg/Kg	12.80	20.7	87.8	80-120			
Phosphorus	229	6.40	mg/Kg	12.80	213	125	80-120			S
Selenium	8.96	1.28	mg/Kg	12.80	ND	70.0	80-120			S
Thallium	9.34	1.28	mg/Kg	12.80	ND	72.9	80-120			S
Titanium	55.4	1.28	mg/Kg	12.80	42.2	103	80-120			
Reference (B9L0408-SRM1)				*Prepared: 12/11/2019 09:53*		*Analyzed: 12/12/2019 12:37*				
Antimony	16.8	25.0	mg/Kg	12.70		133	50-150			
Arsenic	92.0	25.0	mg/Kg	111.3		82.7	50-150			
Barium	357	25.0	mg/Kg	304.9		117	50-150			
Beryllium	109	2.50	mg/Kg	101.6		107	50-150			
Cadmium	78.6	2.50	mg/Kg	88.94		88.4	50-150			
Chromium	177	25.0	mg/Kg	152.5		116	50-150			
Cobalt	41.3	25.0	mg/Kg	46.70		88.4	50-150			
Copper	90.1	25.0	mg/Kg	76.23		118	50-150			
Lead	142	25.0	mg/Kg	127.0		112	50-150			
Manganese	237	25.0	mg/Kg	228.7		104	50-150			
Nickel	139	25.0	mg/Kg	161.6		86.3	50-150			
Selenium	59.2	25.0	mg/Kg	50.82		116	50-150			
Silver	22.1	25.0	mg/Kg	15.25		145	50-150			
Thallium	40.4	25.0	mg/Kg	50.11		80.7	50-150			
Titanium	215	25.0	mg/Kg	287.1		74.8	50-150			
Zinc	144	25.0	mg/Kg	158.1		91.0	50-150			

Environmental Monitoring and Technologies, Inc.

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Quality Control
(Continued)

Client: Reserve Management Group
Project: Residential Soil Analysis
Report Date: 12/13/2019
Matrix: Solid

Work Order: 19L0295, 19L0296, 19L0297, 19L0298, 19L0299

Mercury by CVAA

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch: B9L0421										
Blank (B9L0421-BLK1)				*Prepared: 12/11/2019 10:35*			*Analyzed: 12/11/2019 13:48*			
Mercury	< 0.100	0.100	mg/Kg							
LCS (B9L0421-BS1)				*Prepared: 12/11/2019 10:35*			*Analyzed: 12/11/2019 13:50*			
Mercury	0.504	0.100	mg/Kg	0.5000		101	89.7-115			
MRL Check (B9L0421-MRL1)				*Prepared: 12/11/2019 10:35*			*Analyzed: 12/11/2019 13:42*			
Mercury	0.218	0.100	mg/Kg	0.2000		109	70-130			
Matrix Spike (B9L0421-MS1)		**Source: 19K0764-02**		*Prepared: 12/11/2019 10:35*			*Analyzed: 12/11/2019 14:12*			
Mercury	0.447	0.097	mg/Kg	0.4853	ND	92.2	75-125			
Matrix Spike Dup (B9L0421-MSD1)		**Source: 19K0764-02**		*Prepared: 12/11/2019 10:35*			*Analyzed: 12/11/2019 14:14*			
Mercury	0.452	0.097	mg/Kg	0.4837	ND	93.5	75-125	1.06	20	
Reference (B9L0421-SRM1)				*Prepared: 12/11/2019 10:35*			*Analyzed: 12/11/2019 13:51*			
Mercury	0.147	0.100	mg/Kg	0.1832		80.3	50-150			

Environmental Monitoring and Technologies, Inc.

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Certified Analyses included in this Report

Analyte	CAS #	Certifications
SW6010C in Solid		
Antimony	7440-36-0	DoD,ISO,WDNR,ILEPA
Arsenic	7440-38-2	DoD,ISO,AKDEC,WDNR,ILEPA
Barium	7440-39-3	DoD,ISO,AKDEC,WDNR,ILEPA
Beryllium	7440-41-7	DoD,ISO,WDNR,ILEPA
Cadmium	7440-43-9	DoD,ISO,AKDEC,WDNR,ILEPA
Chromium	7440-47-3	DoD,ISO,AKDEC,WDNR,ILEPA
Cobalt	7440-48-4	DoD,ISO,WDNR,ILEPA
Copper	7440-50-8	DoD,ISO,WDNR,ILEPA
Lead	7439-92-1	DoD,ISO,AKDEC,WDNR,ILEPA
Manganese	7439-96-5	DoD,ISO,WDNR,ILEPA
Nickel	7440-02-0	DoD,ISO,AKDEC,WDNR,ILEPA
Phosphorus	7723-14-0	DoD
Selenium	7782-49-2	DoD,ISO,WDNR,ILEPA
Silver	7440-22-4	DoD,ISO,WDNR,ILEPA
Thallium	7440-28-0	DoD,WDNR,ILEPA
Titanium	7440-32-6	DoD,WDNR,ILEPA
Zinc	7440-66-6	DoD,ISO,WDNR,ILEPA
SW7471B in Solid		
Mercury	7439-97-6	ISO,DoD,WDNR,ILEPA

List of Certifications

Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	04/30/2020
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	04/30/2020
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	04/30/2020
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	004524	01/31/2020
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	04/30/2020
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2020

Environmental Monitoring and Technologies, Inc.

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Qualifiers and Definitions

Item	Description
P	The quality control sample %RPD is above the laboratory control limit.
Q	One or more quality control results were outside of the acceptance limits (e.g. LCS recovery, surrogate spike recovery, or CCV recovery).
S	The quality control sample recovery is outside of the laboratory control limits.
S3	The percent recovery was outside the limits, but the analyte is reported within the calibration range. Data is acceptable.
%Rec	Percent Recovery

ENVIRONMENTAL MONITORING TECHNOLOGIES

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203

19L0295
PM: Mark Steuer
Reserve Management Group
Residential Soil Analysis

n of Custody Record

6666
967-6735
nt.com

TURNAROUND TIME:
☐ RUSH
_____ day turnaround
☐ ROUTINE

Due Date: 12-10-19 COC #: 229008

Company: GENERAL IRON (Reserve Management Group)
Address:

Phone #: (440) 287-7209 Fax #: (___) ___-___
P.O. #: Proj. #: ___-___
Client Contact: MARK WEINTRAUB
Project ID / Location:

Sample Type:
1. Waste Water 4. Sludge 7. Groundwater (filtered)
2. Drinking Water 5. Oil (8) Other
3. Soil 6. Groundwater

Container Type:
P - Plastic V - VOC Vial (O) Other
G - Glass B - Tedlar Bag

Preservative:
(1) None 4. NaOH 7. Zn Ace
2. H_2SO_4 5. HCl 8. Other
3. HNO_3 6. MeOH

Analyses

Sample I.D.	Sample Type	Container Size	Container Type	Container No.	Sampling By	Sampling Date	Sampling Time	Preservation pH	Preservation Temp.	Preservation Field	Preservation Lab	17 TOTAL METALS (SEE LIST)	EMT USE ONLY / EMT WORKORDER #19L0295
FERDWY				1	JK	12/5						X	01A

Relinquished By:	Date: 12-5-19 Time: :	Received By:	Date: - - Time: :	EMT USE ONLY Client Code:	☐ SAMPLE RECEIVED ON ICE ☒ TEMPERATURE
Relinquished By:	Date: - - Time: :	Received By:	Date: - - Time: :	EMT Project I.D. Residential Soil Analysis	20.0
Relinquished By:	Date: - - Time: :	Received For Lab By: Ayuda Zuber	Date: 12-5-19 Time: 15 : 20	Jar Lot No.	EMT SAMPLE RETURN POLICY ON BACK

SPECIAL INSTRUCTIONS:
Add to Log in Notes "must run Sample thru sieve 200 Sieve prior to analysis"

Sample Receipt Checklist

Work Order: 19L0295

Printed: 12/5/2019 4:52:12PM

Client: ***Reserve Management Group***
Project: Residential Soil Analysis

Date Due: **12/10/19 17:00 (3 day TAT)**

Received By: **Agnieszka B. Zabawa**
Logged In By: **Agnieszka B. Zabawa**

Date Received: **12/05/19 15:20**
Date Logged In: **12/05/19 16:48**

Samples Received at:	**20°C**
How were samples received?	Client
Custody Seals Present	No
Custody Seals Intact	NA
Sample Cont/Cooler Intact	Yes
COC Present/Complete	No
COC/Labels Agree	Yes
Proper Cont/Preservation checked	Yes
Sufficient Sample Volume	Yes
Samples Within Holdtime	Yes
Cooler Temp Within Limits	No
VOA Water Vials Received	No
VOA Water Vials/Zero Headspace	NA
PM or Client Contacted	No

COMMENTS
COC missing sample time.

ABZ
12/5/19

ENVIRONMEN MONITORING A TECHNOLOGIES,

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203

19L0296
PM: Mark Steuer
Reserve Management Group
Residential Soil Analysis

# of Custody Record

66
57-6735
www.emt.com

TURNAROUND TIME:
☐ RUSH
____ day turnaround
☐ ROUTINE

Due Date: 12 - 10 - 19 COC #: 229005

Company: GENERAL IRON (Reserve Management Group)
Address:

Phone #: (440) 287 - 7209 Fax #: (____) ____ - ____
P.O. #: Proj. #: ____ - ____
Client Contact: MARK WEINTRAUB
Project ID / Location:

Sample Type:
1. Waste Water 4. Sludge 7. Groundwater (filtered)
2. Drinking Water 5. Oil (8.) Other
3. Soil 6. Groundwater

Container Type:
P - Plastic V - VOC Vial (O.) Other
G - Glass B - Tedlar Bag

Preservative:
(1.) None 4. NaOH 7. Zn Ace
2. H_2SO_4 5. HCl 8. Other
3. HNO_3 6. MeOH

Analyses

Sample I.D.	Sample Type	Container Size	Container Type	Container No.	Sampling By	Sampling Date	Sampling Time	Sampling pH	Sampling Temp.	Preservation Field	Preservation Lab	17 TOTAL METALS (SEE LIST)	EMT USE ONLY / EMT WORKORDER # 19L0296
ASRRDWY				1	JK	12/5						X	01A

Relinquished By:	Date: 12-5-19 Time: :	Received By:	Date: - - Time: :	EMT USE ONLY Client Code:	☐ SAMPLE RECEIVED ON ICE ☒ TEMPERATURE
Relinquished By:	Date: - - Time: :	Received By:	Date: - - Time: :	EMT Project I.D. Residential Soil Analysis	
Relinquished By:	Date: - - Time: :	Received For Lab By:	Date: 12 5 19 Time: 15:20	Jar Lot No.	20.0 EMT SAMPLE RETURN POLICY ON BACK

SPECIAL INSTRUCTIONS:
Add to Log in Notes -> "Must run sample thru size 200 sieve prior to analysis"

Sample Receipt Checklist

Work Order: 19L0296

Printed: 12/5/2019 5:01:50PM

Client: Reserve Management Group
Project: Residential Soil Analysis

Date Due: 12/10/19 17:00 (3 day TAT)

Received By: Agnieszka B. Zabawa
Logged In By: Agnieszka B. Zabawa

Date Received: 12/05/19 15:20
Date Logged In: 12/05/19 16:52

Samples Received at:	20°C
How were samples received?	Client
Custody Seals Present	No
Custody Seals Intact	NA
Sample Cont/Cooler Intact	Yes
COC Present/Complete	No
COC/Labels Agree	Yes
Proper Cont/Preservation checked	Yes
Sufficient Sample Volume	Yes
Samples Within Holdtime	Yes
Cooler Temp Within Limits	No
VOA Water Vials Received	No
VOA Water Vials/Zero Headspace	NA
PM or Client Contacted	No

COMMENTS
COC missing sample time.

ABZ
12/5/19

ENVIRONMENTAL MONITORING TECHNOLOGIES

8100 North Austin Avenue
Morton Grove, Illinois 60053-320

19L0297
PM: Mark Steuer
Reserve Management Group
Residential Soil Analysis

Chain of Custody Record

-6666
7-967-6735
www.emt.com

TURNAROUND TIME:
☐ RUSH
____ day turnaround
☐ ROUTINE

Due Date: 12 - 10 - 19 COC #: 151417

Company: GENERAL IRON (Reserve Management Group)
Address: _____
Phone #: (440) 287 - 7209 Fax #: (____) ____ - ____
P.O. #: _____ Proj. #: ____ - ____
Client Contact: MARK WEINTRAUB
Project ID / Location: _____

Sample Type:
1. Waste Water 4. Sludge 7. Groundwater (filtered)
2. Drinking Water 5. Oil (8) Other
3. Soil 6. Groundwater _____

Container Type:
P - Plastic V - VOC Vial (O) Other
G - Glass B - Tedlar Bag _____

Preservative:
(1) None 4. NaOH 7. Zn Ace
2. H_2SO_4 5. HCl 8. Other
3. HNO_3 6. MeOH _____

Sample I.D.	Sample Type	Container Size	Container Type	Container No.	Sampling By	Sampling Date	Sampling Time	Preservation pH	Preservation Temp.	Preservation Field	Preservation Lab	Analyses: 17-TOTAL METALS (SEE LIST)	EMT USE ONLY / EMT WORKORDER # 19L0297
FETP				1	JR	12/5						X	01A

Relinquished By:	Date: 12 -5 -19 Time: :	Received By:	Date: - - Time: :	EMT USE ONLY Client Code:	☐ SAMPLE RECEIVED ON ICE ☒ TEMPERATURE (Must be recorded if sampling was greater than 6 hrs. prior to sample receipt) Ambient 20.0
Relinquished By:	Date: - - Time: :	Received By:	Date: - - Time: :	EMT Project I.D. Residential Soil	
Relinquished By:	Date: - - Time: :	Received For Lab By:	Date: 12-5-19 Time: 15:20	Jar Lot No.	EMT SAMPLE RETURN POLICY ON BACK

SPECIAL INSTRUCTIONS: Add to Login Notes "Must Run Sample thru size 200 sieve prior to analysis"

EMT-FORM-GEN-028

Sample Receipt Checklist

Work Order: 19L0297

Printed: 12/5/2019 4:55:05PM

Client:	**Reserve Management Group**	**Date Due:**	**12/10/19 17:00 (3 day TAT)**
Project:	**Residential Soil Analysis**		

Received By:	**Agnieszka B. Zabawa**	**Date Received:**	**12/05/19 15:20**
Logged In By:	**Agnieszka B. Zabawa**	**Date Logged In:**	**12/05/19 16:54**

Samples Received at:	**20°C**
How were samples received?	Client
Custody Seals Present	No
Custody Seals Intact	NA
Sample Cont/Cooler Intact	Yes
COC Present/Complete	No
COC/Labels Agree	Yes
Proper Cont/Preservation checked	Yes
Sufficient Sample Volume	Yes
Samples Within Holdtime	Yes
Cooler Temp Within Limits	No
VOA Water Vials Received	No
VOA Water Vials/Zero Headspace	NA
PM or Client Contacted	No

COMMENTS

COC missing sample time.

AMZ
12/5/19

ENVIRONMENTAL MONITORING A[GENCY] TECHNOLOGIES, I[NC.]

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203

19L0298
PM: Mark Steuer
Reserve Management Group
Residential Soil Analysis

[Chain] of Custody Record

TURNAROUND TIME:
☐ RUSH
____ day turnaround
☐ ROUTINE

Due Date: 12-10-19 COC #: 229004

Company: GENERAL IRON (Reserve Management Group)
Address:

Phone #: (440) 287-7209 Fax #: (___) ___-____
P.O. #: Proj. #: ___-___
Client Contact: MARK WEINTRAUB
Project ID / Location:

Sample Type:
1. Waste Water 4. Sludge 7. Groundwater (filtered)
2. Drinking Water 5. Oil (8) Other
3. Soil 6. Groundwater

Container Type:
P - Plastic V - VOC Vial (O) - Other
G - Glass B - Tedlar Bag

Preservative:
(1) None 4. NaOH 7. Zn Ace
2. H_2SO_4 5. HCl 8. Other
3. HNO_3 6. MeOH

Analyses: 17 TOTAL METALS (SEE LIST)

EMT USE ONLY
EMT WORKORDER #19L0298

Sample I.D.	Sample Type	Container Size	Container Type	Container No.	Sampling By	Sampling Date	Sampling Time	pH	Temp.	Preservation Field	Preservation Lab		EMT USE ONLY
RDW				1	JK	12/5							01A

Relinquished By:	Date: 12-5-19 Time: :	Received By:	Date: - - Time: :	EMT USE ONLY Client Code:	☐ SAMPLE RECEIVED ON ICE ☒ TEMPERATURE
Relinquished By:	Date: - - Time: :	Received By:	Date: - - Time: :	EMT Project I.D. Residential Soil Analysis	
Relinquished By:	Date: - - Time: :	Received For Lab By:	Date: 12-6-19 Time: 15:20	Jar Lot No.	2.0 EMT SAMPLE RETURN POLICY ON BACK

SPECIAL INSTRUCTIONS:
Add Note & Log in → "Must Run Sample thru 200 sieve prior to Analysis"

Sample Receipt Checklist

Work Order: 19L0298

Printed: 12/5/2019 4:56:57PM

Client: Reserve Management Group
Project: Residential Soil Analysis

Date Due: 12/10/19 17:00 (3 day TAT)

Received By: Agnieszka B. Zabawa
Logged In By: Agnieszka B. Zabawa

Date Received: 12/05/19 15:20
Date Logged In: 12/05/19 16:55

Samples Received at:	20°C
How were samples received?	Client
Custody Seals Present	No
Custody Seals Intact	NA
Sample Cont/Cooler Intact	Yes
COC Present/Complete	No
COC/Labels Agree	Yes
Proper Cont/Preservation checked	Yes
Sufficient Sample Volume	Yes
Samples Within Holdtime	Yes
Cooler Temp Within Limits	No
VOA Water Vials Received	No
VOA Water Vials/Zero Headspace	NA
PM or Client Contacted	No

COMMENTS
COC missing sample time.

ABZ
12/5/19

ENVIRONMENTAL MONITORING TECHNOLOGIES

8100 North Austin Avenue
Morton Grove, Illinois 60053-32

19L0299
PM: Mark Steuer
Reserve Management Group
Residential Soil Analysis

...ain of Custody Record

...7-6666
...47-967-6735
www.emt.com

TURNARAOUND TIME:
☒ RUSH
____ day turnaround
☐ ROUTINE

Due Date: 12-10-19 COC #: 210038

Company: GENERAL IRON (Reserve Management Group)
Address:

Phone #: (___) ___-____ Fax #: (___) ___-____
P.O. #: ____ Proj.#: ____-____
Client Contact: MARK WEINTRAUB
Project ID / Location:

Sample Type:
1. Waste Water 4. Sludge 7. Groundwater (filtered)
2. Drinking Water 5. Oil 8. Other
3. Soil 6. Groundwater ____

Container Type:
P - Plastic V - VOC Vial O - Other
G - Glass B - Tedlar Bag ____

Preservative:
1. None 4. NaOH 7. Zn Ace
2. H_2SO_4 5. HCl 8. Other
3. HNO_3 6. MeOH ____

Analyses

Sample I.D.	Sample Type	Container Size	Container Type	Container No.	Sampling By	Sampling Date	Sampling Time	pH	Temp.	Preservation Field	Preservation Lab	17 TOTAL METALS (SEE LIST)	EMT USE ONLY EMT WORKORDER #19L0299
NFETP				3	JK	12/5						X	01A-C

Relinquished By:	Date: 12-5-19 Time: :	Received By:	Date: - - Time: :	EMT USE ONLY Client Code:	☐ SAMPLE RECEIVED ON ICE ☒ TEMPERATURE
Relinquished By:	Date: - - Time: :	Received By:	Date: - - Time: :	EMT Project I.D. Residential Soil Analysis	20.0
Relinquished By:	Date: - - Time: :	Received For Lab By:	Date: 12-5-19 Time: 15:20	Jar Lot No.	EMT SAMPLE RETURN POLICY ON BACK

SPECIAL INSTRUCTIONS:
Add 6 Logs in Notes --> "Must Run Sample thru size 200 Sieve Prior to Analysis

Table of Contents

Sample Receipt Checklist

Work Order: 19L0299

Printed: 12/5/2019 4:58:36PM

Client:	**Reserve Management Group**	**Date Due:**	**12/10/19 17:00 (3 day TAT)**
Project:	**Residential Soil Analysis**		

Received By:	**Agnieszka B. Zabawa**	**Date Received:**	**12/05/19 15:20**
Logged In By:	**Agnieszka B. Zabawa**	**Date Logged In:**	**12/05/19 16:57**

Samples Received at:	20°C
How were samples received?	Client
Custody Seals Present	No
Custody Seals Intact	NA
Sample Cont/Cooler Intact	Yes
COC Present/Complete	No
COC/Labels Agree	Yes
Proper Cont/Preservation checked	Yes
Sufficient Sample Volume	Yes
Samples Within Holdtime	Yes
Cooler Temp Within Limits	No
VOA Water Vials Received	No
VOA Water Vials/Zero Headspace	NA
PM or Client Contacted	No

COMMENTS

COC missing sample time.

ABZ
12/5/19

RK
& Associates, Inc.

Air Dispersion Modeling Report for Assessment of Metal Emission Impacts

General III, LLC – Chicago, Illinois

January 24, 2020

Appendix E

Modeling Input and Output Files (CD-ROM)

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RK
& Associates, Inc.

Air Dispersion Modeling Report
for Assessment of Metal Emission Impacts
General III, LLC – Chicago, Illinois

January 24, 2020

Appendix E

Modeling Input and Output Files (CD-ROM)

Modeling was performed for each of the 17 metals identified in USEPA Method 29 emission testing. A separate modeling run was performed for each of the 17 metals. Accordingly, the CD ROM attached to this page contains AERMOD input and output files for each of the 17 modeling runs.

This is a copy of the original modeling report. The CD ROM with AERMOD input and output files was included in the original reports sent to the attention of Jeff Sprague of IEPA.

If you require these files, please contact John Pinion of RKA at jpinion@rka-inc.com.

Layman, Robb

From: John Pinion <jpinion@rka-inc.com>
Sent: Tuesday, January 28, 2020 3:04 PM
To: Sprague, Jeff
Cc: Layman, Robb; Bernoteit, Bob; Barria, German; Zwick, Ann M.
Subject: [External] RE: General III Modeling Report: Additional Information and Corrections Needed

Thank for the comments Jeff.

I will share your comments with Darina that provide the requested information as soon as possible. I will let you know tomorrow when we can make the submittal.

If you have any questions, please do not hesitate to contact me.

Regards,
John Pinion

RK & Associates, Inc.
2 South 631 Route 59, Suite B
Warrenville, Illinois 60555
Phone: 630-393-9000 x 208
Fax: 630-393-9111
Cell: 630-917-1455
E-mail: jpinion@rka-inc.com

From: Sprague, Jeff <Jeff.Sprague@Illinois.gov>
Sent: Tuesday, January 28, 2020 3:00 PM
To: John Pinion <jpinion@rka-inc.com>
Cc: Layman, Robb <Robb.Layman@Illinois.gov>; Bernoteit, Bob <Bob.Bernoteit@Illinois.gov>; Barria, German <german.barria@illinois.gov>; Sprague, Jeff <Jeff.Sprague@Illinois.gov>
Subject: General III Modeling Report: Additional Information and Corrections Needed

John,
I've done a quick "once through" of the report and an initial "look" at one of the AERMOD input files, and have found several things that need to be addressed in a supplemental submittal:

1.) Stack release parameters that were corrected for emission sources at Holcim (US), Inc. and American Zinc Recycling Corporation for the lead (Pb) modeling were not incorporated into the manganese modeling. The manganese modeling should be redone and the corrected AERMOD input and output files resubmitted. Table 3-3 should be edited to reflect these changes, as should Table 4-2, if necessary. Note that there are multiple entries for Kiln #2 in Table 3-3 and the manganese modeling AERMOD input files. These entries should be consolidated, and the emission rate reflecting the combined contributions of Kiln #1 and Kiln #2. You **do not** need to prepare a whole new document with the changes, simply provide the corrected pages under an "Addendum" cover page and the updated modeling files on a new CD.

2.) The documentation regarding volume sources does not adequately address request #9 (e-mail sent November 20, 2019) made in response to the modeling protocol. Specifically, there are no "explanatory remarks regarding . . . the derivation of initial lateral and vertical dimensions", and thus it is extremely difficult to evaluate your volume source constructs. Please refer to the AERMOD User's Guide and indicate for each volume source whether the initial lateral dimension ($sigma_{y0}$) represents a single volume source, **or** a line source represented by adjacent volume sources, **or** a line source represented by separated volume sources and the associated "length of side" or "center-to-center" distance. Also, indicate for each volume source whether the initial vertical dimension ($sigma_{z0}$) represents a surface-based source, **or** an elevated source on or adjacent to a building, **o**r an elevated source not on or adjacent to a building and the associated "vertical dimension of source" or "building height". This information is probably best conveyed in a table that would also be part of the "Addendum".

This represents only preliminary comments in regard to the modeling report, since a thorough review requires additional time and the benefit of an Agency-conducted modeling audit.

Best regards,

Jeff

Jeffrey Sprague
Modeling Unit, Manager
Air Quality Planning Section
Bureau of Air
Illinois Environmental Protection Agency

(217) 524-4692
Jeff.Sprague@Illinois.gov