



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-002
Client Sample ID: 2954584 #247

Work Order: S1905085
Collection Date: 4/6/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/06/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	210	50		ng/filter	05/07/2019 1956 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 1956 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 1956 MS	IO-3.5
Lead	480	50		ng/filter	05/07/2019 1956 MS	IO-3.5
Manganese	3200	600		ng/filter	05/07/2019 1956 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 1956 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 1956 MS	IO-3.5
Filter Metals Concentration						
Arsenic	8.73	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	20.1	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	135	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-003
Client Sample ID: 2954585 #248

Work Order: S1905085
Collection Date: 4/9/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/09/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	50	50		ng/filter	05/07/2019 2008 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2008 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2008 MS	IO-3.5
Lead	270	50		ng/filter	05/07/2019 2008 MS	IO-3.5
Manganese	9500	600		ng/filter	05/07/2019 2008 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2008 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2008 MS	IO-3.5
Filter Metals Concentration						
Arsenic	2.23	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	11.1	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	395	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

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 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-004
Client Sample ID: 2954586 #249

Work Order: S1905085
Collection Date: 4/12/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/12/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	05/07/2019 2032 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2032 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2032 MS	IO-3.5
Lead	60	50		ng/filter	05/07/2019 2032 MS	IO-3.5
Manganese	11100	600		ng/filter	05/07/2019 2032 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2032 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2032 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	2.35	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	462	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

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 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-005
Client Sample ID: 2954587 #258

Work Order: S1905085
Collection Date: 4/14/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	05/07/2019 2038 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2038 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2038 MS	IO-3.5
Lead	ND	50		ng/filter	05/07/2019 2038 MS	IO-3.5
Manganese	ND	600		ng/filter	05/07/2019 2038 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2038 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2038 MS	IO-3.5

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 - E Value above quantitation range
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 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-006
Client Sample ID: 2954588 #259

Work Order: S1905085
Collection Date: 4/15/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/15/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	05/07/2019 2044 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2044 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2044 MS	IO-3.5
Lead	60	50		ng/filter	05/07/2019 2044 MS	IO-3.5
Manganese	14900	600		ng/filter	05/07/2019 2044 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2044 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2044 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	2.63	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	621	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

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- Qualifiers:**
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 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-007
Client Sample ID: 2954589 #260

Work Order: S1905085
Collection Date: 4/18/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/18/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	05/07/2019 2050 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2050 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2050 MS	IO-3.5
Lead	60	50		ng/filter	05/07/2019 2050 MS	IO-3.5
Manganese	7700	600		ng/filter	05/07/2019 2050 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2050 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2050 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	2.60	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	321	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

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- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-008
Client Sample ID: 2954590 #263

Work Order: S1905085
Collection Date: 4/21/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/21/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	50	50		ng/filter	05/07/2019 2056 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2056 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2056 MS	IO-3.5
Lead	90	50		ng/filter	05/07/2019 2056 MS	IO-3.5
Manganese	ND	600		ng/filter	05/07/2019 2056 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2056 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2056 MS	IO-3.5
Filter Metals Concentration						
Arsenic	2.26	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	3.64	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	ND	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-009
Client Sample ID: 2954591 #266

Work Order: S1905085
Collection Date: 4/24/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/24/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	70	50		ng/filter	05/07/2019 2102 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2102 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2102 MS	IO-3.5
Lead	460	50		ng/filter	05/07/2019 2102 MS	IO-3.5
Manganese	2800	600		ng/filter	05/07/2019 2102 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2102 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2102 MS	IO-3.5
Filter Metals Concentration						
Arsenic	2.94	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	19.0	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	118	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
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 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-010
Client Sample ID: 2954592 #268

Work Order: S1905085
Collection Date: 4/27/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/27/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	05/07/2019 2108 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2108 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2108 MS	IO-3.5
Lead	ND	50		ng/filter	05/07/2019 2108 MS	IO-3.5
Manganese	ND	600		ng/filter	05/07/2019 2108 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2108 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2108 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	ND	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	ND	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

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 - L Analyzed by another laboratory
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 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 5/8/2019
Report ID: S1905085001

Project: Watco
Lab ID: S1905085-011
Client Sample ID: 2954593 #270

Work Order: S1905085
Collection Date: 4/30/2019
Date Received: 5/3/2019 9:00:00 AM
Sampler: MS
Matrix: Filter
COC: 181540

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24.0			m ³	04/30/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	05/07/2019 2114 MS	IO-3.5
Cadmium	ND	1000		ng/filter	05/07/2019 2114 MS	IO-3.5
Chromium	ND	1500		ng/filter	05/07/2019 2114 MS	IO-3.5
Lead	80	50		ng/filter	05/07/2019 2114 MS	IO-3.5
Manganese	ND	600		ng/filter	05/07/2019 2114 MS	IO-3.5
Nickel	ND	1300		ng/filter	05/07/2019 2114 MS	IO-3.5
Vanadium	ND	2450		ng/filter	05/07/2019 2114 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	05/08/2019 1501 JJ	Calculation
Chromium	ND	62.5		ng/m ³	05/08/2019 1501 JJ	Calculation
Lead	3.33	2.08		ng/m ³	05/08/2019 1501 JJ	Calculation
Manganese	ND	25		ng/m ³	05/08/2019 1501 JJ	Calculation
Nickel	ND	54.2		ng/m ³	05/08/2019 1501 JJ	Calculation
Vanadium	ND	102		ng/m ³	05/08/2019 1501 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
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 - E Value above quantitation range
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 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Inter-Mountain Labs
 Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -

All shaded fields must be completed.
 This is a legal document. Any misrepresentation may be construed as fraud.

Client Name
 Wateco

Project Identification
 Wateco

Telephone #

Report Address
 MSI/Trinity

Contact Name
 Matt Sloan

Analyses / Parameters
 Metals

Invoice Address
 2926 E 126 St
 Chicago, IL 60633

Email
 msloan@trinitylabs.com

Phone
 330-844-6998

Purchase Order #

Quote #

ITEM	LAB ID (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE IDENTIFICATION	Matrix	# of Containers	REMARKS
1	51905085-0	4-5-19		2 954 583-		246	X
2	002	4-8-19		2 954 584-		247	X
3	003	4-9-19		2 954 585-		248	X
4	004	4-12-19		2 954 586-		249	X
5	005	4-14-19		2 954 587-		258	X
6	006	4-15-19		2 954 888-		259	X
7	007	4-18-19		2 954 589-		260	X
8	008	4-21-19		2 954 590-		263	X
9	009	4-24-19		2 954 591-		266	X
10	010	4-27-19		2 954 592-		268	X
11	011	4-30-19		2 954 593-		270	X
12							
13							
14							

LAB COMMENTS	Relinquished By (Signature/Printed)	DATE	TIME	Received By (Signature/Printed)	DATE	TIME
	Matt Sloan	5/1/19	8:00	George Burnett - IML	5-3-19	9:00
	Mary Anninger	5/7/19	09:35	Kathy Boyd	5.7.19	9:36

SHIPPING INFO

UPS Fed Express US Mail Hand Carried Other

MATRIX CODES

Water WT Soil SL Solid SD Filter FT Other OT

TURNAROUND TIMES

Check desired service Standard turnaround RUSH - 5 Working Days URGENT - < 2 Working Days

Rush & Urgent Surcharges will be applied

COMPLIANCE INFORMATION

Compliance Monitoring? Y / N

Program (SDWA, NPDES,...) _____

PWSID / Permit # _____

Chlorinated? Y / N

Sample Disposal: Lab _____ Client _____

ADDITIONAL REMARKS

- 3.6 Corrected
 - 0.9 Residual
 - 1.



Survey Meter # 221107 R 006980
 pH strip lot # HC857466
 Thermometer SN# 27130475

Condition Upon Receipt (Attach to COC)

Sample Receipt

1 Number of ice chests/packages received: OTC ROI? Yes No

Note as "OTC" if samples are received over the counter, unpackaged

2 Temperature of cooler/samples. (If more than 8 coolers, please write on back)

Temps Observed (°C):	<u>—</u>							
Temps Corrected (°C):	<u>—</u>							

Acceptable is: 0.1° to 10°C for Bacteria; and 0.1° to 6°C for most other water parameters. Samples may not have had adequate time to cool following collection. Indicate ROI (Received on Ice) for iced samples received on the same day as sampled, in addition to temperature at receipt.

Client contact for temperatures outside method criteria must be documented below.

- 3 Emission rate of samples for radiochemical analyses < 0.5mR/hr? Yes No N/A
- 4 COC Number (If applicable): 181540
- 5 Do the number of bottles agree with the COC? Yes No N/A
- 6 Were the samples received intact? (no broken bottles, leaks, etc.) Yes No N/A
- 7 Were the sample custody seals intact? Yes No N/A
- 8 Is the COC properly completed, legible, and signed? Yes No

Sample Verification, Labeling & Distribution

- 1 Were all requested analyses understood and appropriate? Yes No
- 2 Did the bottle labels correspond with the COC information? Yes No
- 3 Samples collected in method-prescribed containers? Yes No
- 4 Sample Preservation:

pH at Receipt:	Final pH (if added in lab):	Preservative/Lot#	Date/Time Added:
<u>—</u> Total Metals	<u>—</u> Total Metals	HNO ₃ <u>—</u>	<u>—</u>
<u>—</u> Diss Metals	<u>—</u> Diss Metals	Filtered and preserved in metals	Filtered and preserved in metals
<u>—</u> Nutrient	<u>—</u> Nutrient	H ₂ SO ₄ <u>—</u>	
<u>—</u> Cyanide	<u>—</u> Cyanide	NaOH <u>—</u>	
<u>—</u> Sulfide	<u>—</u> Sulfide	ZnAcet <u>—</u>	
<u>—</u> Phenol	<u>—</u> Phenol	H ₂ SO ₄ <u>—</u>	
<u>—</u> SDWA Rads	<u>—</u> SDWA Rads	HNO ₃ <u>—</u>	<u>—</u>

- Preserved samples for Rad analysis accompanied by Field Blank? Yes No
- 5 VOA vials have <6mm headspace? Yes No N/A
- 6 Were all analyses within holding time at the time of receipt? Yes No
- 7 Specially requested detection limits (RLs) assigned? Yes No N/A
- 8 Have rush or project due dates been checked and accepted? Yes No N/A
- 9 Do samples require subcontracted analyses? Yes No

If "Yes", which type of subcontracting is required? General Customer-Specified Certified

Sample Receipt, Verification, Login, Labeling & Distribution completed by (initials): VCB
 Set ID: 51905085

Discrepancy Documentation (use back of sheet for notes on discrepancies)

Any items listed above with a response of "No" or do not meet specifications must be resolved.

Person Contacted: _____ Method of Contact: _____ Phone: _____

Initiated By: _____ Date/Time: _____ Email: _____

Problem:

Resolution:

INSPECTION ID	MODIFIED DATE	INSPECTION NAME	STREET ADDRESS FROM	STREET ADDRESS TO	DIRECTIO N	STREET NAME	STREET TYPE	INSPECTION CATEGORY	INSPECTION SUB CATEGORY	INSPECT OR	INSPECTION DATE	NARRATIVE	DATA SOURCE	LATITUDE	LONGITUDE	LOCATION
135292	6/10/2019	WATCO COMPANIES	2926 E 126TH ST	2926	E	126TH	ST	AIR QUALITY INSPECTION	AIR P2 FACILITY RENEWAL	15725	2/15/2019	I CARRIED OUT THE ROUTINE INSPECTION OF WATCO TERMINAL. PORT SERVICES (WATCO COMPANIES), MICHAEL ENOS (CDPH ENVIRONMENTAL ENGINEER) WAS WITH ME DURING THIS INSPECTION. TODAY WAS MOSTLY CLOUDY, TEMPERATURE: HIGH 32 DEGREE F, LOW 19 DEGREE F, WIND: WEST AT 1 MPH AND DUSTS W/PM, ACCORDING TO THE WEATHER CHANNEL. UPON ARRIVAL I MET STEVE CAULDE (THE FACILITY TERMINAL MANAGER), HE TOOK US AROUND THE FACILITY FOR TODAY'S INSPECTION, AFTER A BRIEF MEETING, SUMMARY OF THE FACILITY PROCESS DESCRIPTION, ACCORDING TO STEVE: THE CHICAGO WATCO TERMINAL, PORT SERVICES FACILITY IS A SPECIALTY WAREHOUSE AND MARINE LOADING/UNLOADING TERMINAL THAT RECEIVES, STORES, AND LOADS DRY BULK MATERIAL FOR THE IRON AND STEEL INDUSTRY. THE PRODUCTS ARE: FERROUS ALLOY, FES, SMIN, HCFM (HIGH CARBON MANGANESE), IRON ORE SLAG MAGNESITE, HCF (HIGH CARBON FERROUS CHROME), AND PIG IRON. PRODUCTS ARE RECEIVED BY THE TERMINAL BY BARGE, TRUCK, AND RAIL. PROCESSING OPERATIONS INCLUDE CRUSHING, SCREENING, PACKAGING AND BAGGING OF CUSTOMER PRODUCTS. TODAY'S INSPECTION REVEALED THE FOLLOWING: 1) OBSERVED ACCUMULATION OF MATERIAL ON THE GROUND AT THEROCESSOR (AREA WHERE THERE ARE CRUSHING AND SCREENING OPERATIONS). AT THE PROCESSOR ACCORDING TO STEVE THE FOLLOWING MATERIALS CAN BE CRUSHED AND SCREENED: SILICON MANGANESE (SMM); HIGH CARBON FERROUS CHROME (HFC); CAL FLUX SLAG, FE PIGS, AND TON FERROUS SILICON (TFS) BUT THE ACCUMULATED MATERIAL APPEARED TO HAVE BEEN THERE FOR SOME TIME. PLEASE SEE PHOTO #5 01, 04, 05, 21. 2) OBSERVED ACCUMULATION OF MATERIAL OUTSIDE, AROUND THE PROCESSOR BUILDING, IT APPEARED THE ACCUMULATED MATERIAL HAD BEEN THERE FOR LONGER. TIME PLEASE SEE PHOTO #5 01, 02, 03. WHILE ON THE ROOF OF THE PROCESSOR BUILDING, I OBSERVED ACCUMULATION OF MATERIAL ALL AROUND CONVEYOR, ON TOP OF THE CONVEYOR AND ON THE ROOF OF PROCESSOR BUILDING. PLEASE SEE PHOTO #5 07, 08, 9, 10. 3) OBSERVED OPENINGS ON THE WALL, AND DOORS PLEASE SEE PHOTO #22, 23, 24, 25, 26, 27, 28, AND 29. 4) OBSERVED CONVEYOR NOT COMPLETELY ENCLOSED PLEASE SEE PHOTO #20. 5) OBSERVED BUILDING NORTH DOOR WIDE OPENED, AND MANY HOLES ON WALLS (PLEASE SEE PHOTO #3, 30, 31, 32, 33, 34, 35, 36, 37, 38, AND 39). 6) OBSERVED BAGGING BUILDING SOUTH DOOR WIDE OPENED AND OPENINGS ON THE WALLS AND DOOR PLEASE SEE PHOTO #40, 41, 42, 43, 44, 45, 46 AND 47. 8) OBSERVED TRUCK ON UNPAVED INTERNAL ROAD, WITH THE TRACKS ALL OVER THE DEPT. OF INTERNAL ROAD (PLEASE SEE PHOTO #5 11, 16, 20, 21, 19). OBSERVED THE TRACKS ON UNPAVED INTERNAL ROAD LEADING TO THE MAINTENANCE SHED BUILDING (PLEASE SEE PHOTO # 17). SEE THE ATTACHMENTS.	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)
1341588	2/18/2019	WATCO COMPANIES	2926 E 126TH ST	2926	E	126TH	ST	AIR QUALITY INSPECTION	AIR P2 FACILITY RENEWAL	15725	12/12/2018	I CARRIED OUT THE ROUTINE INSPECTION OF WATCO TERMINAL. PORT SERVICES (WATCO COMPANIES), MICHAEL ENOS (CDPH ENVIRONMENTAL ENGINEER) WAS WITH ME DURING THIS INSPECTION. TODAY WAS MOSTLY CLOUDY, TEMPERATURE: HIGH 22 DEGREE F, LOW 10 DEGREE F, WIND: WEST AT 1 MPH AND DUSTS W/PM, ACCORDING TO THE WEATHER CHANNEL. UPON ARRIVAL I MET STEVE CAULDE (THE FACILITY TERMINAL MANAGER), HE TOOK US AROUND THE FACILITY FOR TODAY'S INSPECTION, AFTER A BRIEF MEETING, SUMMARY OF THE FACILITY PROCESS DESCRIPTION, ACCORDING TO STEVE: THE CHICAGO WATCO TERMINAL, PORT SERVICES FACILITY IS A SPECIALTY WAREHOUSE AND MARINE LOADING/UNLOADING TERMINAL THAT RECEIVES, STORES, AND LOADS DRY BULK MATERIAL FOR THE IRON AND STEEL INDUSTRY. THE PRODUCTS ARE: FERROUS ALLOY, FES, SMIN, HCFM (HIGH CARBON MANGANESE), HCF (HIGH CARBON FERROUS CHROME), AND PIG IRON. PRODUCTS ARE RECEIVED BY THE TERMINAL BY BARGE, TRUCK, AND RAIL. PROCESSING OPERATIONS INCLUDE CRUSHING, SCREENING, PACKAGING AND BAGGING OF CUSTOMER PRODUCTS. TODAY'S INSPECTION REVEALED THE FOLLOWING: 1) OBSERVED ACCUMULATION OF MATERIAL ON THE GROUND AT THE AREA WHERE THERE ARE CRUSHING AND SCREENING OPERATIONS. THIS AREA IS CALLED PROCESSOR BUILDING. PLEASE SEE PHOTO #5 01, 08. AT THE PROCESSOR ACCORDING TO STEVE THE FOLLOWING MATERIALS CAN BE CRUSHED AND SCREENED: SILICON MANGANESE (SMM); HIGH CARBON FERROUS CHROME (HFC); CAL FLUX SLAG, FE PIGS, AND TON FERROUS SILICON (TFS). 2) OBSERVED ACCUMULATION OF MATERIAL OUTSIDE, ALL AROUND THE PROCESSOR BUILDING PLEASE SEE PHOTO #5 01, 02, 03, 04, 05, 10, 11, 12, AND 21. 3) OBSERVED ACCUMULATION OF MATERIAL AROUND THE DUST COLLECTORS (PLEASE SEE PHOTO #5 06, 06, AND 33). 4) OBSERVED ACCUMULATION OF MATERIAL INSIDE THE PROCESSOR BUILDING WITH OPENINGS ON THE WALL, AND DOORS PLEASE SEE PHOTO #5 14, 15, 17, AND 19. 5) OBSERVED CONVEYOR NOT COMPLETELY ENCLOSED (PLEASE SEE PHOTO #5 06 AND 29). 6) OBSERVED ACCUMULATION OF MATERIAL ON THE ROOF OF THE PROCESSOR (PLEASE SEE PHOTO #5 06 AND 07). 7) OBSERVED LEAKED MATERIAL ON INTERNAL ROAD, THE ROAD IS UNPAVED AND MUDGY, WITH THE TRACKS THROUGH THE MATERIAL (PLEASE SEE PHOTO #5 16 AND 21). WATCO COMPANIES WAS SERVED WITH NOTICE OF VIOLATION #S E0003472 AND E0003478 FOR THE MUNICIPAL CODES VIOLATION #S 14-770 (A) HANDLING MATERIAL SUSCEPTIBLE TO BECOMING WINDBORNE; 14-770 RULE 3.0(1) (VIOLATION OF BULK MATERIAL RULE, 'SPOILED MATERIAL'); 14-770 RULE 3.0(2) (VIOLATION OF BULK MATERIAL RULE, 'WINDING LEAKING'); AND 14-770 RULE 3.0 (4) (VIOLATION OF BULK MATERIAL RULE, 'PAVING'), HEARING DATE PENDING FOR FEBRUARY 07, 2019. SEE THE ATTACHMENTS.	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)
1152579	12/4/2017	WATCO COMPANIES	2926 E 126TH ST	2926	E	126TH	ST	AIR QUALITY INSPECTION	AIR P2 FACILITY RENEWAL	15725	9/8/2017	I CARRIED OUT THE ROUTINE INSPECTION OF WATCO TERMINAL. PORT SERVICES, KENNETH SCOTT (CDPH SENIOR ENVIRONMENTAL INSPECTOR) WAS WITH ME DURING THIS INSPECTION. TODAY WAS MOSTLY CLOUDY, TEMPERATURE: HIGHER DEGREE F, LOW 3 DEGREE F, WIND: WEST AT 1 MPH ACCORDING TO THE WEATHER CHANNEL. UPON ARRIVAL I MET STEVE CAULDE (THE FACILITY TERMINAL MANAGER) AND CHUCK SHAFER (OPERATIONS MANAGER), THEY BOTH TOOK US AROUND THE FACILITY FOR TODAY'S INSPECTION, AFTER A BRIEF MEETING, SUMMARY OF THE FACILITY PROCESS DESCRIPTION, ACCORDING TO STEVE: THE CHICAGO WATCO TERMINAL, PORT SERVICES FACILITY IS A SPECIALTY WAREHOUSE AND MARINE LOADING/UNLOADING TERMINAL THAT RECEIVES, STORES, AND LOADS DRY BULK MATERIAL FOR THE IRON AND STEEL INDUSTRY. THE PRODUCTS ARE: FERROUS ALLOY, FES, SMIN, HCFM (HIGH CARBON MANGANESE), IRON ORE SLAG MAGNESITE, HCF (HIGH CARBON FERROUS CHROME), AND PIG IRON. PRODUCTS ARE RECEIVED BY THE TERMINAL BY BARGE, TRUCK, AND RAIL. PROCESSING OPERATIONS INCLUDE CRUSHING, SCREENING, PACKAGING AND BAGGING OF CUSTOMER PRODUCTS. TODAY'S INSPECTION REVEALED THE FOLLOWING: 1) OBSERVED MATERIAL LOADED ON TRUCKS DRIVING AT SPEED APPROXIMATELY 20 MPH, DISPERSED DUST (SEE PHOTO #1, 2). 2) OBSERVED PARTICULATE AND FUGITIVE DUST EMISSIONS AT BUILDING MATERIAL LOADING/UNLOADING (SEE PHOTO #3, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100). 3) HEAVY PARTICULATE DUST EMISSIONS FROM THE MATERIAL LOADED INTO TRUCK THAT WAS NOT IMMEDIATELY COVERED, DRIVING THROUGH AND DISPERSED THE DUST (SEE PHOTO #5 1, 2, 3, 4, 5). 4) SAW FRONT END LOADER WHEELS DRIVING THROUGH, PICKING UP AND DISPERSED PARTICULATE DUST (SEE PHOTO #5 10, 6). 5) ALSO OBSERVED TRUCK WHEELS DRIVING THROUGH, PICKING UP AND DISPERSED DUST (SEE PHOTO #5 11, 7). 6) THERE IS NO BERM AT THE RIVER EDGE OR ANYTHING ELSE TO PROTECT MATERIAL FROM FALLING INTO THE RIVER, DURING LOADING AND UNLOADING OPERATIONS. 7) NO WHEEL WASH OR RUMBLE STRIPS OR OTHER MEANS OF CLEANING TRUCKS, WAS OBSERVED ON SITE. 8) STEVE CAULDE SAID THAT PART OF THE INTERNAL ROAD WAS NOT PAVED AND TRUCK WHEELS DRIVING THROUGH, PICKING UP AND DISPERSED DUST, HE TOLD ME HE IS GOING TO BLOCK THAT PART OF THE INTERNAL ROAD IMMEDIATELY AND THAT NO TRUCK WILL BE ALLOWED TO PASS THE PLACE ANY LONGER. SEE THE ATTACHMENTS. I CARRIED OUT A FOLLOW UP INSPECTION OF WATCO TERMINAL. PORT SERVICES, KENNETH SCOTT (CDPH SENIOR ENVIRONMENTAL ENGINEER) (UPA REGION 5), AND MOLLY SMITH (ENVIRONMENTAL SCIENTIST) (UPA REGION 5). ALSO, MICHAEL TODD (CDPH ENVIRONMENTAL INVESTIGATOR) WAS WITH ME FOR THIS INSPECTION. UPON ARRIVAL I MET STEVE CAULDE (THE FACILITY TERMINAL MANAGER) AND CHUCK SHAFER (OPERATIONS MANAGER), THEY BOTH TOOK US AROUND THE FACILITY FOR TODAY'S INSPECTION, AFTER A BRIEF MEETING, SUMMARY OF THE FACILITY PROCESS DESCRIPTION, ACCORDING TO STEVE: THE CHICAGO WATCO TERMINAL, PORT SERVICES FACILITY IS A SPECIALTY WAREHOUSE AND MARINE LOADING/UNLOADING TERMINAL THAT RECEIVES, STORES, AND LOADS DRY BULK MATERIAL FOR THE IRON AND STEEL INDUSTRY. THE PRODUCTS ARE: FERROUS ALLOY, FES, SMIN, HCFM (HIGH CARBON MANGANESE), IRON ORE SLAG MAGNESITE, HCF (HIGH CARBON FERROUS CHROME), AND PIG IRON. PRODUCTS ARE RECEIVED BY THE TERMINAL BY BARGE, TRUCK, AND RAIL. PROCESSING OPERATIONS INCLUDE CRUSHING, SCREENING, PACKAGING AND BAGGING OF CUSTOMER PRODUCTS. TODAY'S INSPECTION REVEALED THE FOLLOWING: 1) OBSERVED HEAVY PARTICULATE AND FUGITIVE DUST EMISSIONS FROM BUILDING F - MATERIAL LOADING STATION PLEASE SEE PHOTO LOGS. THE PARTICULATE DUST PLUME OPACITY WAS 100 PERCENT FROM THE LOADED TRUCK INSIDE BUILDING AND THE DUST WAS ESCAPING INTO THE ENVIRONMENT THROUGH THE EXIT DOORS (SEE PHOTO #5 1, 2, 4). 2) THE PARTICULATE DUST EMISSIONS PLUME WAS DISPERSED FROM ONE END OF THE BUILDING TO ANOTHER (SEE PHOTO #5 6, 9). THE DUST WAS ESCAPING FROM BOTH ENTRANCES AND SPANNED THE WHOLE LENGTH OF BUILDING F (SEE PHOTO #5 6, 7, 9). 3) PARTICULATE DUST EMISSIONS FROM THE MATERIAL LOADED INTO TRUCK THAT WAS NOT IMMEDIATELY COVERED, DRIVING THROUGH AND DISPERSED THE DUST (SEE PHOTO #11). 4) FRONT END LOADER WHEELS TO TRANSFER THE MATERIALS INTO TRUCKS, THE FRONT END LOADER DUMPED THE MATERIAL AND IT SPILLED ON THE BODY AND WHEELS OF THE TRUCK (SEE PHOTO #3, 4, 5). 5) NO WHEEL WASH OR RUMBLE STRIPS OR OTHER MEANS OF CLEANING TRUCKS, WAS OBSERVED ON SITE. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)
1036297	12/4/2017	WATCO COMPANIES	2926 E 126TH ST	2926	E	126TH	ST	AIR QUALITY INSPECTION	AIR P2 FACILITY RENEWAL	15725	9/1/2017	I CARRIED OUT THE ROUTINE INSPECTION OF KINDER MORGAN. TODAY WAS CLOUDY, TEMPERATURE: HIGH 41 DEGREE F, LOW 34 DEGREE F, WIND: WEST AT 1 MPH ACCORDING TO THE WEATHER CHANNEL. UPON ARRIVAL I MET MESSIE STEVE CAULDE (THE FACILITY TERMINAL MANAGER) AND TERRI JAGELLO (ENVIRONMENTAL HEALTH & SAFETY MANAGER), THEY BOTH TOOK US AROUND THE FACILITY FOR TODAY'S INSPECTION, AFTER A BRIEF MEETING, SUMMARY OF THE FACILITY PROCESS DESCRIPTION, ACCORDING TO STEVE: THE CHICAGO ARROW TERMINAL FACILITY IS A SPECIALTY WAREHOUSE AND MARINE LOADING/UNLOADING TERMINAL THAT RECEIVES, STORES, AND LOADS DRY BULK MATERIAL FOR THE IRON AND STEEL INDUSTRY. PRODUCTS ARE RECEIVED BY THE TERMINAL BY BARGE, TRUCK, AND RAIL. PROCESSING OPERATIONS INCLUDE CRUSHING, SCREENING, PACKAGING AND BAGGING OF CUSTOMER PRODUCTS. TODAY'S INSPECTION REVEALED THE FOLLOWING: THE ACCESS ROADS WERE VERY DRY AND DUSTY. I DID NOT OBSERVE ANY SWEEPER OR WATER TRUCK IN OPERATION AT THE TIME OF THIS INSPECTION (SEE PHOTO #2, 3, 4, 5). ACCORDING TO THE ONLY STREET SWEEPER/WATER TRUCK LOG OBTAINED FROM THE FACILITY: BETWEEN JANUARY 2016 TO AUGUST 2016, THERE WAS NO INDICATION OR RECORD THAT WATER WAS APPLIED ON THE ROADS (WHEELS ONLY INDICATED SWEEPER). I OBSERVED TRACK OUTLINE (SOUTH STREET) (SEE PHOTO #4) MATERIAL PILE HEIGHT APPEARED TO BE APPROXIMATELY JUST BELOW 30FT NO POST MARK FOR 30 FEET BULK MATERIAL HEIGHT WAS VISIBLE ANYWHERE ON THE FACILITY (SEE PHOTO #1). OBSERVED TRUCK WHEELS DRIVING THROUGH, PICKING UP AND DISPERSED DUST, THERE WAS BERM AT THE RIVER EDGE TO PROTECT MATERIAL FROM FALLING INTO THE RIVER. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)
464879	2/8/2017	WATCO COMPANIES	2926 E 126TH ST	2926	E	126TH	ST	AIR QUALITY INSPECTION	AIR P2 FACILITY RENEWAL	15725	12/1/2016	DURING LOADING AND UNLOADING OPERATION (SEE PHOTO #43) SEE THE ATTACHMENTS. ON NOVEMBER 18, 2016, INVESTIGATOR ANTONIOPOULOS OF CHICAGO'S DEPARTMENT OF PUBLIC HEALTH (CDPH) RESPONDED TO A DUST COMPLAINT AT THE ABOVE LOCATION. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)
14767	12/2/2015	2926 E 126TH ST	2926	E	126TH	ST	COMPLAINT RESPONSE	AIR POLLUTION WORK ORDER	227404	11/18/2015	CDPH MET WITH THE COMPLAINTANT AND WALKED AROUND HIS YARD. THE COMPLAINTANT WAS CONCERNED AND WONDERING WHY THE SOILING ON HIS HOUSE AND GARAGE WAS STAINED YELLOW IN SOME AREAS. THE COMPLAINTANT DOESN'T BELIEVE ITS KINDER/MORGAN (BULK NORTH) BECAUSE HE SAID OTHER HOMES IN THE AREA DON'T HAVE THE SAME TYPE OF STAINING ON THEM. THE COMPLAINTANT SAID HE HAS ALSO REACH OUT TO THE EPA AND THE S.E. ENVIRONMENTAL TASK FORCE REGARDING THE STAINING AND POTENTIAL SOURCES. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)	
68477	1/7/2015	2926 E 126TH ST	2926	E	126TH	ST	HAZMAT	HAZMAT	227404	1/7/2015	CDPH DID OBSERVE YELLOW STAINING ON MANY PORTIONS ON THE HOME AND GARAGE. NO SOURCES (VISIBLE AIR POLLUTION) WERE IDENTIFIED IN THE AREA THAT MAY HAVE CAUSED THIS TYPE OF STAINING. A FOLLOW UP INSPECTION WAS CONDUCTED AT THIS TIME. ON 12/20/14, I RESPONDED TO A DUMPING COMPLAINT THAT INVOLVED USED OILS. AT THAT TIME I SPOKE WITH MS. RODGERS, EHS SPECIALIST FOR KINDER MORGAN. ACCORDING TO HER, AN UNKNOWN INDIVIDUAL ON 12/26/14, FLY DUMPED 35 CONTAINERS OF DIFFERENT SIZES OF USED/WASTE OIL ON THEIR PROPERTY. THEY WERE DISCOVERED ON 12/29/14 BY KINDER MORGAN PERSONAL AND WERE ISOLATED. ALL CONTAINERS WERE FOUND ON KINDER MORGAN'S FENCE LINE ON THE WEST SIDE OF THE MAIN ENTRANCE. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)	
13504	12/30/2014	2926 E 126TH ST	2926	E	126TH	ST	COMPLAINT RESPONSE	HAZMAT WORK ORDER	227404	12/30/2014	I INSPECTED ALL CONTAINERS AND FOUND THEM TO BE IN GOOD CONDITION AND CONTAINING WASTE MOTOR OIL SINCE THE CONTAINERS WERE ABANDON ON PRIVATE PROPERTY I INFORMED MS. RODGERS THAT KINDER MORGAN IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL. THEY HAVE A CURRENT WASTE PROFILE FOR USED/WASTE OIL WITH SAFETY KLEEN WHO WILL BE CONTACTED TO REMOVE AND DISPOSAL THE OIL. DURING THIS FOLLOW UP INSPECTION I SPOKE WITH MS. RODGERS WHO INFORMED ME THAT ALL THE WASTE CONTAINERS HAVE BEEN REMOVED FROM THE ENTRANCE AND PUT IN THE SHOP AREA. THE CONTAINERS WERE BURNED AT A S-CALCOB DRUM AND OIL. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)	
68482	11/18/2014	2926 E 126TH ST	2926	E	126TH	ST	SOLID WASTE INSPECTION	ILLEGAL DUMPING	13776	11/18/2014	WHILE AT A FENMETTI FACILITY, I NOTED QUESTIONABLE ACTIVITIES AT THE NEXT DOOR KINDER MORGAN SITE. HUGLE PILES (SEVERAL HUNDRED CUBIC YARDS) OF DIRT AND BROKEN ASPHALT WERE ACCUMULATED ON SITE. I MET G. WEST (SUPERINTENDENT) AND HE STATED THAT THIS WAS BEING REMEDIATED BY IMPROVEMENTS MADE ON SITE. THEY WERE SCHEDULING FOR THE MATERIAL TO BE TRANSPORTED OFF SITE FOR PROPER DISPOSAL. DEPT. OF PUBLIC HEALTH	DEPT. OF PUBLIC HEALTH	41.6667933	-87.5523054	POINT (47.5523053918286 41.6667932637384)	

I CARRIED OUT THE INSPECTION OF KINDER MORGAN DUE TO CITIZEN'S COMPLAINT THE COMPLAINANT ALLEGED THAT HIS/HER GARAGE WAS BROWN MAYBE DUE TO ARROW TERMINAL (KINDER MORGAN) PIG IRON INGOTS OPERATIONS. THE COMPLAINANT SAID THAT ONLY ON NORTH SIDE OF HIS/HER NEW GARAGE AND EAVES OF THE NORTH SIDE OF HIS/HER HOUSE. UPON ARRIVAL I MET MESSRS MICHAEL AND STEVE CAULDE, AFTER BRIEF DISCUSSION, THEY BOTH TOOK ME AROUND THE FACILITY FOR TODAY INSPECTION. I OBSERVED THE FOLLOWING:

POOR HANDLING OF MATERIAL SUSCEPTIBLE TO BECOMING WINDBORNE(SEE PHOTOS 7, 7B, 8, 9, 10 AND 11).

WHILE WRITING REPORTS ON THE FACILITY PARKING LOTS, I ALSO OBSERVED, HEAVY BROWNISH PARTICULATE EMISSIONS AT THE MATERIAL PILE AREA (SEE PHOTOS 1, 2, 3, 5, AND 6).

Case No.	Date	Address	City	State	Inspector	Category	Priority	Description	Status	Comments
464873	11/9/2012	2926 E 126TH ST	INDIANAPOLIS	IN	ST	AIR QUALITY INSPECTION	15725	KINDER MORGAN WAS ISSUED NOTICE OF VIOLATIONS# E0000277881 18 AND FOR MUNICIPAL CODE VIOLATIONS 11-4-700 (HANDLING OF MATERIAL SUSCEPTIBLE TO BECOMING WINDBORNE), AND 7-28-080 (INSURANCE IN CONNECTION WITH A BUSINESS), HEARING DATE PENDING FOR 12/06/2012 AT 1:00PM. FOLLOW UP INSPECTION IN THE WEEK OF DECEMBER 03, 2012. SEE THE ATTACHMENTS.	DEPT. OF PUBLIC HEALTH	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
464893	8/16/2012	WATCO COMPANIES	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	15725	TODAY'S INSPECTION REVEALED NOTHING UNUSUAL (SEE PHOTO LOG), NO EMISSIONS OF FUGITIVE PARTICULATE MATTER THAT ARE VISIBLE BY AN OBSERVER LOOKING GENERALLY TOWARD THE ZENITH AT A POINT BEYOND THE PROPERTY LINE OF THE SOURCE. AS AT THE TIME OF THIS INSPECTION, NO DUST OR TRACK-OUT WAS OBSERVED OUTSIDE THE FACILITY'S PREMISES. SEE THE ATTACHMENTS.	DEPT. OF PUBLIC HEALTH	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57609	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	32	I CARRIED OUT THE ROUTINE INSPECTION OF WATCO TERMINAL PORT SERVICES TODAY WAS CLOUDY WITH ISOLATED THUNDER SHOWERS, TEMPERATURE HIGH 65 DEGREE F, LOW 51 DEGREE F, WIND: ENE AT 7 MPH ACCORDING TO THE WEATHER CHANNEL. UPON ARRIVAL I MET STEVE CAULDE (THE FACILITY TERMINAL MANAGER) WHO TOOK ME AROUND THE FACILITY FOR TODAY'S INSPECTION. AFTER A BRIEF MEETING, SUMMARY OF THE FACILITY PROCESS DESCRIPTION, ACCORDING TO STEVE: THE CHICAGO WATCO TERMINAL PORT SERVICES FACILITY IS A SPECIALTY WAREHOUSE AND MARINE LOADING/UNLOADING TERMINAL THAT RECEIVES, STORES, AND LOADS DRY-BULK MATERIAL FOR THE IRON AND STEEL INDUSTRY. THE PRODUCTS ARE: FERROUS ALLOY, FES, SMM, HCFM (HIGH CARBON MANGANESE), IRON ORE SLAG MAGNESITE, HCF (HIGH CARBON FERROUS CHROME), AND PIG IRON. PRODUCTS ARE RECEIVED BY THE TERMINAL BY BARGE, TRUCK, AND RAIL. PROCESSING OPERATIONS INCLUDE CRUSHING, SCREENING, PACKAGING AND BAGGING OF CUSTOMER PRODUCTS.	DEPT. OF PUBLIC HEALTH	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57609	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	MISCELLANEOUS INSPECTION	35	1. I RESPONDED TO AN ALLEGED DUST COMPLAINT AT THE ABOVE ADDRESS. UPON ARRIVAL, I SPOKE WITH STEVE CAULDE TERMINAL MANAGER FOR KINDER/MORGAN AND EXPLAINED TO HIM THE REASON FOR MY VISIT. DURING THIS INVESTIGATION NO DUST WAS OBSERVED. I INFORMED STEVE THAT WHEN ANY LOADING OR UNLOADING OCCURS INSIDE THE BUILDING TO CLOSE THE OVERHEAD DOORS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	122	12/8/2009 DURING THIS INSPECTION NO DUST WAS OBSERVED AND THE OVERHEAD DOORS WERE CLOSED.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	122	10/26/2009 I RESPONDED TO AN ALLEGED DUST COMPLAINT AT THE ABOVE ADDRESS. UPON ARRIVAL, I SPOKE WITH STEVE CAULDE TERMINAL MANAGER FOR KINDER/MORGAN AND EXPLAINED TO HIM THE REASON FOR MY VISIT. DURING THIS INVESTIGATION NO DUST WAS OBSERVED. I INFORMED STEVE THAT WHEN ANY LOADING OR UNLOADING OCCURS INSIDE THE BUILDING TO CLOSE THE OVERHEAD DOORS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	82	5/1/2009 ACCORDINGLY. I CARRIED OUT THE INSPECTION OF KINDER MORGAN FOR THE ISSUANCE OF ANNUAL CERTIFICATE OF OPERATION. THE FACILITY NEEDS TO APPLY FOR THE INSTALLATION PERMITS OF THOSE EQUIPMENT WITHOUT PERMITS. THE FACILITY WAS ADVISED.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	35	10/20/2008 INVESTIGATOR MAHLER RECEIVED A COMPLAINT ALLEGING DUST IS COMING OUT OF BUILDING. ARROW / KINDER MORGAN IS A BARGE AND TRUCKING TERMINAL. THEY RECEIVE FERROUS AND ALLOY METALS. METALS ARE STORED AND PROCESSED THROUGH CRUSHING AND SCREENING OPERATIONS. SITE HAS A CURRENT CERTIFICATE OF OPERATIONS # 802283 AND A CURRENT LIMITED BUSINESS LICENSE # 80721. SITE ALSO HAS A DOT REGISTRATION #031800RDC FOR HAZARDOUS MATERIALS. UPON ARRIVAL, I OBSERVED RAINY WEATHER CONDITIONS. I DID NOT OBSERVE ANY DUST EMISSIONS COMING FROM ANY OF THE BUILDINGS DURING THIS INSPECTION. I SPOKE AND TOURD THE SITE WITH STEVE CAULDE, TERMINAL MANAGER FOR ARROW TERMINAL / KINDER MORGAN. STEVE INFORMED ME THAT THEY ARE MEETING WITH THEIR CONTRACTOR TOMORROW. THEY WILL BE DISCUSSING INSTALLING 5 NEW OVERHEAD DOORS AND INSTALLING A DUST COLLECTION SYSTEM FOR THE LOADING AND UNLOADING OPERATIONS. THIS WILL LIMIT THE FUGITIVE DUST EMISSIONS DURING INSIDE. I SPOKE WITH COMPLAINANT WHOM INFORMED ME HE OBSERVED CLOUDS OF DUST COMING FROM THE DOOR OPENING. I INFORMED HIM OF THE PROPOSED INSTALLATION OF NEW DOORS AND A DUST COLLECTION UNIT. HE STATED HE WAS SATISFIED WITH THE PROPOSED IMPROVEMENTS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	BANDZA CONSTRUCTION	2926 E 126TH ST	INDIANAPOLIS	IN	SOLID WASTE INSPECTION	122	8/14/2008 A FOLLOW UP INSPECTION WAS DONE AT THE ABOVE LOCATION. BACK ON 8/14/08, MY INVESTIGATION REVEALED THAT THE CONSTRUCTION SITE HAD A PILE OF EXCAVATED SOIL THAT WAS OVER THE 20' LIMIT. AT THAT TIME I INFORMED BANDZA CONSTRUCTION THE PILE MUST BE BROUGHT DOWN AND MUST BE TARPED TO CONTROL ANY DUST THAT MIGHT MIGRATE OFF-SITE. THIS INSPECTION SHOWED THAT THE PILE HAS BEEN LOWERED AND TARPED. FURTHER CONSTRUCTION INQUIRIES SHOWED THAT BANDZA CONSTRUCTION DOES HAVE A GENERAL WYES PERMIT FOR STORM WATER DISCHARGE FROM CONSTRUCTION SITE ACTIVITIES. ALSO, LANDSCAPING PLANS FOR THE SITE HAVE BEEN APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING. OTHER PILES FROM THE CONSTRUCTION ACTIVITIES STILL REMAIN TARPED AND SHOULD BE REMOVED IN 30 DAYS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER/MO	2926 E 126TH ST	INDIANAPOLIS	IN	MISCELLANEOUS INSPECTION	122	7/11/2008 AN INSPECTION WAS DONE AT THE ABOVE LOCATION IN PREPARATION OF THE MAYOR'S RIVER TOUR. UPON MY ARRIVAL, I SPOKE AND TOURD THE BUILDING WITH KINDER/MORGAN'S FACILITY MANAGER STEVEN CAULDE. DURING OUR INSPECTION WE HAD A DISCUSSION ABOUT THE AREA NEXT TO THE RIVER. MR. CAULDE STATED THAT CURRENTLY KINDER/MORGAN IS CONSTRUCTING A NEW STORAGE BUILDING AND IS STOCK PILING ALL THE EXCAVATED CLAY BEFORE IT'S DISPOSED OF. HE ALSO MENTIONED THAT A PILE OF SLAG IS STAGED NEAR THE CLAY PILES. HIS INTENTIONS FOR THE SLAG IS USE IT AS A ROAD BASE BEFORE IT'S BLACK TOPPED.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	MISCELLANEOUS INSPECTION	122	7/11/2008 IN THE MEAN TIME I TOLD MR. CAULDE TO TARP ALL THE PILES AND MAKE SURE THEY ARE SET BACK 20 FEET FROM THE WATER. A VALID CONSTRUCTION PERMIT WAS ONSITE.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	82	9/13/2007 INSPECTION PRIOR TO BOAT TOUR OF FACILITIES ALONG THE SOUTH FORK OF THE CHICAGO RIVER. CURRENT CONDITIONS: WEDS VISIBLE ALONG THE RIVER'S EDGE IN THE BARGE LOADING AREA. I MET WITH S. CAULDE (MGR) AND HE HAD THIS ISSUE ADDRESSED IMMEDIATELY. MATERIALS TRACK WAS MORE THAN SUFFICIENT.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	MISCELLANEOUS INSPECTION	77	7/7/2006	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57606	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	82	5/26/2006 INVESTIGATOR MAHLER RECEIVED A COMPLAINT ALLEGING CLOUDS OF DUST ARE BEING EMITTED BY ARROW TERMINAL. UPON ARRIVAL, I OBSERVED A FRONT END LOADER / OPERATOR SCREENING PIG IRON ORE CAUSING A JUST LATE DUST PARTICULATE CLOUD TO BE EMITTED INTO THE ATMOSPHERE. I SPOKE AND TOURD THE SITE WITH STEVE CAULDE, TERMINAL MANGER FOR ARROW TERMINAL. I HAD STEVE IMMEDIATELY STOP OPERATOR FROM SCREENING UNTIL THE SITE'S WATER TRUCK REFILLS & BEGINS MISTING THE PILE. ARROW IS A BARGE AND TRUCKING TERMINAL. THEY RECEIVE FERROUS AND ALLOY METALS. METALS ARE STORED AND PROCESSED THROUGH CRUSHING AND SCREENING OPERATIONS. SITE HAS A CURRENT CERTIFICATE OF OPERATIONS # 802283 AND A CURRENT LIMITED BUSINESS LICENSE # 80721. SITE ALSO HAS A DOT REGISTRATION #031800RDC FOR HAZARDOUS MATERIALS. STEVE INFORMED ME ARROW HAS BEST PRACTICE OF INFORMATION TO USE INSPECTOR RAJAL, MAJAL REGULATIONS WHAT THEY HAVE BEEN DOING TO MINIMIZE ATMOSPHERIC POLLUTION. CURRENTLY, THEY ARE WORKING INTO 2 DIFFERENT METHODS / TECHNOLOGIES. A FOAMING AGENT & MISTING SYSTEM TO BE INSTALLED FOR THE PIG IRON OPERATIONS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	35	9/1/2005 INSPECTOR CONDUCTED AN ANNUAL POLLUTION PREVENTION INSPECTION OF THE FACILITY UPON ARRIVAL, INSPECTOR MET WITH JEFF WILSON WHO TOOK AN INSPECTOR AROUND THE FACILITY FOR INSPECTION, OBSERVED PARTICULATE DUST EMISSIONS, THE PLUME WAS RELEASED DURING MATERIAL LOADING OPERATIONS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	82	11/26/2004 PLUME WAS RELEASED DURING MATERIAL LOADING OPERATIONS.	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	82	11/19/2004 INVESTIGATOR MAHLER RECEIVED A COMPLAINT ALLEGING CLOUDS OF DUST ARE BEING EMITTED BY ARROW TERMINAL. UPON ARRIVAL, I SPOKE AND TOURD THE SITE WITH STEVE CAULDE, TERMINAL MANGER FOR ARROW TERMINAL. ARROW IS A BARGE AND TRUCKING TERMINAL. THEY RECEIVE FERROUS AND ALLOY METALS. METALS ARE STORED AND PROCESSED THROUGH CRUSHING AND SCREENING OPERATIONS. SITE HAS A CURRENT CERTIFICATE OF OPERATIONS # 802283 AND A CURRENT LIMITED BUSINESS LICENSE # 80721. SITE ALSO HAS A DOT REGISTRATION #031800RDC FOR HAZARDOUS MATERIALS. BARGE STEVE WHAT TYPE OF HAZARDOUS MATERIALS THE SITE HANDLES. STEVE INFORMED ME ARROW STORES ON OCCASIONS CALCIUM SULFATE. CURRENTLY, THE SITE HAS APPROX. 2 TRUCK LOADS OF THIS MATERIAL, STORED ON SITE IN 90 GALLON DRUMS. THE SITE HAS NUMEROUS CYLINDER TANKS AND 3 FUEL TANKS (ALL WITH SECONDARY CONTAINMENT).	HISTORIC DEPT. OF ENVIRONMENT	41.6667933 -87.5523054 POINT (47.5523053918286 41.6667932637384)
DOEN57608	1/1/2012	MORGAN KINDER	2926 E 126TH ST	INDIANAPOLIS	IN	AIR QUALITY INSPECTION	35	4/8/2004 4. SITE HAS A MAJOR ACCUMULATION OF SLAG METAL STORED IN THE NORTHWESTERN AREA OF THE SITE. OLD BATTERIES STORED ON PAVEMENTS, SO WASTE TILES, EMPTY 55 GALLON DRUMS, TAIL WEEDS AND APPROX. 300 CUBIC YARDS OF C & D WASTE. 1. SITE CONDITIONS: 1.BITE HAS NUMEROUS STOCK PILES OF PIG IRON STORED ON THE OUTSIDE. THIS MATERIAL IS ACCESSIBLE TO THE WEATHER AND CAN CAUSE DUST EMISSIONS FROM LOADING THIS TYPE OF MATERIAL INTO TRUCKS. I REQUESTED STEVE TO IMPLEMENT A PLAN TO MINIMIZE DUST EMISSIONS FROM THE LOADING OPERATIONS OF MATERIAL CONTAINING FINE PARTICLES OF DUST (SEE PHOTO #1 & #2). 2.BITE PROCEEDED TO INSPECT THE NUMEROUS BUILDINGS USED FOR STORAGE OF METALS. SOME OF THE METALS STORED INSIDE OF BUILDINGS HAVE FINE DUST PARTICLES THAT CAN BECOME WINDBORNE DURING LOADING OPERATIONS. I ASKED STEVE HOW ARE THESE TYPES OF MATERIALS ARE LOADED OUT? STEVE STATED THESE MATERIALS ARE LOADED INTO TRUCKS BY A FRONT END LOADER. DOORS ARE USUALLY OPEN DURING LOADING OPERATIONS. I REQUESTED HE KEEP DOORS CLOSED DURING THESE OPERATIONS. 3.BITE SITES ROADWAYS ARE MAINLY PAVED WITH ASPHALT OR CONCRETE. SOME OF THE ROADWAYS ARE PAVED WITH SLAG. THESE ROADWAYS HAVE AN ACCUMULATION OF DEBRIS SUSCEPTIBLE OF BECOMING WINDBORNE. I REQUESTED STEVE TO SWEEP THESE AREAS MORE FREQUENTLY AND MAYBE APPLYING A CHEMICAL SUPPRESSION AGENT TO THESE ROADWAYS TO MINIMIZE ATMOSPHERIC POLLUTION (SEE PHOTOS 1 & 2). 4.BITE HAS A MAJOR ACCUMULATION OF SLAG METAL STORED IN THE NORTHWESTERN AREA OF THE SITE. OLD BATTERIES STORED ON PAVEMENTS, SO WASTE TILES, EMPTY 55 GALLON DRUMS, TAIL WEEDS AND APPROX. 300 CUBIC YARDS OF C & D WASTE. 1. SITE CONDITIONS: 1.BITE HAS NUMEROUS STOCK PILES OF PIG IRON STORED ON THE OUTSIDE. THIS MATERIAL IS ACCESSIBLE TO THE WEATHER AND CAN CAUSE DUST EMISSIONS FROM LOADING THIS TYPE OF MATERIAL INTO TRUCKS. 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I REQUESTED STEVE TO SWEEP THESE AREAS MORE FREQUENTLY AND MAYBE APPLYING A CHEMICAL SUPPRESSION AGENT TO THESE ROADWAYS TO MINIMIZE ATMOSPHERIC POLLUTION (SEE PHOTOS 1 & 2). 4.BITE HAS A MAJOR ACCUMULATION OF SLAG METAL STORED IN THE NORTHWESTERN AREA OF THE SITE. OLD BATTERIES STORED ON PAVEMENTS, SO WASTE TILES, EMPTY 55 GALLON DRUMS, TAIL WEEDS AND APPROX. 300 CUBIC YARDS OF C & D WASTE. 1. SITE CONDITIONS: 1.BITE HAS NUMEROUS STOCK PILES OF PIG IRON STORED ON THE OUTSIDE. THIS MATERIAL IS ACCESSIBLE TO THE WEATHER AND CAN CAUSE DUST EMISSIONS FROM LOADING THIS TYPE OF MATERIAL INTO TRUCKS. I REQUESTED STEVE TO IMPLEMENT A PLAN TO MINIMIZE DUST EMISSIONS FROM THE LOADING OPERATIONS OF MATERIAL CONTAINING FINE PARTICLES OF DUST (SEE PHOTO #1 & #2). 2.BITE PROCEEDED TO INSPECT THE NUMEROUS BUILDINGS USED FOR STORAGE OF METALS. SOME OF THE METALS STORED INSIDE OF BUILDINGS HAVE FINE DUST PARTICLES THAT CAN BECOME WINDBORNE DURING LOADING OPERATIONS. 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I REQUESTED STEVE TO SWEEP THESE AREAS MORE FREQUENTLY AND MAYBE APPLYING A CHEMICAL SUPPRESSION AGENT TO THESE ROADWAYS TO MINIMIZE ATMOSPHERIC POLLUTION (SEE PHOTOS 1 & 2). 4.BITE HAS A MAJOR ACCUMULATION OF SLAG METAL STORED IN THE NORTHWESTERN AREA OF THE SITE. OLD BATTERIES STORED ON PAVEMENTS, SO WASTE TILES, EMPTY 55 GALLON DRUMS, TAIL WEEDS AND APPROX. 300 CUBIC YARDS OF C & D WASTE. 1. SITE CONDITIONS: 1.BITE HAS NUMEROUS STOCK PILES OF PIG IRON STORED ON THE OUTSIDE. THIS MATERIAL IS ACCESSIBLE TO THE WEATHER AND CAN CAUSE DUST EMISSIONS FROM LOADING THIS TYPE OF MATERIAL INTO TRUCKS. I REQUESTED STEVE TO IMPLEMENT A PLAN TO MINIMIZE DUST EMISSIONS FROM THE LOADING OPERATIONS OF MATERIAL CONTAINING FINE PARTICLES OF DUST (SEE PHOTO #1 & #2). 2.BITE PROCEEDED TO INSPECT THE NUMEROUS BUILDINGS USED FOR STORAGE OF METALS. SOME OF THE METALS STORED INSIDE OF BUILDINGS HAVE FINE DUST PARTICLES THAT CAN BECOME WINDBORNE DURING LOADING OPERATIONS. 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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 28 2015

REPLY TO THE ATTENTION OF:

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Michael Estadt, Plant Manager
KCBX Terminals Company
3259 East 100th Street
Chicago, Illinois 60617

Re: Notice of Violation
KCBX Terminals Company
Chicago, Illinois

Dear Mr. Estadt:

The U.S. Environmental Protection Agency is issuing the enclosed Notice of Violation (NOV) to KCBX Terminals Company (KCBX) under Section 113(a)(1) of the Clean Air Act (CAA), 42 U.S.C. § 7413(a)(1). We find that you are in violation of the CAA, 42 U.S.C. §§ 7401 *et seq.*, and the Illinois State Implementation Plan, at your Chicago, Illinois facility.

Through three information requests issued under Section 114 of the CAA, 42 U.S.C. § 7414, dated November 15, 2013, April 14, 2014, and February 17, 2015, EPA requested that KCBX install and operate particulate matter air monitors and report monitoring data to EPA. EPA had previously issued an NOV to KCBX based on air monitoring data from February 18, 2014 through May 10, 2014. The attached NOV is based on the air monitoring data submitted by KCBX since May 10, 2014. EPA is issuing this NOV in coordination with the Illinois Environmental Protection Agency and other Agencies that are working to regulate the petroleum coke piles at KCBX. EPA continues to be confident that a coordinated enforcement effort will assist in the most beneficial resolution of these matters.

Section 113 of the CAA gives us several enforcement options. These options include issuing an administrative compliance order, issuing an administrative penalty order, and bringing a judicial civil or criminal action.

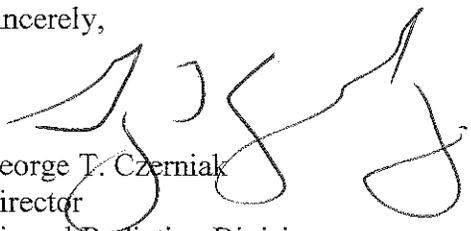
We are offering you an opportunity to confer with us about the violations alleged in the NOV. The conference will give you the opportunity to present information on the specific findings of

violation, the efforts you have taken to comply, and the steps you will take to prevent future violations.

Please plan for your facility's technical and management personnel to attend the conference to discuss compliance measures and commitments. You may have an attorney represent you at this conference.

The technical contacts for this matter are Molly Smith at (312) 353-8773 and Ray Cullen at (312) 886-0538. You may call either to request a conference. You should make the request as soon as possible, but no later than 10 calendar days after you receive this letter. Communications by counsel should be directed to Nicole Cantello at (312) 886-2870. We should hold any conference within 30 calendar days of your receipt of this letter.

Sincerely,



George T. Czerniak
Director
Air and Radiation Division

Enclosure

cc: Eric Jones, Manager
Compliance Unit
Bureau of Air
Illinois Environmental Protection Agency

4. Appendix K to Part 50 explains the computations necessary for analyzing particulate matter data to determine attainment of the 24-hour standards specified in 40 C.F.R. § 50.6.

Illinois SIP

5. On May 31, 1972, EPA approved Illinois Pollution Control Board (IPCB) Rules 101 and 102 as part of the federally enforceable SIP for the State of Illinois. 37 *Fed. Reg.* 10842 (May 31, 1972). IPCB Rule 101 has been recodified at 35 Illinois Administrative Code (Ill. Admin. Code) § 201.102. IPCB Rule 102 has been recodified at 35 Ill. Admin. Code § 201.141.

6. The Illinois SIP at 35 Ill. Admin. Code § 201.141 provides, in pertinent part, that no person shall cause or threaten or allow the discharge or emission of any contaminant into the environment in any State so as, either alone or in combination with contaminants from other sources, to cause or tend to cause air pollution in Illinois or so as to prevent the attainment or maintenance of any applicable ambient air quality standard.

7. The Illinois SIP at 35 Ill. Admin. Code § 201.102 defines “Ambient Air Quality Standard” as those standards promulgated from time to time by the IPCB pursuant to authority contained in the Illinois Environmental Protection Act and found at 35 Ill. Adm. Code 243, or by the U.S. Environmental Protection Agency pursuant to authority contained in 42 U.S.C. 7401 *et seq.* as amended from time to time.

8. The Illinois SIP at 35 Ill. Admin. Code § 201.102 defines “Air Pollution” as the presence in the atmosphere of one or more air contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property.

9. The Illinois SIP incorporated the 24-hour NAAQS for PM₁₀ as 150 µg/m³, 24-hour average concentration. The primary and secondary NAAQS for PM₁₀ are attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. *See* 35 Ill. Admin. Code § 243.120.

10. The Illinois SIP at 35 Ill. Admin. Code § 201.102 defines “PM₁₀” as particulate matter that has an aerodynamic diameter less than or equal to a nominal 10 micrometers (µm).

11. The Illinois SIP incorporates by reference Appendix K to 40 C.F.R. Part 50 (Interpretation of the Primary and Secondary National Ambient Air Quality Standards for Particulate Matter), referenced in 35 Ill. Admin. Code § 243.120.

Factual Background

12. KCBX owns and operates two bulk storage facilities (the Facilities) located at 3259 East 100th Street (the North Plant) and 10740 South Burley Avenue (the South Plant) in Chicago, Illinois. The Facilities unload, store, and load coal and petroleum coke, among other things.

13. To control air pollution emissions, the Facilities employ automated water cannon systems, truck wheel washing stations, a baghouse for rail car unloading, a surfactant and encrusting product on storage piles, some covered conveyors, spray bars on conveyors and transfer points, water trucks on facility roads, and a street sweeper on neighborhood streets.

14. To evaluate the air impact of fugitive particulate matter from the Facilities, EPA has issued to KCBX three information requests under Section 114 of the CAA, 42 U.S.C. § 7414, dated November 15, 2013, April 14, 2014, and February 17, 2015, requiring it to install, operate and maintain ambient continuous and filter-based PM₁₀ monitors and meteorological stations at the Facilities (the Requests).

15. The Requests specified, among other things, that KCBX shall install, operate, and maintain three “ambient monitoring sites” at each of its Facilities. In response to the November Request, on December 16, 2013, KCBX submitted, among other things, a document entitled “Particulate Matter Less Than Ten Microns Air Quality Monitoring Siting Study Report” which provided a monitor siting plan and states that the objective of the Plan is to demonstrate that operations at both terminals are meeting the PM₁₀ NAAQS. KCBX certified the December 16, 2013, response.

16. In accordance with the November 15, 2013, Request, KCBX submitted proposed monitoring sites to EPA on December 16, 2013, which EPA approved on December 24, 2013.

17. On February 18, 2014, KCBX began operating all the PM₁₀ monitors and the meteorological stations at the Facilities.

18. On March 13, 2014, KCBX submitted a Quality Assurance Project Plan in response to the November 15, 2013, Request which states on the cover page: “This document details a quality assurance plan to guide the successful implementation of Ambient Air Monitoring by URS Corporation at the KCBX Terminals Company North and South Terminals in Chicago, IL.”

19. On February 25, 2015, KCBX submitted monitoring data to EPA for February 8, 2015, through February 14, 2015, which shows that on February 14, 2015, the southeast PM₁₀ continuous monitor at the North Plant recorded a 24 hour average of 175 µg/m³.

20. The data from the meteorological station at the North Plant shows that the wind on February 14, 2015, was from the northwest at an average 11.9 miles per hour.

Violations

21. KCBX caused the emission of PM₁₀ into the air, so as, either alone or in combination with contaminants from other sources, to cause or tend to cause, air pollution in Illinois and/or to prevent the maintenance of the revised NAAQS for PM₁₀ in violation of the Illinois SIP at 35 Ill. Admin. Code § 201.141.

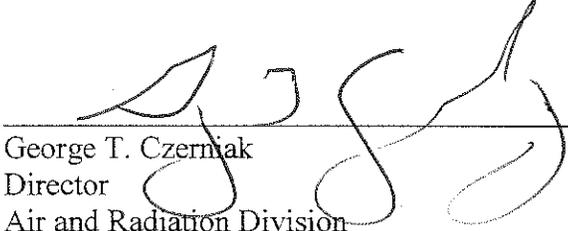
Environmental Impact of Violations

22. Excess emissions of particulate matter contain microscopic solids or liquid droplets, which may get deep into the lungs and cause serious health problems. Particulate matter exposure contributes to:

- irritation of the airways, coughing, and difficulty breathing;
- decreased lung function;
- aggravated asthma;
- chronic bronchitis;
- irregular heartbeat;
- nonfatal heart attacks; and
- premature death in people with heart or lung disease.

Date

1/28/15


George T. Czerniak
Director
Air and Radiation Division

California Department of Toxic Substances Control



DRAFT

Evaluation and Analysis of Metal Shredding Facilities and Metal Shredder Wastes



January 2018

*Implementation of
California Health and Safety Code Section 25150.82*

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S T A T E O F C A L I F O R N I A

Edmund G. Brown, Jr.
Governor

Matthew Rodriguez
Secretary, Environmental Protection Agency

Barbara A. Lee
Director, Department of Toxic Substances Control

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Appendices follow page 113

ACRONYMS

ADC	Alternative Daily Cover
APCD	Air Pollution Control District
AQMD	Air Quality Management District
ARB	Air Resources Board
Cal/OSHA	California Occupational Safety and Health Administration (now the California Department of Industrial Relations, Division of Occupational Safety and Health)
CalEPA	California Environmental Protection Agency
CalRecycle	California Department of Recycling and Resource Recovery
CAR	Certified Appliance Recycler
CFC	chlorofluorocarbon
CTMSR	Chemically Treated Metal Shredder Residue
CUPA	Certified Unified Program Agency
DHS	Department of Health Services
DTSC	Department of Toxic Substances Control
EMP	Emissions Minimization Plan
HWTS	Hazardous Waste Tracking System
ISRI	Institute of Scrap Recycling Industries
LFM	light fibrous material
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
MRSB	Materials that Require Special Handling
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
OCI	Office of Criminal Investigation
OPP	Official Policy and Procedure
PCB	polychlorinated biphenyl
PM	particulate matter
RCRA	Resource Conservation and Recovery Act
RTO	Regenerative Thermal Oxidizer
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SIC	Standard Industrial Classification
SMARTS	Storm Water Multiple Application and Report Tracking System
STLC	Soluble Threshold Limit Concentration
SWRCB	State Water Resources Control Board
TTL	Total Threshold Limit Concentration
VOC	volatile organic compounds
WDID	Waste Discharger Identification
US EPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

The Department of Toxic Substances Control (DTSC) has conducted this Evaluation and Analysis (Analysis) of Metal Shredding Facilities and Metal Shredder Wastes to implement Health and Safety Code Sections 25150.82 through 25150.86, collectively referred to here as the Metal Shredding Facilities Law. Based on certain required findings and demonstrations, the law authorized DTSC to adopt alternative management standards for metal shredding facilities that differ from existing hazardous waste control law, and to classify metal shredder waste as nonhazardous waste. This report describes public health and environmental threats posed by metal shredding facilities, and begins the regulatory process to ensure these facilities comply with important public health and environmental protections.

DTSC reviewed hazardous waste management activities, the current regulatory oversight, and the history of releases, contamination, and enforcement actions at the facilities. DTSC directed a study to identify the highest level of treatment that could be achieved on metal shredder waste with current technology. DTSC also reviewed the current disposal practices of metal shredder waste at municipal solid waste landfills to identify the potential for migration of contaminants to groundwater, to surface waters, or through the air.

DTSC found numerous examples of accidents, improper storage of hazardous wastes, soil contamination, and releases of hazardous wastes that impacted surrounding communities. DTSC noted several legal actions taken against metal shredding facilities in response to these types of incidents. Additionally, DTSC is evaluating enforcement actions resulting from current investigations.

DTSC evaluated whether alternative management standards could be developed that would provide adequate protection for human health and safety and the environment. DTSC showed through a series of demonstrations that the most appropriate level of regulation for these kinds of facilities is a hazardous waste permit. Based on this Analysis, DTSC has chosen not to adopt alternative management standards for metal shredding facilities.

However, DTSC's analysis demonstrated that continued disposal of chemically treated metal shredder residue (CTMSR) as nonhazardous waste in municipal solid waste landfills, including its use as alternative daily cover (ADC), has not resulted in harm to human health or safety or to the environment, and that CTMSR has not contributed to the solubilization and migration of heavy metals from solid waste landfills. DTSC has concluded that classification of CTMSR as a hazardous waste is not necessary to prevent or mitigate potential hazards to human health or safety or to the environment.

This report is intended to serve as a basis to establish enforceable operating requirements for metal shredding facilities through a hazardous waste permit. Through a formal and transparent permitting process, DTSC will ensure these facilities come into compliance with existing law, and that communities are adequately protected. This process will provide for a reasonable and orderly transition period for facilities to complete the permitting process. DTSC also intends to promulgate regulations that exclude CTMSR from classification as a hazardous waste, with certain limitations, under separate statutory authority.

DTSC anticipates conducting workshops on the proposed regulatory action in early 2018, and welcomes input from the public, the regulated community, and other stakeholders in the upcoming permitting process and the anticipated rulemaking process.

DRAFT

1 INTRODUCTION AND OVERVIEW

The Department of Toxic Substances Control (DTSC) prepared this Evaluation and Analysis of Metal Shredding Facilities and Metal Shredder Wastes (Analysis) under Health and Safety Code Sections 25150.82 through 25150.86, collectively referred to here as the Metal Shredding Facilities Law. During the research and preparation of this Analysis, DTSC consulted with other state and local governmental regulatory agencies including the California Air Resources Board, State Water Resources Control Board, California Department of Recycling and Resource Recovery (CalRecycle), California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA), Regional Water Quality Control Boards (Regional Water Boards), local Air Quality Management Districts and Air Pollution Control Districts, and the Certified Unified Program Agencies (CUPAs). DTSC engaged with the metal shredding facilities and with the landfill owners and operators in conducting this evaluation. DTSC appreciates the cooperation and assistance of the regulated community, members of the public, and other stakeholders in conducting this evaluation and developing this Analysis.

1.1 Document Scope

This Analysis was prepared to evaluate metal shredding processes and wastes as they are operating under current conditions. The goal of the Analysis is to ensure that these processes are managed and regulated in a manner that protects public health and the environment and minimizes economic impacts to industry. The Analysis specifically considers the applicability of hazardous waste management regulations and determines whether additional requirements are needed or appropriate. This Analysis also considers whether alternative management standards specific to the generation, handling, transfer, storage, transportation, and disposal of hazardous wastes generated and managed at metal shredding facilities should be adopted by DTSC, and would be, if justified, an alternative to DTSC's existing hazardous waste management requirements.

This Analysis is divided into six sections: Section 1, an Introduction and Overview; Section 2, a presentation of the evaluations that DTSC is required to conduct; Section 3, a presentation of the analyses DTSC is required to perform; Section 4, a discussion of the demonstrations DTSC is required to make to allow alternative management standards to be proposed; Section 5, a discussion of the classification and disposal of chemically treated metal shredder residue; and Section 6, a presentation of DTSC's conclusions.

1.2 Terminology

Many terms have been used to describe the metal shredding industry and the wastes it manages. To ensure a clear and common understanding of the concepts discussed in this Analysis, DTSC provides the following definitions of terms used:

Metal Shredding Facility: The Metal Shredding Facilities Law defines a metal shredding facility as “an operation that uses a shredding technique to process end-of-life vehicles, appliances, and other forms of scrap metal to facilitate the separation and sorting of ferrous metals, non-ferrous metals, and other recyclable materials from nonrecyclable materials that are components of the end-of-life vehicles, appliances, and other forms of scrap metal. A metal shredding facility does not include a feeder yard, a metal crusher, or a metal baler, if that facility does not otherwise conduct metal shredding operations.”
Also known as: Auto shredder, autoshredder, metal shredder, auto shredding facility, shredder.

Metal Shredder Aggregate: The mixture of shredded material produced by the metal shredding hammer mill that typically contains recoverable ferrous and non-ferrous metals, plastics, rubber, glass, foam, fabrics, carpet, wood, residual automobile fluids, road dirt, and/or other debris. *Also known as: Aggregate, intermediate manufacturing process stream.*

Metal Shredder Residue: The portion of the metal shredder aggregate that remains after ferrous metals and non-ferrous metals have been separated, and before chemical stabilization occurs. *Also known as: Metal shredder waste, auto shredder waste, autos shredder waste, shredder residue, fluff, auto shredder fluff, recycling residue.*

Chemically Treated Metal Shredder Residue (CTMSR): Metal shredder residue that has been subject to a chemical stabilization treatment consisting of the addition of sodium or potassium silicate and an alkaline cement powder to reduce to the solubility of metals in the residue. *Also known as: Metal shredder waste, auto shredder waste, autos shredder waste, shredder residue, treated auto shredder waste, treated auto shredder residue, treated (stabilized) auto shredder waste, treated shredder waste, fluff, auto shredder fluff, and recycling residue.*

Metal Shredder Wastes: A collective reference to all wastes being managed at metal shredding facilities that emanate from the metal shredding process, including metal shredder aggregate, metal shredder residue, and Chemically Treated Metal Shredder Residue (CTMSR).

Department of Toxic Substances Control, or DTSC: DTSC originated as the Toxic Substances Control Division (TSCD) within the Department of Health Services (DHS), later expanding to a program (the Toxic Substances Control Program (TSCP)). In 1991, TSCP, by the action of the Governor, was reorganized as a department within the California Environmental Protection Agency (CalEPA). "DHS," "TSCD," and "TSCP" are referred to in this Analysis under the umbrella term of "DTSC" for ease of reference. *Also known as: DHS, TSCD, and TSCP.*

1.3 Metal Shredding Operations

There are estimated to be 2,500 scrap metal recycling facilities in California, which in 2014 collected and processed for export an estimated 7 million tons of scrap metal worth \$5 billion.¹ Taiwan, Korea, and China received 71 percent of the scrap metal exports from California. Scrap metal recycling facilities include feeder yards that collect scrap metal from the public and businesses, automobile dismantlers that process end-of-life vehicles (approximately 1,200), and metal shredding facilities which shred and separate the scrap metal for export. There are currently six metal shredding facilities in California.

Metal shredding operations all follow the same basic process, as illustrated in Figure 1. The metal shredding facility receives scrap metal input materials, such as whole vehicles and large appliances, and certain hazardous wastes that are still present are removed from the input materials in a process commonly referred to as "de-pollution."² The de-polluted input materials are processed through a

¹ See 2014 California Exports of Recyclable Materials, California Department of Resources Recycling and Recovery, Publication # DRRR-2015-1539, September 2015.

² Section 42175 of the Public Resources Code requires that hazardous materials be removed from major appliances and vehicles prior to crushing for transport or transferring to a baler or shredder for recycling. The law defines Materials that Require Special Handling (MRS) as any material that, when removed from a major appliance, is a

hammer mill to break down large metal pieces into smaller pieces, resulting in metal shredder aggregate. Iron-containing metal, or ferrous metal, is separated out, and the remaining metal shredder aggregate is further processed to sort the non-ferrous metals. The material that is left after ferrous and non-ferrous metal separation is called “metal shredder residue,” which is chemically treated and sent to landfills. Each of these steps is discussed further below.

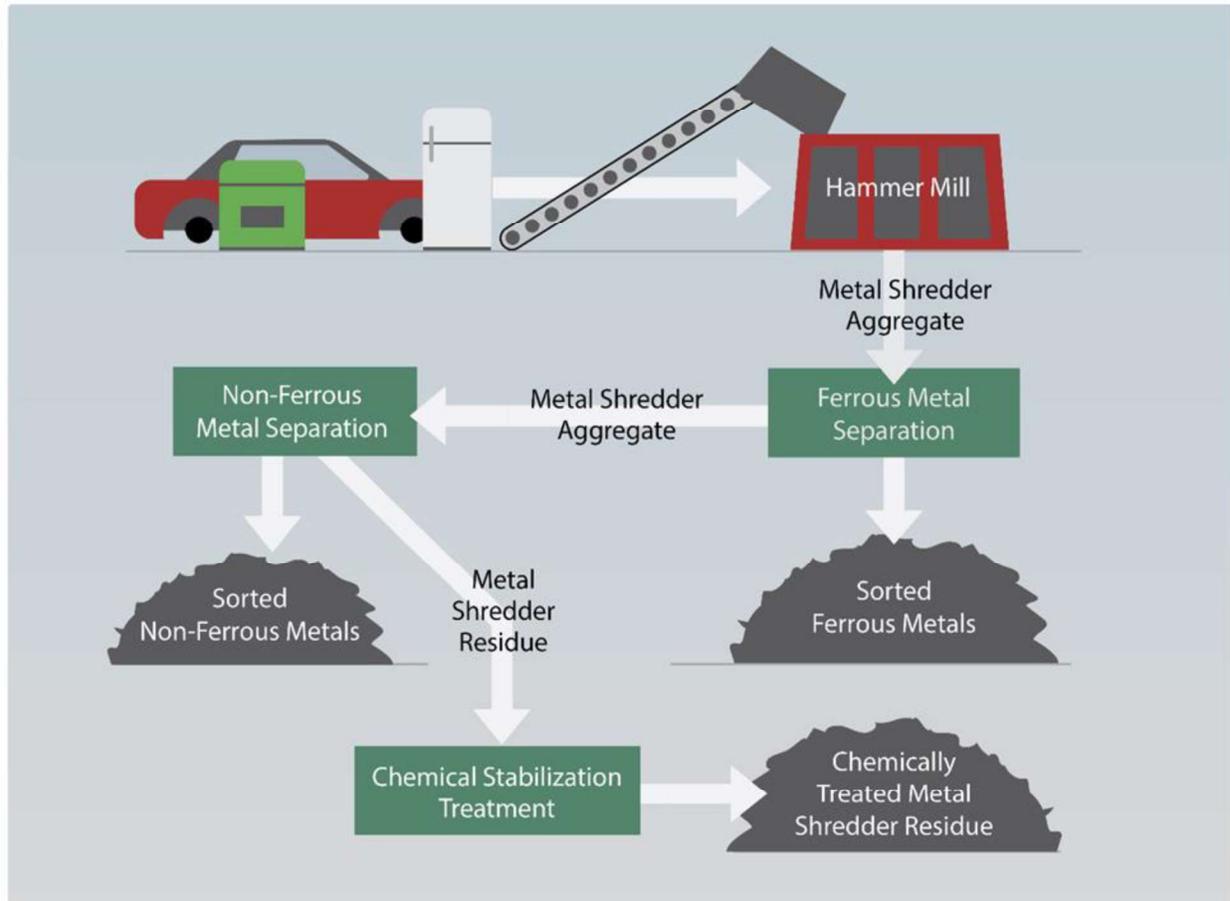


Figure 1. Diagram of a typical metal shredding operation.

Scrap Metal

The types of scrap metals that are sent to metal shredding facilities include end-of-life products that are primarily composed of metal, such as vehicles, appliances, construction and demolition materials, and manufacturing scrap. Much of the scrap metal that arrives at metal shredding facilities comes from metal recycling facilities, which sort, bale, and shear the metal to compress it for ease of transport. Scrap metal arrives at the metal shredding facility in a variety of ways, most commonly by truck or rail. When vehicles, appliances, and other scrap metal arrive at a metal shredding facility, they are subject to

hazardous waste regulated pursuant to Chapter 6.5 (commencing with Section 25100) of Division 20 of the Health and Safety Code.

the scrap metal exclusion, meaning the scrap metal is not regulated as a hazardous waste since it is being recycled.³

When the scrap metal arrives at the metal shredding facility, it is unloaded by large machinery and piled for ease of handling. Because scrap metal deliveries can be a mixture of various metals (ferrous and non-ferrous) and other materials, additional separation and processing steps, such as further sorting, de-pollution, and shearing occur before the scrap metal is ready to be shredded. All six metal shredding facilities in California have acceptance policies regarding what materials they will and will not accept as scrap metal.

De-pollution

Much of the scrap metal that metal shredding facilities receive to shred has the potential to contain hazardous materials, also known as materials that require special handling, or MRSH. The MRSH must be removed before the scrap metal can enter the shredder.⁴ Typical hazardous materials found in scrap metal include gasoline, oil, antifreeze, lead-acid batteries, vehicle air bags, compressed gas cylinders (e.g., propane tanks, compressed gas tanks, and fire extinguishers), refrigerants in air conditioning or heat transfer systems, polychlorinated biphenyls (PCBs) containing capacitors, light ballasts, transformers, and items containing elemental mercury (e.g., tilt-switches or thermostats).

Metal shredding facilities that conduct the de-pollution operations on-site are subject to hazardous waste generator requirements, as the facility becomes a point of hazardous waste generation. Similarly, the metal shredding facility is subject to requirements for containerization, labeling, storage, and disposal or other means of hazardous waste management.



Scrap metal stored prior to shredding.

³ See subdivision (3) of paragraph (a) of Section 66261.6 of Division 4.5 of Title 22, California Code of Regulations.

⁴ See Public Resources Code section 42175

Hammer Mill

The de-polluted scrap metals are fed into a hammer mill to reduce the size to facilitate downstream sorting processes. The hammer mill can reduce scrap metal to pieces less than four inches in diameter. This shredded waste is called metal shredder aggregate.

A large hammer mill may contain up to 72 hammers, each weighing 1,000 pounds. The hammers are placed around a rotor in balanced positions, with the entire rotor assembly weighing up to 100 tons. The rotor is turned by an electric motor with up to 9,000 horsepower at over 400 revolutions per minute, generating hammer tip speeds of more than 100 miles per hour ("tip speed" refers to the speed at which the tip of the hammer is travelling in the hammer mill). The hammer mill is surrounded by grates with slots that allow the smaller pieces to pass through. Larger pieces continue to be shredded until they are small enough to fit through the slots.



Shredder and loading equipment at Schnitzer Steel, Inc., Oakland, CA.



An earlier photo of the shredder unit at SA Recycling, Anaheim, CA before it was enclosed.

Ferrous Metal Recovery

Ferrous metals are recovered from the metal shredder aggregate using magnets, leaving non-ferrous metals such as aluminum, copper, lead, and zinc.



Magnets at SA Anaheim, shown here before they were enclosed.



Pile of sorted ferrous metal following shredding of scrap metal at SA Terminal Island.

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Non-ferrous Metal Recovery

Non-ferrous metals are recovered from metal shredder aggregate based on density and other physical properties. Generally, the non-ferrous metals are separated by first separating the metal shredder aggregate into different size fractions using trommels, then by feeding the segregated sizes into: (1) eddy-current separators to separate most aluminum, zinc and copper materials, (2) under air-actuated sensors to remove stainless steel and copper wire, and (3) through density separators to remove fine copper materials. Additionally, “hand picking” is used at some metal shredding facilities, a process by which individuals manually pick through the metal shredder residue to pull out any remaining non-ferrous metal pieces that the separation may have missed, before the metal shredder residue is subjected to the chemical stabilization treatment.

One of the metal shredding facilities does not conduct the non-ferrous metals separation on-site, but ships partially-processed material to a facility it owns in Arizona for further sorting.⁵ The sorted and separated metals are sold in bulk to metal refiners for further purification, ultimately to be used in the manufacture of new metal products.



Eddy current separator, used for recovery of non-ferrous metals.



Hand picking station, Sims Metals, Redwood City, CA.

⁵ Ecology Auto Parts of Colton, California, ships its aggregate for further processing to another facility owned by Ecology, located at 59260 Highway 72, in Salome, Arizona. The aggregate is shipped as an Excluded Recyclable Material in trucks owned and operated by Ecology.

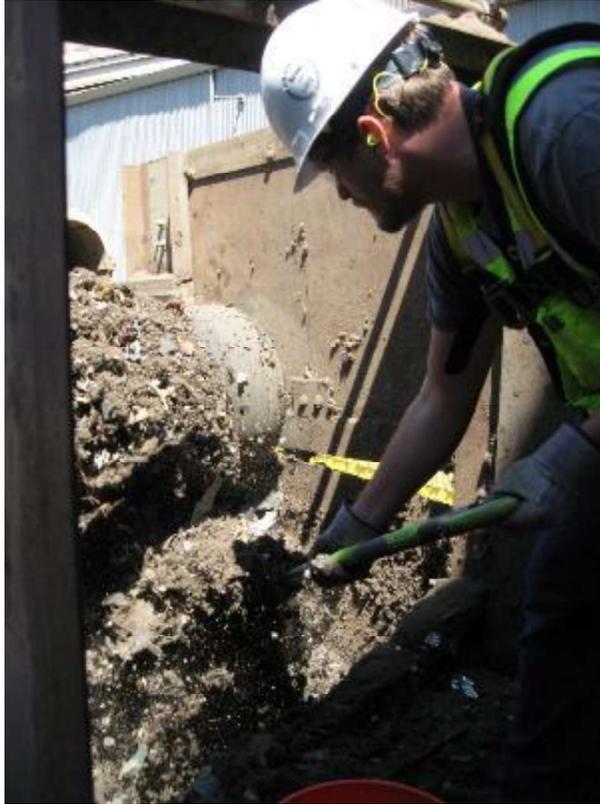


Pile of sorted non-ferrous metal.

Metal Shredder Residue

A large amount of waste remains after all the metals that can be economically recovered have been removed. This remaining material, called metal shredder residue, consists of plastics, rubber, glass, foam, fabrics, carpet, wood, residual automobile fluids, road dirt, other debris, and a small amount of unrecoverable metals (typically non-ferrous). Approximately 25 percent of the original weight of a typical end-of-life vehicle remains after all the metals have been practicably removed.⁶

⁶ See industry presentation, "Regulation of Auto Shredder Residue in California," Oakland Public Workshop, January 23, 2014.



Metal shredder residue exiting the joint products plant following removal of non-ferrous metals.

Chemical Stabilization

Each of the facilities that conducts non-ferrous metal separation on-site treats the resulting metal shredder residue using a chemical stabilization process that applies a sodium or potassium silicate solution and an alkaline activator such as cement.⁷ Chemical stabilization is used to reduce the mobility of toxic heavy metals in the residue. The initial step is a thorough wetting of the material with liquid silicate. After the material is wetted, cement powder is added and the material is mixed in a pug mill, yielding chemically treated metal shredder waste. This CTMSR is passed under a final magnet for additional recovery of ferrous metals before it is transported off-site for disposal.

⁷ For Ecology Auto Parts, the metal shredder residue produced following the sorting of non-ferrous metals is generated in Arizona, and thus, is not governed by California hazardous waste control law.



Cement storage silos at SA Bakersfield.



Pug mill mixing screw at Schnitzer Steel, Oakland.

DO NOT CITE OR QUOTE



Chemically treated metal shredder residue is passed under a final magnet for recovery of ferrous metal at Schnitzer Steel, Inc., in Oakland.

1.4 Regulatory History of Metal Shredding Facilities and Metal Shredder Waste

All facilities that store, treat, or dispose of hazardous waste in California must obtain a permit or grant of authorization from DTSC. California's tiered permitting system includes a full permit, which is generally required for hazardous waste facilities that are managing federally regulated hazardous wastes; a standardized permit, generally available for facilities managing hazardous wastes that are not federally regulated; and three lower-tiered permits that are reserved for lower-risk and lower-volume waste streams.

Metal shredding facilities generally do not produce waste that exceeds the federal regulatory levels established by the U.S. Environmental Protection Agency (US EPA) under the Resource Conservation and Recovery Act (RCRA), and thus are not regulated under the full permit. Metal shredding facilities do, however, produce waste that exceeds California's more stringent regulatory thresholds as is recognized to be a hazardous waste.

Metal shredder residue was not managed as hazardous waste until 1984, when California adopted the Waste Extraction Test to determine whether a waste is hazardous due to the solubility of contaminants in the waste. Metal shredder residue was found to have high levels of lead, copper, and zinc which could be mobilized under the test conditions.

On March 9, 1984, DTSC informed all generators of metal shredder residue that their waste was classified as hazardous and must be managed in accordance with hazardous waste regulations.⁸ The

⁸ See DHS Letter to Dr. Kenneth Hekimian RE: Disposal of Automobile Shredder Wastes from Hugo Neu-Proler and Clean Steel, Inc., March 9, 1984.

requirement for disposal of metal shredder residue as a hazardous waste greatly increased the cost for the shredder operators and also created a concern about the limited capacity of hazardous waste landfills.

In 1985, Senate Bill (SB) 976 (Bergeson, Ayala and Seymour, Chapter 1395, Statutes of 1985) addressed the issue of limited capacity at hazardous waste landfills by requiring five Regional Water Quality Control Boards (RWQCBs)⁹ to prepare a list of Class III nonhazardous waste landfills that would be authorized to accept and dispose of metal shredder residue.¹⁰ Class III landfills are generally authorized to only accept nonhazardous waste. The RWQCBs identified 13 Class III landfills, including at least one in each of the five RWQCB jurisdictions, that could accept metal shredder residue. SB 976 did not require that the listed landfills accept metal shredder residue, and did not provide exemptions from other hazardous waste regulations. Metal shredder residue was designated nonhazardous for purposes of disposal only, and it retained the hazardous designation for purposes of storage, transportation, manifesting, and disposal fees. The RWQCBs required the 13 landfills to upgrade their facilities to accept metal shredder residue; doing so was financially prohibitive, and only a few Class III landfills that became authorized by SB 976 actually accepted the metal shredder residue. By its own operation, this statute expired on January 1, 1988.

In 1986, DTSC began working with a shredder in Los Angeles to determine if shredder waste could be treated with silicate and cement to reduce the solubility of metals so that it would qualify for a nonhazardous waste classification. Based on testing results of the treated waste, DTSC made the determination that CTMSR exhibited “mitigating physical or chemical characteristics which rendered it insignificant as a hazard to human health and safety, livestock, and wildlife” and classified the waste as nonhazardous. It cited as legal authority subdivision (e) of Section 66305 of Title 22 of the California Administrative Code.¹¹ This authority was later renumbered to subdivision (f) of Section 66260.200 of Title 22 of the California Code of Regulations. The letters granting the nonhazardous waste determinations are now referred to as “f letters.”

In 1987, as DTSC continued to work with the industry to develop effective chemical stabilization for metal shredder residue, the State Water Resources Control Board (SWRCB) adopted Resolution 87-22, which established a policy to standardize the requirements for the Class III landfills to accept metal shredder residue for disposal. The policy attempted to resolve the conflict between the Legislature’s direction to accept the metal shredder residue at Class III landfills, and the RWQB’s longstanding policy to prevent hazardous wastes from being accepted by nonhazardous waste landfills. The SWRCB’s Resolution 87-22 stated that metal shredder residue that was determined to be hazardous by DTSC, but was granted a variance for the purposes of disposal by DTSC, was suitable for disposal at designated Class III landfills.

In 1987, Assembly Bill (AB) 1542 (Bradley and Peace, Chapter 1483, Statutes of 1987), exempted untreated metal shredder residue that was disposed in an appropriate Class III landfill from hazardous waste disposal fees and taxes. The AB 1542 conditional exemption was effective only if the generator

⁹ RWQCBs in the San Francisco, Central Valley, Los Angeles, Santa Ana, and San Diego regions.

¹⁰ See former Section 25143.6 of the Health and Safety Code, now repealed (SB 976, Bergeson, Ayala and Seymour, Chapter 1395, Statutes of 1985, Section 1).

¹¹ See letter from Dr. David J. Leu, Department of Health Services, Toxic Substances Control Division to Jim Wotherspoon, Hugo Neu-Proler Company, February 21, 1986.

carried out specified monitoring, recordkeeping, and testing requirements; if the waste was disposed within 45 days of being generated; and if DTSC determined that the metal shredder residue would not pose a threat to human health or water quality. AB 1542 required the metal shredder residue generators to analyze their residue for total and soluble concentrations of chromium, cadmium, copper, lead, mercury, nickel, and zinc, and for total concentrations of PCBs.

On November 30, 1987, in anticipation of AB 1542 going into effect on January 1, 1988, DTSC rescinded all disposal variances it had previously issued to metal shredder residue generators in 1984 and 1985.¹² The timing of this rescission allowed metal shredder residue generators sufficient time to apply to DTSC for a new variance prior to the effective date of AB 1542.

Of the eight metal shredding facilities in California at that time, only Levins Metal Corporation (later to become Sims Metal Management) and Schnitzer Steel Products, used the AB 1542 nonhazardous disposal provision. Four of the facilities applied to DTSC for nonhazardous waste classifications by submitting testing data demonstrating their use of the silicate and cement treatment. DTSC approved the treatment based on the reduction in solubility of the metals. Nonhazardous waste classifications were granted to Ferromet (later to become SA Rancho Cucamonga; no longer in operation), Hugo Neu-Proler (later SA Terminal Island), Clean Steel (later Ecology Auto Parts), and Orange County Steel Salvage (later SA Anaheim). The two remaining facilities—Pacific Steel (no longer operating) and Golden State Metal (later SA Bakersfield)—were not disposing of metal shredder residue at that time. By its own operation, AB 1542 expired on January 1, 1989.

In 1988, DTSC also issued Official Policy and Procedure Number 88-6 (OPP 88-6) to ensure that a consistent regulatory approach would be applied to the management and disposal of auto shredder waste.¹³ The policy was designed to assist staff in regulating generators, and provided clarification for several scenarios typically encountered at metal shredding facilities. Facilities that treat, store, or dispose of hazardous waste in California are required to have a hazardous waste permit. DTSC's OPP 88-6 focused on the chemical stabilization process being performed on the metal shredder residue, which required a hazardous waste facility permit. Through OPP 88-6 DTSC interpreted that the metal shredder aggregate that was undergoing separation at the metal shredding facilities was not yet a waste. If the chemical stabilization were to take place while the metal shredder aggregate was still undergoing separation processes, prior to the last separation process, the treatment would be considered "in-line" and would not require a permit. Each of the metal shredding facilities complied with OPP 88-6 by conducting a final ferrous metal separation step after the chemical stabilization. Each metal shredding facility now passes the CTMSR under a final magnet as a stage of ferrous separation to conform their operations to the OPP 88-6 policy and to avoid requiring a permit.

In 2002, DTSC conducted sampling at three auto shredding facilities to verify compliance with the existing statutes, regulations, and DTSC policy.¹⁴ The investigation identified longstanding and continuing issues related to the treatment, storage, and handling of hazardous waste at the facilities. However, DTSC's historic waste classifications and policies remained in effect during the investigation, and were affirmed in 2005, when one of the metal shredding facilities was reorganized under a new

¹² See DHS Letter to Adams RE: Auto Shredder Disposal Variances, November 30, 1987.

¹³ See DHS Official Policy and Procedure Number 88-6 Auto Shredder Waste Policy and Procedure, 1988 (OPP 88-6).

¹⁴ See DTSC draft report "California's Automobile Shredding Waste Initiative", 2002.

name, and requested that the previous “f letter” be transferred from the existing facility’s location to that of a new facility.¹⁵

In 2008, based on the results sampling conducted during the 2002 investigation, DTSC determined that the conditions contained in DTSC’s authorization letters and in OPP 88-6 were not sufficient to reduce the waste to a nonhazardous solid waste. DTSC informed the metal shredding facilities of DTSC’s intention to rescind the nonhazardous classifications and OPP 88-6,¹⁶ and to impose management standards (including requiring a permit or some other form of authorization to treat the metal shredder wastes). DTSC then began discussions with industry on the process to rescind the conditional nonhazardous waste classifications and require the waste to be managed as hazardous waste. In response, industry representatives provided DTSC with a significant amount of technical information supporting the treatment and legal arguments challenging the process to rescind the authorizations and policy. DTSC’s proposed rescission was not finalized, and the “f letters” and policy continued to remain in place.

During this time, DTSC conducted in-depth investigations of specific metal shredding facilities. An explosion at the SA Terminal Island facility (then operated by a subsidiary of Sims) in 2007 resulted in the release of hazardous waste. In 2011, the multi-agency enforcement action against the company resulted in penalties of nearly \$3 million and improved environmental protections. DTSC also investigated releases of light fibrous material (LFM) from the Sims facility in Redwood City beginning 2009. The enforcement action resulted in \$2.4 million in penalties in 2015 and enclosure of the entire facility to prevent future releases into the surrounding community.

In 2012, DTSC again met with industry to discuss the “f letters” and OPP 88-6. DTSC raised questions about the efficacy of the treatment, the protectiveness of the policy, and the appropriateness of allowing the metal shredding facilities to perform hazardous waste treatment without a permit. DTSC invited industry to provide additional information that demonstrated the effectiveness of the chemical treatment through a treatability study, as well as to document the industry’s claims that the current treatment was the best available.

In 2013, the Institute of Scrap Recycling Industries (ISRI) submitted a Draft Metal Shredder Residue Treatability Study Workplan to DTSC, presenting a methodology to determine the effectiveness of various application rates of the current treatment technology.¹⁷ In late 2013 and early 2014, DTSC held a series of workshops with the public, other state and local government agencies, and the regulated community to receive feedback and input on the development of the treatability study.¹⁸

In 2014, Senator Jerry Hill introduced SB 1249 (Chapter 756, Statutes of 2014) in response to safety concerns at metal shredding facilities related to two recent fires in his district, and his concern that the

¹⁵ See DTSC Letter to Lynn Delzell regarding the transfer of the Clean Steel nonhazardous waste classification (“f letter”) to Pacific Rail Industries, dated August 1, 2005.

¹⁶ See DTSC Letter to Metal Shredding Facilities repealing “f letters” and Policy and Procedure 88-6 effective January 1, 2009, dated September 29, 2008.

¹⁷ See DTSC Letter to Margaret Rosegay, July 11, 2013, providing DTSC’s review of the Draft Metal Shredder Residue Treatability Study Workplan (Treatability Study Workplan), dated May 9, 2013.

¹⁸ Local Governmental Agency Workshops were held in Berkeley on November 7, 2013 and in Cypress on November 15, 2013. Public Workshops were held in Wilmington on January 14, 2014 and in Oakland on January 23, 2014. A meeting with Landfill Owners and Operators was held on December 16, 2013.

hazards associated with these operations were not adequately regulated. The Senate Committee on Environmental Quality noted that many of these facilities are in highly populated areas and have been found to have contaminated air and water surrounding their facilities.¹⁹ The bill was amended to require DTSC to consider additional aspects of the industry and its wastes. SB 1249 was passed by the Legislature, signed by the Governor, and became effective on January 1, 2015. The final bill as chaptered authorizes DTSC to adopt regulations establishing management standards for metal shredding facilities for hazardous waste management activities within the department's jurisdiction, as an alternative to the requirements of existing hazardous waste control law, based on a comprehensive evaluation of the industry and its practices, which would identify the appropriate level of regulatory controls to place on the industry and the management of treated metal shredder residue.

1.5 Requirements of Legislation

SB 1249 enacted Health and Safety Code Sections 25150.82 through 25150.86. These provisions are collectively referred to in this document as the Metal Shredding Facilities Law. It requires DTSC to evaluate the risks posed by metal shredding facilities and the management of metal shredder aggregate. Based on the findings of its evaluation, SB 1249 authorizes DTSC to either develop alternative management standards for metal shredding facilities or to rescind any prior decisions and require the facilities and their hazardous wastes to be subject to full hazardous waste management requirements.

In Section 1 of the Metal Shredding Facilities Law, the Legislature expressed its intent "that the conditional nonhazardous waste classifications, as documented through the historical 'f letters,' be revoked and that metal shredding facilities be thoroughly evaluated and regulated to ensure adequate protection of the human health and the environment."

The general requirements of the Metal Shredding Law:

- Authorize DTSC, in consultation with CalRecycle, SWRCB, and affected local air quality management districts, to adopt regulations establishing management standards for metal shredding facilities for hazardous waste management activities as an alternative to current hazardous waste control law and regulations.
- Require DTSC, before adopting regulations establishing alternative management standards, to first prepare an analysis evaluating the hazardous waste management activities to which alternative management standards would apply.
- Prohibit DTSC from adopting management standards that are less stringent than applicable standards under federal law.
- Authorize the alternative management standards, to the extent consistent with the federal hazardous waste standards, to allow CTMSR to be classified and managed as nonhazardous waste.

¹⁹ See SB 1249 Committee Analysis, Senate Committee on Environmental Quality, Committee Consultant Rachel Machi Wagoner, April 30, 2014, p. 3.

- Allow CTMSR that is classified as nonhazardous waste pursuant to the alternative management standards to be managed as either alternative daily cover or for beneficial reuse, or to be placed in a unit that meets specified state waste discharge requirements.
- Require that all hazardous waste determinations and policies, procedures or guidance issued by DTSC before January 1, 2014, governing CTMSR be inoperative if DTSC completes its analysis and does either of the following: 1) adopts new regulations establishing alternative management standards; or 2) rescinds the existing conditional nonhazardous waste classifications.
- Sunset DTSC's authority to adopt regulations on January 1, 2018.
- Authorize DTSC to collect an annual fee from metal shredding facilities to pay DTSC's costs for implementation. This bill also establishes a separate subaccount in the Hazardous Waste Control Account and requires the fees to be deposited into the account, to be available upon appropriation by the Legislature, and authorizes regulations relating to fee provisions to be adopted as emergency regulations.
- Repeal Section 25143.6 of the Health and Safety Code.²⁰

In order to implement the Metal Shredding Facilities Law, the Legislature directed DTSC to evaluate:

- 1) The operative environmental and public health regulatory oversight of metal shredding facilities (HSC Section 25150.82(d)(1)); and
- 2) The hazardous waste management activities (HSC Section 25150.82(d)(2)).

The Legislature then directed DTSC, if it were to propose any alternative management standards, to prepare an analysis that would address the following:

- 1) The types of hazardous waste and the estimated amounts of each hazardous waste that are managed as part of the activity (HSC Section 25150.82(d)(3)(A));
- 2) The complexity of the activity, and the amount and complexity of operator training, equipment installation and maintenance, and monitoring that are required to ensure that the activity is conducted in a manner that safely and effectively manages each hazardous waste (HSC Section 25150.82(d)(3)(B));
- 3) The chemical or physical hazards that are associated with the activity and the degree to which those hazards are similar to, or different from, the chemical or physical hazards that are associated with the production processes that are carried out in the facilities that produce the hazardous waste that is managed as part of the activity (HSC Section 25150.82(d)(3)(C));
- 4) The types of accidents that might reasonably be foreseen to occur during the management of particular types of hazardous waste streams as part of the activity, the likely consequences of those accidents, and the reasonably available actual accident history associated with the activity (HSC Section 25150.82(d)(3)(D));

²⁰ Repeal of the requirement for five RWQCBs to prepare a list of Class III nonhazardous waste landfills that would be authorized to accept and dispose of metal shredder residue that was enacted by SB 976 (Bergeson, Ayala and Seymour, Chapter 1395, Statutes of 1985).

- 5) The types of locations where hazardous waste management activities associated with metal shredding and management of treated metal shredder waste may be carried out and the types of hazards or risks that may be posed by proximity to the land uses described in Section 25227 (HSC Section 25150.82(d)(3)(D)).²¹

The Legislature next directed DTSC to demonstrate, for any alternative management standards that DTSC is proposing, one of the following:

- 1) The requirements that the alternative management standards replace are not significant or important for either a) Preventing or mitigating potential hazards to human health or safety or to the environment posed by the activity; or b) Ensuring that the activity is conducted in compliance with other applicable requirements of this chapter and the regulations adopted pursuant to this chapter (HSC Section 25150.82(e)(1));
- 2) A requirement is imposed and enforced by another public agency that provides protection of human health and safety and the environment that is as effective as, and equivalent to, the protection provided by the requirement, or requirements, that the alternative management standards replace (HSC Section 25150.82(e)(2));
- 3) Conditions or limitations imposed as part of the alternative management standards will provide protection of human health and safety and the environment equivalent to the requirement, or requirements, that the alternative management standards replace (HSC Section 25150.82(e)(3));
or
- 4) Conditions or limitations imposed as part of the alternative management standards accomplish the same regulatory purpose as the requirement, or requirements, that the alternative management standards replace, but at less cost or with greater administrative efficiency, and without increasing potential risks to human health or safety or to the environment (HSC Section 25150.82(e)(4)).

SB 1249 also allows DTSC to classify and manage CTMSR as nonhazardous waste if the analysis demonstrates that classification and management as hazardous waste is not necessary to prevent or mitigate potential hazards to human health or safety or to the environment. SB 1249 authorizes the classification of CTMSR as nonhazardous waste to be included in any regulations to establish alternative management standards. The alternative management standards may allow CTMSR to be used as either alternative daily cover or for beneficial reuse, or to be placed as a nonhazardous waste in a land disposal unit that meets specified requirements.

However, SB 1249 requires the disposal of CTMSR to be regulated by existing hazardous waste control law unless alternative management standards are adopted by DTSC. If the department does not adopt alternative management standards that include the classification of CTMSR as nonhazardous waste, SB 1249 allows the current disposal of CTMSR to continue until the department rescinds the conditional nonhazardous waste classifications. If DTSC were to rescind the nonhazardous waste classifications without alternative management standards, or other new regulations in place which classify the waste

²¹ HSC § 25227 cites sensitive land uses including hospitals for humans, schools for persons under 21 years of age, day care centers for children, and permanently occupied human habitations, other than those used for industrial purposes.

as nonhazardous, the waste would be required to be managed as hazardous waste. This provision in SB 1249 which allows DTSC to adopt alternative management standards and to classify metal shredder waste as nonhazardous sunsets as of January 1, 2018.

Importantly, SB 1249 does not affect or limit DTSC's other statutory authorities to regulate metal shredding operations or to classify wastes as hazardous or nonhazardous as appropriate to ensure proper management and disposal.

The information summarized in this report provides the evaluations, analyses, and demonstrations required by SB 1249.

DRAFT

2 EVALUATION

Pursuant to HSC Sections 25150.82(d)(1) and 25150.82(d)(2), the Metal Shredding Facilities Law requires DTSC to evaluate:

- The operative environmental and public health regulatory oversight of metal shredding facilities, identifying activities that need to be addressed by the alternative management standards or other advisable regulatory or statutory changes; and
- The hazardous waste management activities being conducted by metal shredding facilities or at landfills that handle metal shredder waste.

This section presents the information that DTSC gathered in performing the required evaluations.

2.1 Identification of Metal Shredding Facilities

Pursuant to SB 1249, DTSC first identified all metal shredding facilities that would be evaluated based on the statutory definition of a metal shredding facility and using available data as shown in Table 1.

Table 1. Databases Searched for Potential Metal Shredding Facilities	
Database	Identified metal handlers
Hazardous Waste Tracking System (HWTS)	1,325 entities with ID numbers with company featuring keywords (“metal” or “scrap”) or Standard Industrial Classification (SIC) codes related to metal recycling activities
California Department of Motor Vehicles list of Licensed Automobile Dismantlers	1,111 auto recyclers identified as automobile salvage/recycler
DTSC’s Certified Appliance Recycler (CAR) Program	343 registered facilities
State of California Auto Dismantlers Association	171 member companies
Dunn and Bradstreet Business Listings for specific North American Industry Classification System (NAICS) codes	999 business entities with NAICS codes for used motor vehicle parts, metal wholesalers, metal service centers, and recyclable mineral merchant wholesalers
Institute of Scrap Recycling Industries (ISRI)	241 California businesses
2014 North American Scrap Metals Directory	8 facilities

The data review identified approximately 2,000 businesses that managed scrap metal (some of the businesses were identified across multiple databases). In narrowing the scope to further identify only metal shredding facilities, DTSC identified 400 facilities that were shown in HWTS records to have shipped contaminated soil or other hazardous waste solids off-site for disposal. DTSC examined satellite images of the 400 facilities in Google Earth and identified 101 locations where metal processing equipment and piles of material indicating that metal shredding operations were visible.

DTSC next sought the assistance of the CUPAs in evaluating the 101 potential metal shredding operations within their respective jurisdictions.²² The CUPAs confirmed that 74 of the identified locations did not perform any shredding activities, that 18 facilities had not been inspected and the CUPAs had no additional information on them, and that nine were potential metal shredding facilities. DTSC’s Office of Criminal Investigations (OCI) then conducted follow-up inspections of the facilities identified by the CUPAs to determine if they met the statutory definition of a metal shredding facility.

OCI completed its initial inspection of the facilities in December 2015. The name and locations of metal shredding facilities authorized to operate in California are shown in Table 2. In addition to the facilities identified in Table 2, an SA Recycling facility in Rancho Cucamonga holds a valid “f letter” but was not operating as a metal shredding facility as of 2017.²³ DTSC identified two additional facilities which were not currently authorized to operate: Universal Recycling Services in Stockton and Kramar’s Iron and Metal in Sun Valley. Due to pending enforcement activities by DTSC, these facilities were not included in the evaluation.

Table 2. Authorized Metal Shredding Facilities Operating in California		
Facilities Currently Holding an “f letter”	Original “f letter” Recipient	Original “f letter” Issue Date
SA Recycling, Terminal Island 901 New Dock Street Terminal Island, CA 90731	Hugo Neu-Proler Company 901 New Dock Street P. O. Box 3100 Terminal Island, CA 90731	February 21, 1986
Schnitzer Steel Products 1101 Embarcadero West Street Oakland, CA 94607-2536	Schnitzer Steel Products Foot of Adeline Street P.O. Box 747 Oakland, CA 94604	June 13, 1988
SA Recycling, Anaheim 3200 East Frontera Street Anaheim, CA 92806-2822	Orange County Steel Salvage, Inc. 3200 E. Frontera Road Anaheim, CA 92806	December 19, 1988
Sims Metal Management 699 Seaport Boulevard Redwood City, CA 94063-2712	LMC Metals 600 South 4th Street Richmond, CA 94804	May 31, 1989
SA Recycling, Bakersfield 2000 East Brundage Lane Bakersfield, CA 93307-2734	Golden State Metals, Inc. P.O. Box 70158 Bakersfield, CA 93387	February 25, 1992
Ecology Auto Parts, Inc. doing business as (DBA) Pacific Rail Industries 785 East M Street Colton, CA 92324-0000	Transferred from Clean Steel, Inc. August 1, 2005	Transferred from Clean Steel, Inc. August 1, 2005

²² See DTSC Letter requesting assistance from the CUPAs, July 28, 2015.

²³ See DHS Letter to Mr. Thomas Hightower, Ferromet, Inc., February 23, 1990.

The locations of the six metal shredding facilities that were identified as currently active and operating under the authority of the “f letters” and OPP 88-6 are shown in Figure 2. Additionally, the locations of the five solid waste landfills that accept CTMSR as of 2017 are also presented in Figure 2.



Figure 2. Metal shredding facilities currently active and operating under the authority of the “f letters” and OPP 88-6 and landfills accepting CTMSR.

2.2 Survey of Metal Shredding Facilities

In 2015, DTSC sent questionnaires to the authorized metal shredding facilities and to the landfills currently accepting CTMSR as a preliminary assessment of their operational practices. The survey requested information on general operating conditions and practices, acceptance policies, volumes processed, environmental controls, and waste management practices related to the generation, treatment, storage, transportation, and disposal of metal shredder wastes. Responses were returned by all six metal shredding facilities, and from four of the five landfills. The complete responses to the questionnaires are provided in Appendices A and B.

General information about each of the metal shredding facilities and their operations is provided below. Additional information from these surveys has been integrated into the relevant sections of this Analysis.

DO NOT CITE OR QUOTE

SA Terminal Island

SA Terminal Island is located on 27 acres in the Terminal Island area of the Port of Long Beach. The area is entirely industrial. More than 95 percent of the facility site is covered with pavement or by structures.²⁴ The facility captures storm water and wash water from the yard and reuses it after chemical treatment and clarification. Water that is not reused is discharged to the Cerritos Channel, which flows to the Pacific Ocean.



SA metal recycling facility in Terminal Island CA.

The facility receives automobiles, consumer and industrial appliances, manufacturing scrap, curbside collection scrap, demolition scrap, miscellaneous scrap from consumers and homeowners, and industrial scrap. In some circumstances, appliances and vehicles have fluids, batteries, mercury switches, and other pollutants, which are removed on-site prior to being sent to the shredder. The facility reported that a total weight of approximately 300,000 metric tons of scrap metal was shredded for the year 2014. The scrap metal consisted of 42.16 percent automobiles, 43.63 percent appliances, and 14.21 percent miscellaneous. SA Terminal Island uses a 9,000-horsepower mega shredder manufactured by Riverside Engineering.

SA Terminal Island reported that there is no material storage on bare ground. The facility reported up to 100,000 tons of ferrous and non-ferrous scrap metal were stored on-site at any given time. The facility

²⁴ See Storm Water Pollution Prevention Plan, SA Recycling LLC dba SA Recycling, Waste Discharge Identification (WDID) number 419I021125, June 20, 2015.

reported that it typically stores 1,000 to 4,000 tons of metal shredder waste with its ferrous metals removed, prior to the removal of non-ferrous metals. SA Terminal Island reported that it typically stores 1,500 to 2,000 tons of CTMSR on-site at any given time, but that up to 10,000 tons could potentially be present at the site.

Schnitzer Steel Products

Schnitzer Steel Products (Schnitzer) is located on 26.5 acres in southern Oakland in the industrialized port area. The facility is adjacent to Oakland Inner Harbor and the Port of Oakland.²⁵ Approximately 57 percent of the site is composed of paved roads and other paved areas, 12 percent is composed of buildings and structures, and the remaining 31 percent is composed of unpaved dirt and gravel surfaces. The facility is bounded to the south by the Oakland Inner Harbor, to the east and west by the Port of Oakland, and to the north by Embarcadero West and the Union Pacific Railroad tracks. The facility is located approximately 0.3 mile south of Interstate 880. The nearest residential area is approximately one-half mile to the north of the facility, with other residents to the south in nearby Alameda.



Schnitzer Steel Products metal recycling facility, located in Oakland, CA.

The facility does not normally discharge storm water. Any storm water that falls on the facility is contained on-site and used as cooling water in the shredder. Containment is achieved by a combination of structural and physical features, including a 2,400-foot concrete wall with a raised walkway that runs the entire length of the shoreline, a 1,300-foot concrete wall that runs along the facility's western

²⁵ See Industrial Activities Storm Water Pollution Prevention Plan, prepared for Schnitzer Steel Products Company, Inc., Oakland, CA, WDID number 2011003365, June 2015.

boundary, a 1,000-foot concrete wall and 300-foot sheet pile wall that run along the facility's eastern boundary, and a 1,000-foot concrete wall that encloses the pier crane dock. Storm water is retained on-site in a 1.2-million-gallon storage tank pending use in the shredder. There are no storm water outfalls at the facility and no storm drains that connect to the separate municipal storm sewer system.

Schnitzer processes iron containing scrap including end-of-life vehicles, appliances, and demolition scrap; non-ferrous metals including copper, aluminum, and stainless steel; electronics scrap; and lead-acid batteries. Schnitzer's scrap acceptance policy prohibits items such as elemental mercury; nickel-cadmium, lithium ion, and alkaline batteries; scrap metals with free-flowing liquids (e.g. used oil); scrap metals with refrigerants; scrap metals with capacitors, ballasts, and transformers; munitions and other explosives; asbestos; radioactive scrap metal; and any wastes that contain hazardous materials.

Schnitzer reported that the scrap metal processed at its facility was composed of approximately 50 percent end-of-life vehicles, 10 percent appliances, and 40 percent other light tin or iron. Schnitzer also uses a 9,000-horsepower mega shredder manufactured by Riverside Engineering.

Schnitzer reported that between 70,000 and 80,000 tons of sorted scrap metals are stored outdoors at any given time. Additionally, on average there may be 300 to 500 tons of metal shredder aggregate which has had ferrous metal removed stockpiled near the shredder and the non-ferrous separation plant. The facility reported that the maximum amount of CTMSR typically stored at the facility is approximately 350 tons. Typically, 20 loads per day of CTMSR are transported off-site for disposal in a landfill. Each load weighs between 20 and 25 tons.

SA Anaheim

SA Anaheim is located on approximately 20 acres of a 40-acre site in Anaheim, near retail centers, warehouses, and residential neighborhoods. Scrap metal operations are conducted on the 20-acre portion. The remainder of the site is used as a railyard.²⁶ The facility is completely paved and is designed to collect storm water for recycling and on-site reuse. The site is surrounded by Highway 91 to the west and north, the Santa Ana River Basin to the south-southeast, and commercial properties including a hotel to the south-southwest. Other surrounding land areas are zoned heavy industrial.

SA Anaheim reported that end-of-life vehicles, consumer and industrial appliances, manufacturing scrap, curbside collection scrap, demolition scrap, miscellaneous scrap from consumer and homeowners, and industrial scrap are all processed at the facility. The facility receives scrap from industrial accounts, from other scrap metal recycling facilities, and from the public. Some materials are received with the fluids, batteries, mercury switches, and other pollutants already removed. In other circumstances, such pollutants are removed from the appliances and vehicles at the site, in a specially designated area, prior to being sent to the shredder.

²⁶ See Storm Water Pollution Prevention Plan SA Recycling LLC dba SA Recycling, WDID: 830MR000004, revision dated June 6, 2011.



SA metal recycling facility, located in Anaheim, CA.

SA Anaheim reported that approximately 225,000 metric tons of scrap metal were shredded in 2014. The scrap metal was composed of 39.25 percent end-of-life vehicles, 34.63 percent appliances, and 26.11 percent miscellaneous. The facility uses a 7,000-horsepower mega shredder manufactured by The Shredder Company.

The facility reported that it stores more than 20,000 tons of separated ferrous and non-ferrous scrap metal on-site at any given time. The separated ferrous and non-ferrous scrap is stored in containers and in piles in bermed areas that also serve as surface impoundments for storm water collection. These storage locations are in various areas of the site. There are typically 500 to 1,000 tons of metal shredder aggregate which has had the ferrous metal removed stored in the metals recovery plant. The facility reported storing less than 150 tons of CTMSR on-site at any one time.

Storm water collected from the parking lot and the central industrial operations main yard is captured and treated in the storm water treatment system prior to reuse or discharge. The facility has a multi-stage chemical treatment process to reduce the concentration of contaminants in the collected water. The facility has a 135,000-gallon aboveground storage tank. Water exiting the treatment system which is not reused on-site is discharged to the municipal storm drain that discharges to the Santa Ana River, which eventually discharges to the Pacific Ocean.

Sims Metal Management

Sims Metal Management (Sims) is located on 13.54 acres in the northern industrialized section of the Port of Redwood City and adjoins Redwood Creek, a tributary to San Francisco Bay.²⁷ The facility is

²⁷ See Storm Water Pollution Prevention Plan for Sims Metal Management, Redwood City, June 30, 2015.

surrounded by sensitive wetlands, including Bair Island State Marine Park, and extensive commercial salt evaporation ponds. Residential areas are located approximately two miles south of the facility.



Sims metal recycling facility, located in Redwood City, CA.

The facility reported that it stores approximately 3,400 tons of ferrous and non-ferrous scrap on-site at any given time. In addition, the facility stores 350 tons of CTMSR awaiting disposal.

The facility reported that approximately 90 percent of the site is either paved or beneath structures.²⁸ There are no storm drain connections from the facility to any off-site storm water drainage system. Run-off and on-site precipitation from storm events is collected in two storage ponds designed to contain enough volume to hold the precipitation from a 100-year storm event. One pond is lined while the other, which has a surface area of 95,000 square feet (2.2 acres), is unlined. The unlined pond is also used to store ferrous metal before it is loaded onto ships. The collected water is used for dust control in the yard, and for cooling and dust control in the shredder and material recovery plant.

The facility has installed 34-foot fencing on the east boundary, 20-foot fencing on the south boundary, and 25-foot fencing on the west boundary. The fence on the east side of the shredder stockpile is 22 feet high, with a “candy cane” curve installed at the top intended to capture fugitive emissions of LFM.

²⁸ See Emissions Minimization Plan, Regulation 6, Particulate Matter, Rule 4: Metal Recycling and Shredding Operations, Sims Metal Management, Redwood City, September 25, 2014.

SA Bakersfield

SA Bakersfield is located on 18.1 acres in central Bakersfield in a predominantly industrial area, and a mile from the nearest residences.²⁹ More than 95 percent of the facility is paved or beneath structures.



SA metal recycling facility, located in Bakersfield, CA.

The facility processes end-of-life vehicles, consumer and industrial appliances, manufacturing scrap, curbside collection scrap, demolition scrap, consumer/homeowner scrap, and industrial scrap. It receives scrap from industrial accounts, materials from other scrap metal recycling facilities, and materials from the public. The facility reported that it processed approximately 75,000 metric tons of scrap metal in 2014. The scrap was composed of 52.34 percent end-of-life vehicles, 30.10 percent appliances, and 17.56 percent miscellaneous. The facility uses a 6,000-horsepower mega shredder manufactured by The Shredder Company.

The facility reported that less than 6,000 tons at any given time of ferrous and non-ferrous scrap is stored in bins, boxes, and in piles in bermed areas that also serve as surface impoundments. Shredded scrap metal is not stored at the site, but 300 to 800 tons of metal shredder aggregate with ferrous metal removed is stored on concrete paved surfaces prior to further metal removal. Following the chemical stabilization treatment, there can be from 100 to 300 tons of CTMSR stored on-site at any one time.

²⁹ See Storm Water Pollution Prevention Plan, SA Recycling LLC dba SA Recycling, June 17, 2015.

SA Bakersfield reported that it has no active outfalls that are a point of discharge. Rather, it manages storm water through infiltration on the property. The storm water management includes settling/sedimentation, oil-water separation, filtration, and reuse.

Ecology Auto Parts

Ecology Auto Parts (Ecology) is located on approximately 22 acres in an industrial section of Colton, but with residences nearby. Ecology accepts various types of materials for shredding, including end-of-life vehicles, appliances, tin, and other forms of scrap metal. In most instances, auto bodies that have not been depolluted are not accepted directly at Ecology's shredder facility; most have fluids, batteries, mercury switches, and other pollutants removed before delivery to the shredder facility. Ecology estimated that it processed 264,000 tons of scrap metal in 2014, comprising 35 percent end-of-life vehicles, 56 percent appliances, and 9 percent miscellaneous. Ecology uses a 6,000-horsepower hammer mill manufactured by Metso Corporation.



Ecology Auto Parts metal recycling facility, located in Colton, CA.

Ecology is unique among the other shredding facilities in that it performs the initial removal of ferrous materials using magnets at the shredding facility in Colton, but then transports the remaining aggregate to a facility in Arizona for further processing to recover the non-ferrous metals. At one time, the facility recovered non-ferrous metals at the Colton facility and then chemically treated the remaining metal shredder aggregate on-site. However, since the metal shredder aggregate is currently sent off-site for further processing, Ecology is no longer operating the chemical stabilization treatment system.

Ecology reported that between 80 and 85 percent of the site is paved, and that the site is graded so that all storm water runoff is captured in a lined storm water pond with a capacity of one million gallons.³⁰ The captured water is transferred to a holding tank, also with a capacity of one million gallons, and reused for cooling in the hammer mill and for dust suppression throughout the facility. Ecology's retention pond was constructed with a capacity to accommodate the precipitation from a 100-year, 24-hour storm event.

2.3 Operative Environmental and Public Health Regulatory Oversight of Metal Shredding Facilities

This section presents the information that DTSC gathered to evaluate the operative environmental and public health regulatory oversight of metal shredding facilities, and to identify activities that need to be addressed by the alternative management standards or other advisable regulatory or statutory changes.

Table 3 provides information regarding the local environmental regulatory agencies that exercise jurisdiction over the metal shredding facilities.

³⁰ See Report of Investigation on Ecology Auto Parts, Inc., Colton dba: Pacific Rail Industries, December 16, 2015.

Table 3. Local Environmental Regulatory Agencies That Oversee Metal Shredding Facilities			
Metal Shredding Facility	Air District	RWQCB	CUPA
SA Recycling, Terminal Island 901 New Dock Street Terminal Island, CA 90731 Los Angeles County	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765-4182	Los Angeles Regional Water Quality Control Board 320 West Fourth Street Los Angeles, CA 90013	Los Angeles County Fire Department 5825 Rickenbacker Road Commerce, CA 90040
Schnitzer Steel Products 1101 Embarcadero West Oakland, CA 94607-2536 Alameda County	Bay Area Air Quality Management District 939 Ellis Street San Francisco, CA 94109-7799	San Francisco Bay Regional Water Quality Control Board 1515 Clay Street Oakland, CA 94612	Alameda County Environmental Health 1131 Harbor Parkway, Suite 240 Alameda, CA 94502-
SA Recycling, Anaheim 3200 E Frontera Street Anaheim, CA 92806-2822 Orange County	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765-4182	Santa Ana Regional Water Quality Control Board 3737 Main Street, Suite 500 Riverside, CA 92501-3348	Anaheim City Fire Department 201 South Anaheim Boulevard, Suite 300 Anaheim, CA 92805
Sims Metal Management 699 Seaport Boulevard Redwood City, CA 94063-2712 San Mateo County	Bay Area Air Quality Management District 939 Ellis Street San Francisco, CA 94109-7799	San Francisco Bay Regional Water Quality Control Board 1515 Clay Street, Suite 1400 Oakland, CA 94612	San Mateo County Environmental Health 2000 Alameda de las Pulgas San Mateo, CA 94403
SA Recycling, Bakersfield 2000 East Brundage Lane Bakersfield, CA 93307-2734 Kern County	San Joaquin Valley Air Pollution Control District 1990 East Gettysburg Avenue Fresno, CA 93726	Central Valley Regional Water Quality Control Board 1685 E Street Fresno, CA 93706-2007	Kern County Environmental Health Services Department 2700 M St., Suite 300 Bakersfield, CA 93301-2370
Ecology Auto Parts, Inc. DBA Pacific Rail Industries 785 East M Street Colton, CA 92324-0000 San Bernardino County	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765-4182	Santa Ana Regional Water Quality Control Board 3737 Main Street, Suite 500 Riverside, CA 92501-3348	San Bernardino County Fire Department Hazardous Materials Division 620 South E Street San Bernardino, CA 92415

2.3.1 Air Quality: Regulation by Local Air Quality Management Districts or Air Pollution Control Districts

The federal Clean Air Act requires attainment of National Ambient Air Quality Standards (NAAQs) for criteria air pollutants causing human health impacts. The criteria pollutants include: ozone, particulate matter (PM), carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide. The Clean Air Act established deadlines for all states to reach attainment levels for these pollutants. States are required to develop a State Implementation Plan (SIP) to attain the NAAQs by the attainment deadlines. SIPs must contain air pollution measures in adopted “regulatory” form and must be approved by US EPA as containing sufficient measures to attain NAAQs. California law makes the California Air Resources Board the lead

agency for developing and implementing the SIP. Local air districts and certain other agencies prepare SIP elements and submit them to ARB for review and approval. ARB forwards SIP revisions to US EPA for approval and publication in the Federal Register. Local air districts are responsible for developing and implementing the portion of the SIP applicable within their boundaries, including adoption of control regulations for stationary sources, and implementation of other source control measures. Metal shredding facilities are stationary sources of air pollution subject to regulation by local air districts.

Metal shredding facilities and landfills that accept metal shredder waste are also regulated by California's Air Toxics "Hot Spots" program.³¹ The program's goals are to collect emissions data, identify facilities having localized impacts, ascertain health risks, and notify nearby residents of significant risks. The program requires stationary sources to report the types and quantities of certain substances their facilities routinely release into the air. Each of the metal shredding facilities and landfills has submitted data on their emissions, including their annual emissions of particulate matter and lead. These data are reviewed by the local air district and, depending on the nature and quantity of the emissions, the facility may be required to prepare a formal health risk assessment, notify the public of potential risks, and take additional actions. The local air districts submit emissions and health risk information to ARB, which then provides that information to the public.³²

Emissions from each of the metal shredding facilities are quantified and permitted by the local air districts. Total facility throughput is also often specified in the permits, along with the types and quantities of pollutants, such as volatile organic compounds (VOCs) and particulate matter. Visible emissions are also often specified.

The Ringelmann Smoke Chart, referenced in this section, is used to quantify visible emissions. The Ringelmann scale was officially promulgated by the U.S. Bureau of Mines and is used to determine whether emissions of smoke or dust are within limits or standards of permissibility established and expressed with reference to the chart.³³ It is widely used by law enforcement or compliance officers in jurisdictions that have adopted standards based on visible emissions.

A summary of the regulatory oversight of the metal shredding facilities by local air districts is shown in Table 4.

³¹ See Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly), as amended (SB 1731 1992, Calderon).

³² Annual emissions data is available on the ARB website at:
<https://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>

³³ United States Department of the Interior, Bureau of Mines, Information Circular 8333, 1967.

Table 4.						
Regulatory Oversight of Metal Shredding Facilities by Local Air Districts						
Facility	Sims Metal Manageme	Schnitzer Steel Products	SA Terminal Island	SA Anaheim	SA Bakersfield	Ecology
District	BAAQMD	BAAQMD	SCAQMD	SCAQMD	SJVAPCD	SCAQMD
Permit Identification	PPermitfor Plant #5152	Permit for Plant #208	Permit No. R-G27565	Permit No. G 16984	Permit Number(s): S-1256-7-2	Permit No. G32848
Point Source	Hood, H2O, Cyclone	Hood, H2O, Cyclone	Hood, H2O	Hood, H2O	Hood, H2O	Hood, H2O
VOC Control Technology	Scrubber	Scrubber	RTO, Scrubber	RTO, Scrubber	No RTO or Scrubber	RTO
Fugitive Emissions Requirements	Ringelmann less than 1.0, Emissions Minimization Plan	Ringelmann less than 1.0, Emissions Minimization Plan	Must be kept moist	Must be kept moist	5% max opacity, PM10 limit	Must be kept moist
Maximum Throughput Authorized	200 tons/hr max	720,000 tons/yr	108,333 tons/mo max	56,160 tons/mo	2,300 tons/day max	40,000 tons/mo max
Particulate Matter Emissions in 2015, tons/yr³⁴	6.1	0.4	1.7	0.9	1	0
PM 10 Emissions in 2015, tons/yr	3.9	0.3	0.4	0.2	0.6	0
PM 2.5 Emissions in 2015, tons/yr	2.9	0.2	0.3	0.2	0.4	0
Lead Emissions in 2015, lbs/yr	N/A	0	13.4	1	N/A	N/A

The following is more detailed information regarding the air pollution control permits and compliance activities at each of the facilities.

³⁴ All emissions data from <https://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>

SA Terminal Island

SA Terminal Island is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Air permits issued by SCAQMD include Permits to Operate for the shredder (R-G27565), the metals recovery plant (R-G18947), and the shredder air pollution control system (APCS) (R-G27566).

SA Terminal Island and the other facilities within the SCAQMD have the most extensive air pollution control equipment. Regenerative Thermal Oxidizers (RTOs) are required at the three facilities to remove VOCs from exhaust air. The RTO uses a substrate bed of ceramic material to absorb heat from the exhaust gas. Incoming gases are passed over this heated bed, which destroys the organic compounds by oxidizing (burning) them. The RTO requires a dust-free air stream, so demisters and PM filters are placed before the oxidizer. Any dust containing metal particles that enter the RTO can form slag, which reduces performance and can damage the unit. Subjecting organic compounds to the high temperatures in the oxidizer ideally yields only carbon dioxide and water vapor. Any halogenated compounds in the incoming exhaust stream, such as remaining chlorofluorocarbons (CFCs) in vehicle and appliance refrigerant systems, can create acid gasses when burned in the oxidizer, and are removed using a wet scrubber at the final stage of the air pollution control system following the RTO.

The facility employs a variety of measures to control off-site migration of contaminants. These include:

- RTO for control of VOCs
- A chemical scrubber to neutralize and remove acid gases from the shredder exhaust
- Water spray inside the shredder chamber to control temperature and reduce dust generation
- Overhead exhaust hood to collect particulate matter and VOCs generated from shredding
- Dust/mist collector to capture oils, particulate matter and moisture from shredder exhaust
- Various moisture-coalescing filters and high-efficiency dust filters
- Periodic sweeping of material stacking areas throughout the day to reduce dust generation
- A sweeper truck to clean the entrances and driveways in the yard
- Water applied to the yard, haul roads, and material piles to reduce dust generation

The facility is concrete-paved, and is designed to allow collection of the wash water for recycling and subsequent reuse on-site.

Schnitzer Steel Products

Schnitzer is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). Air permits issued by BAAQMD include a Permit to Operate for Plant # 208, as well as application of BAAQMD Rule 4 for Metal Recycling and Shredding Operations, and BAAQMD Regulation 6 for particulate matter. The facility employs a variety of control measures to eliminate the potential for off-site contamination. These include:

- Shredder emissions abatement by a water spray system
- Irrigated cyclone scrubber (venture scrubber), mist eliminator, moving dry belt filter
- A simple cyclone downstream of the magnets
- Frequent sweeping of paved traffic surfaces with a mobile sweeper
- Frequent application of water to all traffic surfaces and stockpiles
- Use of mist turbines at key material handling areas to minimize fugitive emissions
- Enclosure of many material conveyance systems to minimize fugitive emissions

- Use of an industrial wheel wash at the facility exit to minimize tracking off-site

BAAQMD Regulation 6, Rule 4 for Metal Recycling and Shredding Operations requires metal recycling facilities to develop an Emissions Minimization Plan (EMP) to minimize the fugitive emissions of particulate matter from the facilities operating in the district. The EMP is to detail the management practices, measures, equipment, and procedures that are used to minimize fugitive emissions. Operations subject to the EMP include roadways and traffic areas, metal management, metal shredder waste management, and de-pollution operations. Schnitzer submitted its EMP to BAAQMD on October 27, 2014.

SA Anaheim

SA Anaheim is under the jurisdiction of SCAQMD. Air permits issued by SCAQMD include a permit to construct/operate the shredder (Permit to Construct/Modify No. 502884), the shredder air pollution control system (Permit to Construct No. 495678), and for the Metals Recovery Plant (G16984). The facility employs the following measures to control off-site migration:

- RTO for VOC control
- A chemical scrubber to neutralize and remove acid gases from the shredder exhaust
- Water spray inside the shredder chamber to control temperature and reduce dust generation
- Overhead exhaust hood to collect particulate matter and VOCs generated from shredding
- Dust/mist collector to capture oils, particulate matter, and moisture from shredder exhaust
- Various moisture-coalescing filters and high-efficiency dust filters.
- Periodic sweeping of material stacking areas throughout the day to reduce dust generation
- Use of a sweeper truck to clean the entrances and driveways in the yard
- Extensive application of water to the yard haul roads and piles of materials to reduce dust generation
- The entire Metals Recovery Plant operation, from receipt of aggregate via conveyer, through non-ferrous recovery operations, to loading out CTMSR in trucks, is conducted within a covered structure, although the sides are open

The entire facility is concrete-paved.

Sims Metal Management

Sims is under the jurisdiction of BAAQMD. Air permits issued by BAAQMD include Permit to Operate for Plant # 5152, as well as application of BAAQMD Rule 4 for Metal Recycling and Shredding Operations, and BAAQMD Regulation 6 for particulate matter. The facility employs a variety of measures to reduce the potential for off-site contamination. These include:

- Water spray inside the shredder chamber to control temperature and reduce dust generation
- An exhaust collection system
- A cyclone dust collection system for the shredder exhaust
- A wet scrubber system
- A fabric-covered fencing to reduce off-site emissions of LFM

BAAQMD Regulation 6, Rule 4 for Metal Recycling and Shredding Operations requires the facilities to develop an EMP to minimize the fugitive emissions of particulate matter from metal recycling facilities operating in the district. The EMP details the management practices, measures, equipment, and procedures that are used to minimize fugitive emissions. Operations subject to the EMP include

roadways and traffic areas, metal management, metal shredder waste management, and de-pollution operations. Sims submitted its EMP to BAAQMD on September 25, 2014.

Sims has dry and wet cyclones and secondary high-efficiency particulate filtration units on the main shredding chamber exhaust. Various sprinklers, mist turbines, and sweepers are used to keep the ground area dust-free.

According to Sims, in response to recent enforcement actions (see Section 2.3), it has made a number of improvements to reduce the potential for fugitive emissions from transfer and loading operations. The facility has taken efforts to enclose its conveyor systems to eliminate them as a source of fugitive emissions of particulate matter and light fibrous material (LFM).

SA Bakersfield

SA Bakersfield is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). Air emissions from the facility are governed under permits to operate the shredder and the air pollution control system (S-1256-7-2 and S-1256-3-10). The shredder is equipped with an exhaust collection system, which incorporates a mist/oil eliminator and a series of high-efficiency particulate filters on the main shredder exhaust. However, the shredder and the metals recovery plant are not enclosed. The facility employs a variety of measures to control off-site migration. These include:

- Water spray inside the shredder chamber to control temperature and reduce dust generation
- Overhead exhaust hood to collect particulate matter and VOCs generated from shredding
- Dust/mist collector to capture oils, particulate matter, and moisture from shredder exhaust
- Various moisture-coalescing filters and high-efficiency dust filters
- Material stacking areas are swept periodically throughout the day

A sweeper truck is used to clean the entrances and driveways in the yard. The SA Bakersfield facility is fully paved.

Ecology Auto Parts

Ecology is under the jurisdiction of SCAQMD. Air permits issued by SCAQMD include a Permit to Operate the Shredder (G32848 and A/N 567354) and a Permit to Operate the RTO (G32228). The facility employs a variety of measures to control off-site contamination. These include:

- RTO for VOC control
- Water spray inside the shredder chamber to control temperature and reduce dust generation
- Overhead exhaust hood to collect particulate matter and VOCs generated from shredding
- High-efficiency particulate air filtration system for ultra-fine particulate control
- A full-time mechanical street sweeper
- A water truck to wash down specific areas when needed
- Overhead, remote-controlled water cannon and mist turbines to spray down the shredder area
- Use of a water truck to wash down specific areas when needed

The entire shredding area, including the receiving and stockpile areas, is completely paved.

2.3.2 Water Quality: Regulation by the Regional Water Quality Control Boards

SWRCB implements federal requirements for storm water quality for industrial facilities using the industrial general permit (referred to as the “general permit”), which is used throughout California. Applicability of the general permit is based on the types of activities that occur at the facility using Standard Industrial Classification codes, recycling being one of the categories. RWQCBs administer the statewide general permit, in addition to any region-specific requirements for that permit. Once a facility is covered under the general permit they are assigned a waste discharge identification (WDID) number and must submit a Notice of Intent for coverage under the permit, explaining how they will adhere to all the requirements of the general permit. Additionally, a facility covered under the general permit is required to create and implement a storm water pollution prevention plan (SWPPP) with a site map, conduct water quality monitoring and reporting, and install best management practices.

SA Terminal Island

SA Terminal Island is under the jurisdiction of the Los Angeles RWQCB. Storm water discharges from SA Terminal Island are permitted under the SWRCB General Permit to Discharge Storm Water Associated with Industrial Activity. The WDID number is 4 19I021125.

Schnitzer Steel Products

Schnitzer is under the jurisdiction of the San Francisco Bay RWQCB. Storm water discharges from the Schnitzer facility are permitted by the East Bay Municipal Utilities District under Wastewater Discharge Permit No. 02300311.

SA Anaheim

SA Anaheim is under the jurisdiction of the Santa Ana RWQCB. Storm water discharges from SA Anaheim are permitted under the Sector-specific General Permit for Storm Water Runoff Associated with Industrial Activities from Scrap Metal Recycling Facilities within the Santa Ana Region. The WDID number is 8 30MR000004.

Sims Metal Management

Sims is under the jurisdiction of the San Francisco Bay RWQCB. Storm water discharges from Sims are permitted under WDID number 2 41I005107. Sims has also obtained a National Pollutant Discharge Elimination System (NPDES) permit under the authority of the federal Clean Water Act to discharge storm water into San Francisco Bay.

SA Bakersfield

SA Bakersfield is under the jurisdiction of the Central Valley RWQCB. Storm water discharges from SA Bakersfield are permitted under the SWRCB General Permit to Discharge Storm Water Associated with Industrial Activity, and the facility WDID number is 5 F15I021109.

Ecology Auto Parts

Ecology is under the jurisdiction of the Santa Ana RWQCB. Storm water discharges from Ecology are permitted under SWRCB General Permit to Discharge Storm Water Associated with Industrial Activity (WQ Order No. 97-03-DWQ). The facility is designated WDID number 8 361027274.

Ecology received a no-discharge exemption from the Santa Ana RWQCB in 2012 since it does not discharge storm water associated with industrial activities to surface waters. Instead, a retention pond was constructed with a capacity to accommodate the precipitation from a 100-year, 24-hour storm event.

2.3.3 Hazardous Waste: Regulation by DTSC

DTSC is responsible for ensuring that hazardous wastes generated and handled in California are managed safely and legally to prevent harm to public health and the environment. There are currently 113 facilities permitted by DTSC to store, treat, or dispose of hazardous waste in California. Additionally, there are over 100,000 businesses that generate hazardous waste, and approximately 900 transporters registered with DTSC to transport hazardous waste. Federal and California law creates the framework for the management of hazardous waste by generators, transporters, and storage, treatment, and disposal facilities. DTSC administers these laws in part by issuing permits and registering hazardous waste transporters. DTSC enforces these laws by inspecting hazardous waste generators, transporters, and facilities, and providing compliance assistance and training. DTSC's compliance assistance activities include partnering with the CUPAs.

DTSC can conduct investigations of potential hazardous waste violations on its own initiative, or in response to complaints that have been submitted to CalEPA's Environmental Complaint System, but the CUPAs have had the primary responsibility for conducting routine inspections of metal shredding facilities' hazardous waste management activities.

2.3.4 Hazardous Waste and Hazardous Materials: Regulation by Local CUPAs

CalEPA oversees the statewide implementation of the Unified Program and its 81 certified local government agencies, known as CUPAs. The CUPAs administer and enforce a consolidated program that includes the following individual environmental and emergency management programs:

- Aboveground Petroleum Storage Act Program;
- Area Plans for Hazardous Materials Emergencies;
- California Accidental Release Prevention Program;
- Hazardous Materials Release Response Plans and Inventories;
- Hazardous Material Management Plan and Hazardous Material Inventory Statements;
- Hazardous Waste Generator and On-site Hazardous Waste Treatment (tiered permitting) Programs; and
- Underground Storage Tank Program.

The hazardous waste activities conducted by the metal shredding facilities are under the jurisdiction of the CUPA in their geographic area. But because of DTSC's historical decisions to classify CTMSR as nonhazardous waste, and DTSC's implementation of OPP 88-6, the CUPAs do not permit or inspect the metal shredding operations, the storage of metal shredder waste on-site, or the chemical stabilization treatment. The oversight provided by the CUPAs is limited to hazardous waste activities such as implementing DTSC's Certified Appliance Recycler program, and overseeing the storage of traditional hazardous wastes, such as the materials that require special handling that are removed from appliances and vehicles prior to shredding. None of the metal shredding facilities is operating under the one of the

lower-tiered permitting programs for which the CUPAs would have primary jurisdiction. Table 3 identifies the CUPAs that oversee each metal shredding facility.

2.4 Hazardous Waste Management Activities

This section provides a summary of the hazardous waste management activities at the facilities. It is important to note that DTSC's historic decisions and policies have affected the regulation and management of wastes and hazardous wastes at all California metal shredding facilities. For purposes of this Analysis, DTSC assessed the generation and management of hazardous wastes by metal shredding facilities based on existing law and regulation, without consideration of the "f letters" or OPP 88-6.

2.4.1 Hazardous Wastes Generated and Managed at Metal Shredding Facilities

Scrap Metal Feedstock: When vehicles, appliances and other scrap metals arrive at a metal shredding facility, they are subject to the scrap metal exclusion.³⁵ At this point, the scrap metal is not regulated as a hazardous waste.



Scrap metal awaiting shredding

Metal Shredder Aggregate: After vehicles, appliances, and other scrap metal are shredded in the hammer mill, a combination of ferrous metals, non-ferrous metals, and nonrecyclable materials is generated. This combination of ferrous metals, non-ferrous metals, and nonrecyclable or reclaimable materials is referred to in this Analysis as metal shredder aggregate.

³⁵ See subdivision (3) of paragraph (a) of Section 66261.6 of Division 4.5 of Title 22, California Code of Regulations.



Pile of aggregate awaiting further processing at Schnitzer Steel Industries, Inc., Oakland, CA.



Stockpiled aggregate prior to processing in joint products plant, Schnitzer Steel, Inc., Oakland, CA.



Stored aggregate pile at Ecology, Colton, CA.

Metal shredder aggregate has been demonstrated to contain levels of lead, copper, and zinc in finely divided form that exceed their respective Soluble Threshold Limit Concentrations (STLCs) and Total Threshold Limit Concentrations (TTLCs). Historically, metal shredder aggregate has also contained levels

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of cadmium and PCBs in excess of their respective STLCs and TTLCs, although the presence of these constituents has decreased in recent years.³⁶ These constituents are listed in subdivision (a) of Section 66261.24 of Chapter 11, of Title 22 of the California Code of Regulations along with their respective STLCs and TTLCs. The STLC and TTLC are regulatory levels that determine whether a waste is considered hazardous because of its toxicity.

Due to challenges in sampling methodology, there is limited empirical data available demonstrating the toxicity of metal shredder aggregate at the precise point of shredding in the hammer mill. Sampling data from later stages of processing demonstrates the toxicity of the metal shredder wastes, and therefore provides the basis for a reasonable assumption that the metal shredder aggregate is generally hazardous.

Metal Shredder Residue: After the metal shredder aggregate has been treated to separate the ferrous and non-ferrous metals, the portion that remains is referred to in this Analysis as metal shredder residue. As with the metal shredder aggregate, the metal shredder residue also contains levels of lead, copper, and zinc that exceed their respective Soluble STLCs and TTLCs, and historically contained levels of cadmium and PCBs in excess of their respective STLCs and TTLCs.



Metal shredder residue exiting the joint products plant following removal of non-ferrous metals

³⁶ Metal Shredder Residue Treatability Study, prepared for the Institute of Scrap Recycling Industries, California Chapter, prepared by Terraphase Engineering, Inc., April 26, 2017.

CTMSR: To reduce the solubility of hazardous constituents in the metal shredder residue, the metal shredding facilities apply a chemical treatment of silicates and cement to reduce the solubility of the lead, copper and zinc. After this chemical treatment, it is referred to in this Analysis as CTMSR. Although the chemical treatment has been shown to reduce the solubility of the lead, copper, and zinc, it has not been successful in consistently reducing the soluble concentrations below their respective STLCs, and does not affect their total concentrations, which still exceed their respective TTLCs. (More detailed information regarding the characteristics of the metal shredder residue and CTMSR are presented below, as part of the information on a treatability study that was performed by the metal shredding industry.) Thus, although the solubility of metals in the waste is reduced by the treatment, CTMSR continues to exhibit hazardous characteristics after treatment, and is a hazardous waste.



Pile of chemically treated metal shredder residue, Schnitzer Steel, Inc., Oakland, CA

Treatability Study for Metal Shredder Residue and CTMSR: In 2016, metal shredding facilities at the direction of DTSC conducted a study to demonstrate the effectiveness of their treatment methods. The treatability study demonstrated different application rates of silicate and cement under full-scale operating conditions to determine if the treatment could be optimized, and if the optimized treatment could achieve the required reduction in soluble metals. The treatability study confirmed the treatment process used by metal shredding facilities can significantly reduce the solubility of regulated heavy metals contained within CTMSR, including lead. However, the treatability study confirmed that CTMSR remains a non-RCRA hazardous waste even after treatment.

Data collected in preparation for the treatability study showed that metal shredder residue prior to chemical treatment is nonhazardous waste under RCRA. Metal shredder residue is not regulated as a hazardous waste under the federal hazardous waste program because US EPA thresholds for regulated hazardous constituents were not met or exceeded. For instance, US EPA's toxicity characteristic regulatory threshold for lead is 5.0 milligrams per liter (mg/l), and the average and maximum

concentrations found in 17 samples of untreated metal shredder residue were 0.99 and 2.60 mg/l, respectively.³⁷ In addition, the highest result for PCBs was 33 mg/kg.³⁸

As a result of the bench-scale testing in the treatability study, three treatment reagent combinations were selected for evaluation during the subsequent demonstration of the treatment at the full-scale. The reagent combinations ranged from 0.5 to 0.7 gallons of silicate per ton, and from 5 to 12 percent cement. Treatment at the highest rates, 0.7 gallons of silicate per ton and 12 percent cement, was found to be most effective at reducing soluble metals. However, even metal shredder residue treated at the highest still exceeded regulatory thresholds for both total and soluble metals.

The treatability study showed that CTMSR remains a non-RCRA hazardous waste (i.e., the waste is a hazardous waste under California's Hazardous Waste Control Law and under Chapter 11 of Title 22 of the California Code of Regulations). This was demonstrated by the TTLC test results, which showed that CTMSR exceeded regulatory thresholds for lead and zinc, although STLCs were met occasionally.

In California, wastes that exceed the TTLC for regulated hazardous constituents, including lead and zinc, regardless of their STLCs, are classified as hazardous wastes. The TTLC limit for lead is 1,000 milligrams per kilogram (mg/kg) and the average concentration in CTMSR treated at the higher, most effective, rates was found to be 1,041 mg/kg.³⁹ Likewise, the TTLC limit for zinc is 5,000 mg/kg and the average concentration in CTMSR was found to be 6,468 mg/kg.⁴⁰ However, the maximum lead concentration observed in 120 samples treated at the higher rates was 11,300 mg/kg.⁴¹ Similarly, the maximum zinc concentration was 15,500 mg/kg, which further indicates that significant concentration spikes are a possibility for individual sampling events.⁴²

The treatability study also demonstrated that the treatment process used by metal shredding facilities could not consistently lower soluble concentrations for lead. The STLC limit for lead is 5 mg/l and the average concentration was found to be 13.4 mg/l.⁴³ The concentration of zinc in CTMSR did not exceed the zinc STLC of 250 mg/l. The average concentration measured was 180 mg/l.⁴⁴ The maximum observed

³⁷ Metal Shredder Residue Treatability Study, April 26, 2017, Discrete sample results found in Table A1, Baseline Analysis - Total and Extractable Metals Results for Untreated Samples Bench-scale Study, Metal Shredder Residue Treatability Study.

³⁸ Metal Shredder Residue Treatability Study, April 26, 2017, Discrete sample results found in Table A2, Baseline Analysis - PCBs, Moisture Content, pH, Alkalinity, Aquatic Toxicity Bioassay, and Ignitability, Results for Untreated Samples, Metal Shredder Residue Treatability Study.

³⁹ Metal Shredder Residue Treatability Study, April 26, 2017, Individual Sample Results for the high dosages found in Table B1, Pilot Study, Metal Shredder Residue Treatability Study.

⁴⁰ Ibid.

⁴¹ Metal Shredder Residue Treatability Study, April 26, 2017, Results for sample SMM-2-H-8, Eurofins Calscience Analytical Report, Work Order Number 16-09-1887, page 678 of Part 5.

⁴² Metal Shredder Residue Treatability Study, April 26, 2017, Results for sample SARB-1-3-H, Eurofins Calscience Analytical Report, Work Order Number 16-08-1653, page 1629 of Part 4.

⁴³ Metal Shredder Residue Treatability Study, April 26, 2017, Individual Sample Results for the high dosages found in Table B1, Pilot Study.

⁴⁴ Metal Shredder Residue Treatability Study, April 26, 2017, Individual Sample Results for the high dosages found in Table B1, Pilot Study.

concentration for lead was 91.3 mg/l.⁴⁵ The maximum observed concentration for zinc was 529 mg/l, which as noted previously is an indication that significant concentration spikes are possible in individual samples.⁴⁶

The treatability study showed that soluble concentrations of cadmium, lead, and zinc usually decreased when application rates were increased. In most cases, the greatest percent reduction achieved during the full-scale demonstration was with a treatment rate of 0.7 gallons per ton silicate and 12 percent cement.⁴⁷ However, even though the treatment significantly reduces the solubility of regulated heavy metals, CTMSR still exceeds total thresholds for lead and zinc, and soluble thresholds for lead. that although the highest treatment rates used in the pilot-scale test generally achieved the highest reductions in soluble metals concentrations, the lead and zinc concentrations were not consistently reduced below their respective STLCs.⁴⁸ The treatment results also reflected the high degree of variability in metal shredder residue, as shown by the difference between single samples collected at a given point in time, compared to composite samples of daily production runs. Thus, the treatability study results indicate that, even at the highest levels of treatment evaluated during the study, regulatory thresholds for soluble and total metals were usually not achieved. While concentrations below STLCs of some soluble metals were achieved in individual samples, this was not consistent from sample to sample, or over a range of treatment rates.⁴⁹

Hazardous Materials Removed from Received Scrap Metals: Scrap metal often contains hazardous materials when received by metal shredding facilities. Although many of the metal shredding facilities require these materials to be removed prior to their arrival at the facility, some are discovered as loads are checked. In some instances, a metal shredding facility will remove the hazardous materials rather than reject the load. Typical hazardous materials found in scrap metal include free-flowing hazardous liquids (e.g., gasoline, oil, antifreeze), flammable or combustible materials, corrosive materials (e.g., lead-acid batteries), radioactive materials, explosives in any form (e.g., vehicle air bag actuators, ammunition), pressurized containers (e.g., propane tanks, compressed gas tanks, fire extinguishers), refrigerants, capacitors, ballasts, transformers or other materials containing PCBs, and items containing elemental mercury (e.g., switches or thermostats).

⁴⁵ Metal Shredder Residue Treatability Study, April 26, 2017, Results for sample SMM-3-H-4, Eurofins Calscience Analytical Report, Work Order Number 16-09-1616, page 586 of Part 5.

⁴⁶ Metal Shredder Residue Treatability Study, April 26, 2017, Results for sample SSP-2-4-H, Eurofins Calscience Analytical Report, Work Order Number 16-09-0276, page 159 of Part 5.

⁴⁷ Ibid., page 68 of Part 5.

⁴⁸ Ibid., page 71 of Part 5.

⁴⁹ Metal Shredder Residue Treatability Study, April 26, 2017, Results for sample SSP-2-4-H, Eurofins Calscience Analytical Report, Work Order Number 16-09-0276, page 71 of Part 5.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
DRAFT Evaluation and Analysis of Metal Shredding Facilities and Metal Shredder Wastes



Compressors removed from refrigerators and other appliances, Ecology, Colton, CA.



Storage area for materials requiring special handling, SA Recycling, Anaheim, CA. Two pallets of lead-acid batteries are shown in the foreground.



Waste mercury switches pulled from appliances, Ecology Auto Parts, Colton, CA.

Air Pollution Control Equipment Dust and Filters: The air pollution control equipment operated by metal shredding facilities to capture particulate and emissions from the hammer mill and other operational equipment will capture contaminants in bag houses or filters. These filtered materials are expected to contain the same contaminants as the metal shredder aggregate, and are also expected to be hazardous wastes. The amount and characteristics of this type of waste have not been quantified by the metal

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shredding facilities. No residues from air pollution control equipment were analyzed as part of this analysis. Hazardous waste manifests use general hazardous waste codes that may not always specify the particular source of the waste stream. Therefore, DTSC has not been able to verify through the Hazardous Waste Tracking System (HWTS) whether this material is being managed as a hazardous waste.

Wastewater Treatment System Residuals: Most of the metal shredding facilities capture their surface water runoff and treat it to allow for its recycling and reuse as hammer mill quench water or for dust suppression. The treatment of the water includes the removal of contaminants and suspended solids. These filtered materials are expected to contain the same contaminants as the metal shredder aggregate, and are also expected to be hazardous wastes. The amount of this type of waste has not been quantified by the metal shredding facilities, and DTSC has been unable to verify through the HWTS whether this material is being managed as a hazardous waste. No samples from this waste stream were analyzed as part of this analysis and DTSC was not able to identify this waste stream in HWTS.

Storm Water Collection System Tank Bottoms: Most of the remaining metal shredding facilities have no surface water discharge, meaning they capture and store all surface water runoff in large tanks, and recycle and reuse it directly as hammer mill quench water and for dust suppression. The captured surface water runoff contains contaminants and suspended solids which, as the water is retained in the tank, settles to the bottom. These tank bottom materials are expected to contain the same contaminants as the metal shredder aggregate, and are also expected to be hazardous wastes. The amount of this type of waste has not been quantified by the metal shredding facilities. No samples from this waste stream were analyzed as part of this analysis and DTSC was not able to identify this waste stream in HWTS.

Metal Shredding Facility Equipment Maintenance Wastes: Each metal shredding facility operates gasoline and diesel-powered equipment, including forklifts, cranes, front-end loaders, and other mechanical equipment. This mechanical equipment requires routine maintenance for continued operation. The routine maintenance can generate a variety of hazardous wastes that must be disposed by the metal shredding facility, including used oil, hydraulic fluid, contaminated gasoline or diesel fuel, used oil filters, aerosol spray cans (paints and solvents), oily rags, absorbent material, and contaminated soil from spills or releases. Each of these wastes is a hazardous waste. The amount of this type of waste has not been quantified separately by the metal shredding facilities. No samples from this waste stream were analyzed as part of this analysis and DTSC was not able to identify this waste stream in HWTS.

Metal Shredding Facility Maintenance Wastes: Each metal shredding facility performs routine “housekeeping” of its facility, cleaning up dirt and debris that escapes from the scrap metal and metal shredder aggregate and metal shredder residue treatment activities. Most of the metal shredding facilities collect this dirt and debris using sweepers and vacuums. These housekeeping wastes are expected to contain the same contaminants as the metal shredder aggregate and metal shredder residue, and are also expected to be hazardous wastes. The amount of this type of waste has not been quantified by the metal shredding facilities. No samples from this waste stream were analyzed as part of this analysis and DTSC was not able to identify this waste stream in HWTS.

Summary of Hazardous Wastes Shipped Off-site on Manifests

DTSC does not have information with which it can quantify the individual waste streams which are generated by metal shredding facilities that are expected to be hazardous wastes. DTSC has access to copies of the hazardous waste manifests used to ship hazardous wastes from the metal shredding facilities to off-site hazardous waste facilities. (All hazardous waste shipments must be accompanied from the site where they are generated to the site where they are disposed by a hazardous waste manifest.) Table 5 provides the approximate quantities of hazardous waste manifested by the metal shredding facilities in 2016. The hazardous waste types listed correlate to the California Waste Codes that were used. These waste codes do not often correlate directly to the hazardous wastes discussed above. If these wastes are managed as hazardous wastes, they may be included in the category for soils and other solids.

Table 5. Hazardous Wastes Manifested from Metal Shredding Facilities in 2016						
Facility	Soils and Other Solids (tons)	Asbestos (tons)	Oils (tons)	PCBs (tons)	Solvents (tons)	Other Wastes (tons)
SA Recycling, Terminal Island	28.86	0	91.61	0.17	0	0.14
Schnitzer Steel Products	395.93	0	0	0	0	0
SA Recycling, Anaheim	53.35	0.11	24.14	0.65	5.50	0
Sims Metal Management	0.57	0	0	0	0	0
SA Recycling, Bakersfield	18.33	0	0.18	3.22	91.81	1.87
Ecology Auto Parts	135.44	0	0	0	0	0

2.4.2 Treatment, Storage and Handling of Metal Shredder Wastes at Metal Shredding Facilities

The treatment, storage, and disposal of any hazardous waste must be performed in accordance with the hazardous waste management statutes and regulations. Each of these terms is defined in the hazardous waste laws and regulations.

Treatment is defined as “any method, technique, or process which changes or is designed to change the physical, chemical, or biological character or composition of any hazardous waste or any material contained therein, or removes or reduces its harmful properties or characteristics for any purpose including, but not limited to, energy recovery, material recovery or reduction in volume.” (See Section 25123.5 of the Health and Safety Code, and Section 66260.10 of Division 4.5 of Title 22 of the California Code of Regulations.)

Storage is defined as “the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of or stored elsewhere.” (See Section 25123 of the Health and Safety Code, and Section 66260.10 of Division 4.5 of Title 22 of the California Code of Regulations.)

Disposal is defined as “the discharge, deposit, injection, dumping, spilling, leaking or placing of any waste or hazardous waste into or on any land or water so that such waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters,” as well as “the abandonment of any waste.” (See Section 25113 of the Health and Safety Code, and Section 66260.10 of Division 4.5 of Title 22 of the California Code of Regulations.)

Unless specifically excluded or exempted from regulation, treatment, storage,⁵⁰ and disposal of hazardous wastes can only be performed at a facility that has a hazardous waste permit issued by DTSC or that has received some other grant of authorization to conduct the activities (e.g., through statute or regulation). Apart from the “f letters” and OPP 88-6, none of the metal shredding facilities have been granted authorization for the treatment, storage, or disposal of hazardous waste. Storage of hazardous waste generated at the metal shredding facilities, for less than 90 days, would not require a permit if it is stored in appropriate containers and the metal shredding facilities comply with other applicable accumulation requirements.

Treatment Processes

Generally, a facility must apply for and obtain a hazardous waste permit or other form of authorization to conduct treatment on a hazardous waste. There are many treatment processes that can occur at a metal shredding facility, as described below.

Metal Shredding Unit or Hammer Mill: Hazardous waste regulations are not applicable to scrap metal entering the hammer mill since the crushed vehicles, appliances, and other forms of scrap metal are excluded from hazardous waste management when recycled. Therefore, a hazardous waste permit is not required to operate the hammer mill. In practice, however, hammer mills at metal shredding facilities rarely operate in isolation, and are usually adjacent to ferrous recovery equipment.

Physical Separation of Ferrous Metals from Metal Shredder Aggregate: The removal of ferrous metals from metal shredder aggregate using magnets may be considered a hazardous waste treatment activity, depending on the circumstances.

Physical Separation of Ferrous Metals from Metal Shredder Aggregate: The removal of ferrous metals from metal shredder aggregate using magnets may be considered a hazardous waste treatment activity, depending on the circumstances.

Chemical Stabilization of Metal Shredder Residue: The metal shredder residue that remains after ferrous and non-ferrous metals have been removed (which was shown to be a non-RCRA hazardous waste) is treated with silicate and cement to reduce the mobility of toxic metals in the waste, which is recognized to be a hazardous waste treatment activity.

⁵⁰ Generators typically cannot store hazardous waste onsite for longer than 90 days.



Tube for feeding cement into the pug mill for chemical treatment of metal shredder residue, Sims Metal Management, Redwood City, CA.



Pug mill mixing screw, chemical treatment of metal shredder residue, Sims Metal Management, Redwood City, CA

Storage Processes

The metal shredder aggregate stored in piles exhibits hazardous waste characteristics. California's hazardous waste laws generally allow the storage of hazardous wastes for 90 days or less without a permit or grant of authorization, but only if certain conditions are met (including that they are stored in tanks or containers). There are many storage activities that occur with the metal shredder aggregate, CTMSR, and components of the metal shredder waste, as it is processed at a metal shredding facility.

Storage of Metal Shredder Aggregate: Metal shredder aggregate is stored for varying periods of time at various stages of its processing in piles due to the quantities being managed. These piles at most of the metal shredding facilities are outside of buildings, and at some facilities are on bare ground. The metal shredder aggregate exhibits hazardous waste characteristics. The hazardous waste laws generally allow for storage of hazardous wastes for 90 days or less without a permit or grant of authorization, but only if certain conditions are met (including that the waste is stored in tanks or containers). The storage of hazardous waste in piles is regulated as a hazardous waste management activity; to the extent the aggregate includes hazardous wastes, a metal shredding facility would need to apply for and receive a hazardous waste permit, or obtain some other form of authorization, to conduct this activity.

Storage of Sorted Ferrous and Non-ferrous Metals: Sorted ferrous and non-ferrous metals are typically stored following the shredding and metals separation processes. The sorted metals are largely homogeneous materials which are not further processed at the metal shredding facilities. Because of their quantities, they are typically stored in piles. The sorted ferrous and non-ferrous metals are reclaimed materials and, because they have been segregated from the metal shredder aggregate (which may contain hazardous wastes, depending on the circumstances), are not expected to exhibit hazardous

waste characteristics. Residual amounts of the hazardous constituents from the metal shredder aggregate, however, could remain in the sorted ferrous and non-ferrous metals. The storage and management of the ferrous and non-ferrous metals could consequently cause the residual hazardous waste constituents to separate from the recovered metals. This residue would be considered hazardous waste. Metal shredding facilities need to ensure that the hazardous wastes generated by the storage of the ferrous and non-ferrous metals are managed to minimize their releases. Storage of sorted ferrous and non-ferrous metal would not be regulated as a hazardous waste management activity, and a metal shredding facility would not need a hazardous waste facility permit to conduct this activity unless residual amounts of metal shredder aggregate, or hazardous constituents of the metal shredder aggregate, remain in the segregated metals.



Stockpiled aggregate, Schnitzer Steel, Inc., Oakland, CA.



Stockpiled aggregate, Ecology, Colton, CA.

Storage of CTMSR: CTMSR is stored in piles (sometimes outside of buildings) due to the quantities being managed for varying periods of time after treatment. CTMSR continues to exhibit hazardous waste characteristics, even after chemical treatment to stabilize the soluble metals in the waste. The storage

DO NOT CITE OR QUOTE

of hazardous waste in piles does not meet the storage in tanks or containers requirement, and therefore does not meet the conditions for storage for 90 days or less. Because of this, its storage would be regulated as a hazardous waste management activity, and a metal shredding facility would need to apply for and receive a hazardous waste permit, or obtain some other form of authorization, to conduct this activity.



CTMSR, Schnitzer Steel, Inc., Oakland, CA.



Pile of sorted ferrous metal, background, and scrap metal from the Oakland Bay Bridge demolition project, foreground, Schnitzer Steel, Inc., Oakland, CA.



Pile of sorted ferrous metal following shredding of scrap metal at SA Terminal Island.

Transportation Processes

There are many transportation processes that occur with the metal shredder aggregate as it is processed at a metal shredding facility, as described below:

Transfer of Metal Shredder Aggregates within the Facility: Metal shredder aggregate is transferred within the metal shredding facilities from the hammer mill to the different locations where it is further treated. This transfer occurs via conveyor belts and via heavy equipment such as trucks and front-loading tractors. These methods to convey this material within a site do not require a permit from DTSC, nor do they require the use of a registered hazardous waste transporter. However, the conveyance of this material is generally required to be performed in a manner that minimizes or prevents the release of hazardous wastes and hazardous waste constituents into the environment.



Conveyor belt lines used to transport material through the joint products plant and to the chemical treatment system at Schnitzer Steel, Inc., Oakland, CA.

DO NOT CITE OR QUOTE



Front loader used to feed stockpiled aggregate into the joint products plant, Schnitzer Steel, Inc., Oakland, CA.

Transportation of Ferrous Metal from the Metal Shredding Facility: Ferrous metal is transferred from the metal shredding facilities primarily by way of ocean-going vessels to steel mills in Pacific Rim countries.



Loading sorted and shredded ferrous metals onto ship via conveyor system, Sims Metal Management, Redwood City, CA.



Ferrous metal being loaded onto a truck for transportation at Ecology Auto Parts, Colton, CA.

DO NOT CITE OR QUOTE

Transportation of CTMSR from the Metal Shredding Facility: CTMSR is transferred from the metal shredding facilities to the landfills where it is either being directly disposed, or used as alternative daily cover. CTMSR continues to exhibit hazardous waste characteristics, even after chemical treatment to stabilize the soluble metals in the waste. Its transportation is regulated as a hazardous waste management activity, and its transportation to another facility requires the use of a registered hazardous waste transporter.



Truck being loaded with CTMSR for transportation to Altamont or Vasco Road Landfill, Schnitzer Steel, Oakland, CA.

Transportation of Untreated Metal Shredder Aggregate from a Metal Shredding Facility: One metal shredding facility, Ecology, transports its metal shredder aggregate (after ferrous metal has been removed) out of state for further processing. Ecology uses a facility in Arizona owned by the same company to recover non-ferrous metals from its metal shredder aggregate. Ecology ships the aggregate as an excluded recyclable material under the provisions of subdivision (d) of Section 25143.2 of the Health and Safety Code. DTSC is reviewing Ecology's assertion that the material is not subject to hazardous waste requirements and has not yet made a determination regarding the claimed exclusion. Because the aggregate is processed out of state, the facility does not generate CTMSR in California, and does not dispose of CTMSR in California landfills.

Disposal Processes

Land Disposal: The current practices employed by the metal shredding facilities to manage metal shredder wastes generally meet the definition of land disposal. The metal shredder wastes are being managed in piles in direct contact with bare soil or on paved surfaces that are designed to withstand traffic but not to prevent migration of hazardous waste or hazardous waste constituents. Particulate and LFM have been shown to be emitted from the metal shredding facilities and to deposit onto the ground outside the facility boundaries. Metal shredder aggregate or residue that falls from conveyors or outside of waste management units and is not retrieved or cleaned up, results in all operational areas of the metal shredding facilities being contaminated with the hazardous constituents present in the metal shredder wastes.

Solid Waste Landfill Disposal: CTMSR is currently managed at solid waste landfill facilities. The disposal processes will be discussed further in Section 5 of this Analysis.



Vasco Road Landfill, Livermore, CA with municipal solid waste in the foreground (lighter material) and stockpiled CTMSR in the distance (darker colored material).

2.5 Enforcement History

DTSC reviewed compliance and enforcement history from CUPAs, SWRCB, and DTSC's own investigations. Enforcement history was requested from each respective authority for a 10-year timespan, starting in 2007 and ending in 2016. The following databases and resources were used to obtain information on violations:

Storm Water Requirements: SWRCB's Storm Water Multiple Application and Report Tracking System (SMARTS) is a public database that keeps track of facilities that have storm water permits and all supporting documentation, including sampling results, notices of violation, and storm water pollution prevention plans.⁵¹ Facilities were searched by their WDID number, and supporting documentation was reviewed to discern if there had been any enforcement actions regarding their storm water permit.

Soil/Groundwater Contamination: SWRCB's GeoTracker database is used to track facilities with groundwater contamination.⁵² Additionally, DTSC's EnviroStor was consulted to see if any of the facilities had undergone cleanup activities.⁵³

Fire/Explosions: A search of newspaper articles was conducted regarding any fires or explosions that had occurred at the metal shredding facilities and summarized.

CUPA Inspections: DTSC contacted CUPAs that oversee hazardous waste inspections for the metal shredding facilities in their jurisdictions for inspection reports during the 10-year time span.

DTSC Inspections or Investigations: DTSC reviewed all investigations for the six metal shredding facilities from 2007 to 2016 that were included in the report, including complaints received.

⁵¹ See <https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml>

⁵² See <https://geotracker.waterboards.ca.gov/>

⁵³ See <https://www.envirostor.dtsc.ca.gov/public/>

Storm Water Violations: Two of the four metal shredding facilities that operate under an industrial general permit had issues with routine exceedances of the water quality thresholds (known as numeric action levels). The exceedances were for specific conductance, chemical oxygen demand, iron, and lead. The SWRCB requires subsequent proof of implementation of best management practices to mitigate any future exceedances of the numeric action levels.

One metal shredding facility had violations for both its NPDES permit and the Clean Water Act, enforced by US EPA, which identified material associated with metal shredding exiting the property boundary and contaminating surrounding areas. Subsequent soil and sediment samples from the areas surrounding the property revealed TTLC exceedances of lead, zinc, copper, and cadmium.

Soil/Groundwater Contamination: All six metal shredding facilities have been cited by DTSC and/or SWRCB for soil or off-site migration contamination, or have had monitoring conducted which revealed regulatory threshold exceedances. As a result of enforcement actions by RWQCBs, two facilities were required to install an impermeable concrete cap over part of their properties due to contamination found in both the soil and groundwater attributed to metal shredding activities. Three facilities required soil cleanup due to the presence of petroleum hydrocarbons, metals, PCBs, and other contaminants associated with metal shredding activities. Two facilities have had soils collected and analyzed by DTSC in areas where metal processing and storage operations occur, revealing STLC and TTLC exceedances for lead, copper, zinc, and cadmium. Two facilities had off-site migration of LFM, which lands on soil and can cause contamination of the surrounding properties.

Fire/Explosions: Four metal shredding facilities have had fires on their properties, either in the metal shredding machinery or in the piles of scrap metal, with a total of six known fires over the past 10 years. Two of the four had more than one fire from 2009 to 2013. One of the fires resulted in substantial damage to the air pollution control device on the shredder to reduce particulate emissions, resulting in the release of particulate matter and VOCs and enforcement action by the Los Angeles County District Attorney's Office.

CUPA Inspections

Typically, facilities are inspected by CUPAs for hazardous waste and materials management every three years. Minor violations were most commonly cited, and included improper containerization and labeling of hazardous wastes, improper tank certifications, inadequately maintained health and safety measures (such as exit signs, eyewash and shower installations, aisle space, and housekeeping), missing tank log inspections, improper storage, keeping containers closed when not in use, and failure to dispose of wastes within appropriate storage time limits.

Class I and II violations also occurred, including improper storage and inadequate hazardous waste plan for hazardous waste ammunitions, unknown fluids being stored, and inaccurate and out-of-date hazardous waste inventory.

DTSC Inspections/Investigations

DTSC has inspected or investigated all of the metal shredding facilities, several times in coordination with SWRCB. DTSC has responded to fires, collected soil samples that have led to or are in the process of supporting enforcement actions, and enforced off-site migration of contaminants associated with metal shredding facilities.

SA Terminal Island

Storm Water Requirements: In 2010 and again in 2011, the facility exceeded water quality benchmark standards for specific conductance and chemical oxygen demand (COD).⁵⁴ In 2011, the facility also exceeded water quality standards for zinc under its industrial storm water permit. The exceedances prompted the Los Angeles RWQCB to require the facility to ensure that it is in full compliance with the general permit, and that it has either implemented best management practices (BMPs) identified in its Storm Water Pollution Prevention Plan or has described which additional BMPs will be implemented, and updated its Storm Water Pollution Prevention Plan with the additional BMPs.⁵⁵ A response from SA Terminal Island indicated that significant structural changes were made, including “storage containers for [material recovery plant] finished product ... a roof for [material recovery plant] storage bunkers,” and “fully [enclosing] the shredder operation and 75% of the [material recovery plant] operation” to mitigate storm water quality exceedances.⁵⁶ In 2013, the facility was cited by the Los Angeles RWQCB for inadequately updating the Storm Water Pollution Prevention Plan, failing to update the site map to specifically address the pollutant sources, and failing to fully describe the pump station sizes in the storm water treatment system.⁵⁷ After a subsequent site inspection conducted two months afterward by the Los Angeles RWQCB, the facility was required to submit a description of the storm water

⁵⁴ See SWRCB Letter to Ms. Nancy Felix, S.A. Recycling L.L.C., Annual Report Review – Second Benchmark Value Exceedance: NPDES General Permit (Permit) for Storm Water Discharges Associated with Industrial Activity (Order No. 97-03 DWQ; NPDES No. CAS000001), WDID# 4 19I021125, July 5, 2012.

⁵⁵ Ibid.

⁵⁶ See SA Recycling Letter to Mr. Sean Lee, Regional Water Quality Control Board, RE: July 5, 2012 Annual Report Review – Second Benchmark Value Exceedance: NPDES General Permit (Permit) for Storm Water Discharges Associated with Industrial Activity (Order No. 97-03 DWQ; NPDES No. CAS000001), WDID# 4 19I021125, July 19, 2012.

⁵⁷ See Los Angeles Regional Water Quality Control Board Notice to Comply for SA Recycling, WDID# 4 19I021125, Order No. 97-03, February 25, 2013.

treatment system to resolve discrepancies in the plan.⁵⁸ The RWQCB also required the facility to sample for priority pollutants using the correct detection limits, and to provide proof of proper grading to the pump stations.⁵⁹

Soil Contamination: The Los Angeles RWQCB required SA Terminal Island to add an impermeable concrete cap to all or part of the property and to conduct semi-annual groundwater monitoring as part of remediation plans associated with contamination found in both the soil and groundwater.⁶⁰ Both actions were intended to prevent further soil and groundwater contamination from ongoing shredding activities. Investigations of soil and groundwater were conducted from 1990 to 1994 to assess the environmental impact from long-term scrap metal recycling at the facility. Soils were found to have been impacted by petroleum hydrocarbons, metals, polychlorinated biphenyls, and polycyclic aromatic hydrocarbons. Cleanup involved removing, backfilling the excavation, and placing a concrete cap over the affected area to prevent further contamination. Low-level detections of methyl tert-butyl ether and tert-butyl alcohol were present, but were attributed to an off-site source.

Fire/Explosions: On May 21, 2007, there was an explosion at SA Terminal Island that damaged the air pollution control system, which was used to control emissions of particulate matter and VOCs.⁶¹ The shredder operated without its air pollution control system for 120 days following the explosion. DTSC described the matter as a significant and ongoing health risk to the employees and the surrounding community in its Statement of Facts in the Investigation of SA Recycling LLC, presented to the Los Angeles County District Attorney and State Attorney General's Office in Oakland, on April 22, 2009. An estimated 52 pounds per hour of VOCs were released into the air, and approximately 28.3 tons of particulate matter were emitted over the course of the 120 days that the shredder was in operation after the explosion. Although a chiller box was later installed to control the release of particulates and VOCs in the absence of the air pollution control system, it was estimated to have removed only 40 percent of total particulates. The Los Angeles County District Attorney's Office reached a \$2.9 million settlement with SA Recycling for these violations.⁶²

CUPA Inspections: One hazardous waste inspection report from 2015 was provided to DTSC from the 10-year timeframe requested. Records for the most recent inspection (conducted on August 27, 2015) were provided, in addition to the dates of additional inspections conducted between September 1999 to September 2016. SA Terminal Island was visited by the CUPA 18 times during that time, in 1999, 2003, 2011, 2015, and 2016.⁶³ On August 27, 2015, the Los Angeles Fire Department conducted a routine inspection and noted three minor violations.⁶⁴ The inspectors observed hazardous waste solids stored in an open metal container without the required labeling. They observed five open 12-foot roll-off

⁵⁸ See California Regional Water Quality Control Board – Los Angeles Region, Industrial Storm Water Inspection Report for SA Recycling, WDID# 4 19I021125, April 19, 2013.

⁵⁹ Ibid.

⁶⁰ See California Regional Water Quality Control Board Los Angeles Region, Order No. R4-2012-0088, Termination of Waste Discharge Requirements for Discharges to Land/Groundwater.

⁶¹ See Statement of Facts in the Investigation of SA Recycling LLC. Case No. 13450-19-078, April 22, 2009.

⁶² People of the State of California v. SA Recycling, LLC and Simsmetal West, LLC, California Superior Court, Los Angeles County, case no. BC458943, Stipulated Judgment and Order, filed August 31, 2011.

⁶³ See LA County Fire Department, Facility Information Report for SA Recycling, retrieved on October 4, 2016.

⁶⁴ See Los Angeles County Fire Department – Health Hazardous Materials Division, Inspection Report for SA Recycling LLC on August 27, 2015.

dewatering bins at the storm water tank area that are required to be kept closed at all times except when adding or removing waste. They found that the facility did not have tank assessments for the 10 10,000-gallon hazardous waste holding tanks at the storm water tank area. An operator of a hazardous waste tank is required to obtain a written certification from a professional engineer.

DTSC Inspections or Investigations: In 2008, DTSC sampled the filter media of the air pollution control system and found quantities of lead and mercury above the regulatory threshold. DTSC concluded that during the period in 2007 when the shredder was operating without a functioning air pollution control system (see above description in “Fires/Explosions”), particulates containing lead and mercury were released into the surrounding community.⁶⁵ These findings were included in the case brought by the Los Angeles County District Attorney’s Office against SA Recycling.⁶⁶

Schnitzer Steel Products

Soil Contamination: Schnitzer was identified in GeoTracker for groundwater contamination that required remedial measures. The San Francisco Bay RWQCB required Schnitzer to add an impermeable concrete cap to part of the property and to conduct semi-annual groundwater monitoring as part of the remediation plans.⁶⁷ Both actions are intended to prevent further soil and groundwater contamination resulting from Schnitzer’s operations.

In 1987 soil samples were collected during construction at the Schnitzer facility that showed elevated levels of PCBs, copper, lead, and zinc, prompting a more thorough investigation of potential soil and groundwater contamination from metal shredding activities. In 1987, Schnitzer installed a graded concrete cap along the inner-estuary shoreline to prevent storm water runoff into San Francisco Bay; it also installed an engineered riprap along the shore and implemented routine groundwater monitoring as part of an overall remedial action plan. The San Francisco Bay RWQCB required Schnitzer to maintain the concrete cap and riprap to ensure that the soil contaminants do not migrate from their current location. The San Francisco Bay RWQCB also required Schnitzer to place a deed restriction on the property to ensure that any future use of the property would take into account the residual soil contamination at the site.

During the excavation of nine pits for the construction of a wind wall on the eastern part of the property as part of Cleanup and Abatement Order R2-2013-001 issued by The San Francisco Bay RWQCB, oily soil was discovered in the subsurface along with a severed pipe leaking oily sludge in one of the pits.⁶⁸ The Bay RWQCB allowed Schnitzer to continue construction of the wind wall, provided it did not interfere with the evaluation and cleanup of the subsurface oily soil discovered during initial construction. Schnitzer filled in the pits with pea gravel and removed soil piles that had accumulated from the excavation of the pits. In response to the potential petroleum hydrocarbon contamination, the San

⁶⁵ See Statement of Facts in the Investigation of SA Recycling LLC. Case No. 13450-19-078, April 22, 2009.

⁶⁶ People of the State of California v. SA Recycling, LLC and Simsmetal West, LLC, California Superior Court, Los Angeles County, case no. BC458943, Stipulated Judgment and Order, filed August 31, 2011.

⁶⁷ See California Water Quality Control Board, San Francisco Bay Region, Order No. 88-023 Site Cleanup Requirements for Schnitzer Steel Products Company, Inc., February 17, 1988.

⁶⁸ See San Francisco Bay Regional Water Quality Control Board Letter to Chris Orsolini, Schnitzer Steel Industries, Inc., Conditional Approval of Work Plan for sampling in the vicinity of nine pits; Requirement for Technical Report – Schnitzer Steel Products, 1101 Embarcadero West, Oakland, Alameda County, File No. 01S0067 (CFC), March 23, 2015.

Francisco Bay RWQCB required Schnitzer to evaluate the extent of the contamination and any migration pathways, to assess the potential surface water infiltration due to the pea gravel infill, and to sample soil, groundwater, standing water, and sludge. The San Francisco Bay RWQCB approved the cleanup work plan, with a draft report submitted on September 28, 2016.

Fire/Explosions: On April 8, 2009, a fire occurred at Schnitzer in a pile of debris at the site.⁶⁹ The smoke was reported to create air quality concerns for the local neighborhoods. On September 29, 2011, another fire occurred in a pile of scrap metal, which was reported to have sent a plume of smoke into the sky that was visible for miles.⁷⁰

CUPA Inspections: Two hazardous waste inspection reports were provided to DTSC from the 10-year timeframe requested, one on February 13, 2007, and the second on September 14, 2015. The Alameda County Environmental Health Department conducted a routine inspection of the Schnitzer facility on the latter date.⁷¹ The CUPA found six violations, all of which were minor. Schnitzer had violated two recordkeeping and documentation requirements related to eyewash and shower station installation, lack of exits signs in a specific area, and verification of employee training for hazardous waste handling. Schnitzer also violated three hazardous waste generator requirements for waste labels that did not have accumulation start dates, for unlabeled waste stored in open containers, and for missing tank inspection logs in a hazardous waste storage area. A general facility violation was also noted for visible oil stains and for improper storage of compressed gas cylinders.⁷² During the previous inspection on February 13, 2007, no violations had been found.⁷³

DTSC Inspections or Investigations: On March 17, 18, and 19, 2015, DTSC conducted a Compliance Investigation Inspection of Schnitzer.⁷⁴ During the inspection DTSC collected soil samples from bare ground where scrap metal was stored or being processed; from piles of material collected from the bare ground and from paved surfaces (swept material); and from areas adjacent to and under the joint products plant where the non-ferrous metals are removed from metal shredder aggregate. DTSC found that samples collected from various locations at the facility had the following characteristics:

- Five exceeded the STLC for chromium.
- Eleven exceeded the STLC for lead.
- One exceeded the STLC for nickel.
- Ten exceeded the STLC for zinc.
- Five exceeded the TTLC for copper.
- Twelve exceeded the TTLC for lead.

⁶⁹ See Don Sanchez of ABC 7 News, "Fire Breaks Out at Steel Plant in Oakland," April 8, 2009, <http://abc7news.com/archive/6751956/>

⁷⁰ See Angela Woodall of East Bay Times, "Oakland Firefighters Extinguish Scrap Metal Blaze," September 29, 2011, <http://www.eastbaytimes.com/2011/09/29/oakland-firefighters-extinguish-scrap-metal-blaze/>

⁷¹ See Alameda County Department of Environmental Health Inspection Report for Schnitzer Oakland, September 14, 2015.

⁷² Ibid.

⁷³ See Alameda County Department of Environmental Health, Hazardous Waste Generator Inspection Report for Schnitzer Steel, February 13, 2007.

⁷⁴ See DTSC Letter to Orsolini, Re Report of Investigation on Schnitzer Steel Industries, Inc. Oakland Facility, August 18, 2015.

- Two exceeded the TTLC for nickel.
- Ten exceeded the TTLC for zinc.

One of the samples exceeded the federal limit for lead as measured by the Toxic Characteristic Leaching Procedure, indicating that the waste was also federally regulated as hazardous waste.

DTSC has shared a copy of the Report of Investigation with Schnitzer and is evaluating appropriate enforcement actions.

SA Anaheim

Storm Water Requirements: The facility holds a specific storm water permit for scrap metal recyclers administered by the Santa Ana RWQCB. A notice of violation was issued in 2014 for exceeding limits for chemical oxygen demand and iron for the sampling year 2012-13, and exceeding the annual average numeric action level for specific conductance, chemical oxygen demand, and iron.⁷⁵ In response, the facility was required to submit a corrective action plan to identify preventative measures and control measures to reduce the concentrations of each specific contaminant. In 2015, SA Anaheim received another notice of violation for exceeding the numeric action levels for chemical oxygen demand and lead after developing a corrective action plan resulting from the 2014 notice of violation.⁷⁶ SA Anaheim was required to develop a corrective action plan that included the best available technology treatment method. The RWQCB conducted an inspection in 2016, and found that no corrective actions were needed and all documentation required as part of the storm water permit was present.⁷⁷

Soil Contamination: In June 1987, a Remedial Action Order was issued by DTSC requiring the facility, then known as Orange County Steel Salvage, to characterize contamination at its facility, and in the piles of metal shredder residue that had been accumulated. In June of 1991 DTSC approved a Remedial Action Plan for the site, which included plans to remove and dispose of the accumulated metal shredder residue to a hazardous waste landfill. Some areas of the site were found to have soil contaminated with PCBs, heavy metals, and oil and grease. Some areas had contamination that exceeded the TTLC of 50 mg/kg for PCBs. By December 1998, 31,250 cubic yards of PCB-contaminated soil had been removed. On October 30, 2002, DTSC certified that remediation of the site had been completed and that no further action was required.⁷⁸ No deed restriction was required for the property and, because no groundwater contamination was found, the groundwater monitoring wells were abandoned and removed per agreement with the Santa Ana RWQCB.

CUPA Inspections: Six hazardous waste inspection reports from 2008, 2010, 2013, and 2016 were provided to DTSC from the 10-year timeframe requested, with two of the six being re-inspections. On

⁷⁵ See Santa Ana Regional Water Quality Control Board Letter to Lindsay Maine of SA Recycling, Notice of Violation with Industrial Activities from Scrap Metal Recycling Facilities Within the Santa Ana Region, Order No. R8-2012-0012 (Scrap Metal Storm Water Permit), April 3, 2014.

⁷⁶ See Santa Ana Regional Water Quality Control Board Letter to Lindsay Maine of SA Recycling, Notice of Violation of the Sector-specific General Permit for Storm Water Runoff Associated with Industrial Activities from Scrap Metal Recycling Facilities within the Santa Ana Region, Order No. R8-2012-0012 (Scrap Metal Storm Water Permit), June 29, 2015.

⁷⁷ See Santa Ana Regional Water Quality Control Board Inspection Report for SA Recycling LLC (WDID: 8 30MR000004), September 1, 2016.

⁷⁸ See DTSC Letter to Mr. George Adams, Jr., October 30, 2002.

March 13, 2008, during a routine inspection, the CUPA cited a minor violation for not properly marking and labeling containers, including the presence of unmarked containers.⁷⁹ On March 4, 2010, during a routine inspection, the CUPA cited a minor violation pertaining to damage to the concrete pad where metal turnings were stored, in addition to irregular inspection of oil drainage collection sump.⁸⁰ On February 20, 2013, the CUPA observed one Class II violation regarding containers that held mixed live ammunition with empty casings, with no accumulation start date and no hazardous waste plan for hazardous waste ammunitions.⁸¹

On February 12, 2016, the CUPA conducted a routine inspection and cited one Class II violation for containers with unknown fluids found stored, requiring a hazardous waste determination for the wastes.⁸² One minor violation related to aisle space and housekeeping issues was also cited. On March 22, 2016, the CUPA determined that all violations from the February 12, 2016, inspection had been corrected.⁸³

Sims Metal Management

Storm Water Requirements: On March 4, 2011, US EPA observed material outside the Sims property boundary, including “shredding residue, scrap metal, and other debris associated with industrial activities” while conducting a storm water inspection for its NPDES permit.⁸⁴ On August 25, 2011, US EPA returned and collected sediment and soil samples from areas surrounding the facility, which were found to have TTLC exceedances for lead, zinc, copper, and cadmium. US EPA determined that Sims had been operating that way since at least the early 1990s. On December 16, 2011, US EPA issued an Order for Compliance based on findings of violations of the Clean Water Act and the NPDES permit regulating storm water and non-storm water discharges from the facility.⁸⁵ In 2014, US EPA fined Sims \$189,500 for polluting Redwood Creek and San Francisco Bay.⁸⁶

Fires/Explosions: On November 10, 2013, a two-alarm fire originated from “crushed cars and scrap metal that were in a large pile about 30 feet high.”^{87,88} The fire sent a plume of smoke into the area that

⁷⁹ See Anaheim Fire Department Hazardous Materials Section, Hazardous Waste Generator Inspection Report for SA Recycling, LLC, March 13, 2008.

⁸⁰ See Anaheim Fire Department Hazardous Materials Section, Hazardous Waste Generator Inspection Report for SA Recycling, LLC, March 4, 2010.

⁸¹ See Anaheim Fire & Rescue Hazardous Materials Section, Hazardous Waste Generator Inspection Report for SA Recycling, LLC, February 20, 2013.

⁸² See Anaheim Fire & Rescue Hazardous Materials Section, Hazardous Waste Generator Inspection Report for SA Recycling, LLC, February 12, 2016.

⁸³ See Anaheim Fire & Rescue Hazardous Materials Section, Hazardous Waste Generator Inspection Report for SA Recycling, LLC, March 22, 2016.

⁸⁴ See DTSC Statement of Facts in the Investigation of Sims Group USA Corporation, Case No. 14158-48.

⁸⁵ See US EPA Letter to Mr. Steven Shinn, Sims Metal Management, Findings of Violation and Order for Compliance, December 16, 2011.

⁸⁶ See “EPA fines Sims Metal plant in Redwood City \$189,500 for polluting the Bay,” The Mercury News, September 19, 2014.

⁸⁷ See Bay Area Air Quality Management District, “Incident Report, Sims Metal Management (A5152), Redwood City, CA,” Compliance and Enforcement Division, November 10, 2013.

⁸⁸ See “Redwood City requires Sims Metal to take more than a dozen steps to prevent future fires,” The Mercury News, February 21, 2014.

prompted the Redwood City Fire Department to advise nearby residents to avoid the smoke, stay indoors and close air intake systems to their homes. On December 17, 2013, another fire broke out at about 12:50 a.m. after a small explosion, which again prompted “health, emergency and air quality officials ... to [advise] residents ... to stay inside with the windows closed.”⁸⁹ DTSC also received complaints filed by a local business via the CalEPA Environmental Complaint System stating that employees had sore throats due to the smoke and were unable to come to work.

CUPA Inspections: Five hazardous waste inspection reports from 2009, 2010, 2011, 2014, and 2016 were provided to DTSC from the 10-year timeframe requested. In 2009 and 2010, no violations were cited, and in 2011, one violation regarding an unlabeled drip pan was found but corrected on-site.^{90,91,92} On March 18, 2014, four violations were cited pertaining to checking eyewash stations and fire extinguishers on a monthly basis, proper labeling of hazardous waste containers and tanks, keeping hazardous waste containers closed when not in use, and properly managing empty containers.⁹³ On April 18, 2016, two minor violations and one Class II violation were cited.⁹⁴ The minor violations included improper labeling for a container of hazardous waste antifreeze and improperly contained and labeled filters.

DTSC Inspections or Investigations: Following up on the US EPA report of the NPDES inspection (see *Storm Water Requirements* section above), DTSC conducted its own investigation of Sims after the soil and sediment sampling results indicated that “disposal of a non-Resource Conservation and Recovery Act (non-RCRA) hazardous waste” had occurred.⁹⁵ Results of the soil/sediment samples collected by US EPA revealed exceedances of DTSC’s TTLCs for cadmium, copper, lead and zinc. Prior to DTSC visiting the facility with US EPA for a reinspection, the San Francisco Bay RWQCB submitted a report to DTSC regarding observations of “man-made fibrous material (‘white fluff’) originating from the [Sims] Metal Management site in Redwood City.”⁹⁶ Release of light fibrous material has been an issue at the Sims facility since at least 2009, when discoloration, subsequently identified as light fibrous material, was found in the ponds at the neighboring Cargill Salt facility. Beginning on March 13, 2012, samples from various locations in and around the vicinity were collected, including treated shredder waste, fluff, soil,

⁸⁹ See “Redwood City Officials Meet with Recycling Plant After Second Blaze in Two Months,” San Francisco Examiner, December 20, 2013.

⁹⁰ See San Mateo County Environmental Health Division, Hazardous Waste Generator Inspection Report for Sims, February 25, 2009.

⁹¹ See San Mateo County Environmental Health Division, Hazardous Waste Generator Inspection Report for Sims Metal, November 18, 2010.

⁹² See San Mateo County Environmental Health Division, Hazardous Waste Generator Inspection Report for Sims Metal, December 9, 2011.

⁹³ See San Mateo County Environmental Health Division, Hazardous Waste Generator Inspection Report for Sims Metal Management, March 18, 2014.

⁹⁴ See San Mateo County Environmental Health Division, Hazardous Waste Generator Inspection Report for Sims Metal Management, April 18, 2016.

⁹⁵ See DTSC Statement of Facts in the Investigation of Sims Group USA Corporation, Case No. 14158-48.

⁹⁶ Ibid.

soil/fluff combination, and HVAC air filters. Of the samples collected, exceedances were noted for zinc, lead, and copper, demonstrating the illegal disposal of hazardous shredder residue.⁹⁷

DTSC referred the case to the California Attorney General's Office, alleging that Sims's scrap metal recycling operations released light fibrous material, some of which deposited onto nearby property. The release, migration, deposition, and accumulation of this hazardous waste outside the facility constituted the unlawful disposal of hazardous waste and a failure to minimize the possibility of a release of hazardous waste. The California Attorney General's Office filed an action in San Mateo County Superior Court and negotiated a settlement on behalf of DTSC.

In November 2014, Sims agreed to pay nearly \$2.4 million to settle the civil environmental enforcement action.⁹⁸ Under the settlement, Sims was directed to pay \$825,000 to DTSC in civil penalties and for reimbursement of DTSC's investigative costs; \$125,000 to the Environmental Enforcement and Training Account Program as a Supplemental Environmental Project; and at least \$1,443,814 to upgrade the facility. Additionally, Sims was directed to implement facility upgrades including construction of buildings to enclose the metal shredder and the screening unit and associated magnets; improving the air pollution control system; constructing additional perimeter fencing; and conducting regular sweeping of the public roadways outside of the facility. Interim measures outlined in the settlement included logged weekly visual inspections for accumulation of LFM in areas including private properties, public sidewalks, and streets adjacent to and downwind of Sims, immediate removal of any deposits, and proper characterization and management of any deposits.

SA Bakersfield

Fires/Explosions: On February 19, 2008, SA Bakersfield experienced a fire in a scrap metal pile that was about "150 feet, by 300 feet by 50 feet high, firefighters reported."⁹⁹ Ultimately, the fire was managed by using a large crane to pull metal pieces from the pile to reach the fire.

CUPA Inspections: Three hazardous waste inspection reports from 2009, 2012, and 2015 were provided to DTSC from the 10-year timeframe requested. During hazardous waste generator inspections conducted by the Kern County Environmental Health Services Department in 2012 and 2015, no violations were found.^{100,101} In 2009 and 2012, inspections for three program areas were conducted simultaneously: business plan, hazardous waste generator, and aboveground storage tank.¹⁰²

On April 10, 2009, a routine inspection found three violations under the hazardous waste generator program and two violations under the business plan requirements program. The three minor violations

⁹⁷ See DTSC's Supplemental Statement of Facts in the Investigation of Sims Group USA Corporation, Case No. 14158-48, March 12, 2013.

⁹⁸ See *People of the State of California, ex rel. Miriam Barcellona, Acting Director of the California Department of Toxic Substances Control v. Sims Group USA Corp.*, California Superior Court, San Mateo County, case no. CIV531456, Stipulation for Entry of Final Judgment and Order, filed November 24, 2014.

⁹⁹ See "Public Safety Digest: Golden State Metals Catches Fire," Bakersfield.com, February 19, 2008.

¹⁰⁰ See Kern County Public Health Services, Hazardous Waste Generator Inspector Report for SA Recycling LLC DBA SA Recycling, May 19, 2015.

¹⁰¹ See Environmental Health Division, Certified Unified Program Agency (CUPA) Hazardous Material Inspection Form, March 15, 2012.

¹⁰² See Environmental Health Services Department, (CUPA) Hazardous Material Inspection Form, April 10, 2009.

cited under generator requirements were related to improper labeling of hazardous waste storage containers, missing accumulation start dates on spent lead-acid batteries, and failure to dispose of lead-acid batteries within 180 days of generation. Of the two business plan requirements, one Class II violation was cited regarding inaccurate and out-of-date inventory of hazardous waste, and one minor violation related to improperly labeled hazardous waste containers.

DTSC Inspections: In 2014, soil and sludge samples collected by DTSC in areas surrounding the facility showed lead levels that exceeded the STLC. DTSC could not determine the source of the lead, and because the samples did not contain the light fibrous materials often associated with metal shredding facilities, the case was closed without further action. The source of the lead has not been determined. In 2015, SA Bakersfield was issued a letter by DTSC for improper housekeeping on-site including improperly managing shredded materials that escaped the property boundaries as hazardous waste.¹⁰³ DTSC warned that failure to prevent metal shredder waste from leaving the site would result in the facility being subject to additional enforcement action.

Ecology Auto Parts

CUPA Inspections: Three hazardous waste inspection reports from 2011, 2012, and 2015 were provided to DTSC from the timeframe requested. On September 25, 2015, the San Bernardino County Fire Department conducted an inspection of the facility and found a violation relating to the failure to update the business plan within 30 days. The facility subsequently submitted updated business plan elements electronically to the California Environmental Reporting System (CERS), and the violation was corrected on October 12, 2015. The facility was previously inspected on June 19, 2012, and November 1, 2011, and no violations were found.^{104,105}

DTSC Inspections or Investigations: In 2014, LFM was found in the public access areas outside of the property boundaries, indicating that waste material was migrating from the facility. In 2014 and 2015, it was found that Ecology had “significantly reduced” the amount of LFM that was being generated by the facility based on an observation and on-site inspection conducted by DTSC. Due to the improved management practices employed by the facility, DTSC did not pursue the issue further.

On June 2 and 3, 2015, DTSC conducted an inspection of the Ecology facility.¹⁰⁶ During a walk-through tour of the facility DTSC observed metal processing operations being conducted on bare ground, stained soils collected on paved surfaces, and contaminated soils collected in piles. Inspectors also observed light fibrous material, similar to a heavy dust, that had settled on surfaces and covering piles of other material. DTSC collected samples from each of these locations and found that the collected samples exhibited the following characteristics:

- Soil from the torch cutting area exceeded the STLC for lead.
- Soil from the railroad processing area exceeded the STLC for lead.
- Material from an aggregate pile exceeded the STLCs for cadmium, lead, and zinc.

¹⁰³ See DTSC Letter to Adams, Re Operational Expectations During Implementation of SB 1249, April 13, 2015.

¹⁰⁴ See CUPA San Bernardino Fire Department Hazardous Materials Division, Hazardous Waste Generator and Hazardous Materials Handler Inspection Report, June 19, 2012.

¹⁰⁵ See CUPA San Bernardino Fire Department Hazardous Materials Division, Preliminary Field Inspection Report, November 1, 2011.

¹⁰⁶ See DTSC Report of Investigation on Ecology, Inc., Colton, dba: Pacific Rail Industries, December 16, 2015.

- Material from an aggregate pile exceeded the TTLCs for copper, lead, and zinc.
- Shredder residue on the ground under the conveyors exceeded the STLCs for cadmium and zinc.
- Shredder residue on the ground under the conveyors exceeded the TTLCs for copper, lead, and zinc.
- LFM exceeded the STLC for zinc, and the TTLCs for copper, lead, and zinc.
- Soil collected near the aggregate lines exceeded the STLCs for cadmium, lead, and zinc.
- Soil collected near the aggregate lines exceeded the TTLCs for copper, lead, and zinc

DTSC has shared a copy of the Report of Investigation with Ecology and is evaluating appropriate enforcement.

2.6 Evaluation Findings and Conclusions

Each of the metal shredding facilities is under the jurisdiction of various environmental and health agencies, and their oversight is often specific to particular media or activities. However, even though several agencies have jurisdiction and provide oversight, certain aspects of the operation of the metal shredding facilities appear to be either not regulated adequately or entirely unregulated. DTSC found that the level of regulation clearly differs among local agencies for air pollution control, water pollution programs, and the oversight of hazardous waste management activities. DTSC found that this has resulted in the release of contaminants to the surrounding communities.

Several of the facilities were found to have had storm water runoff exceedances. Two of the four metal shredding facilities had exceedances of the water quality thresholds for specific conductance, chemical oxygen demand, iron, and lead. One metal shredding facility had violations of both its NPDES permit and the Clean Water Act, in which material associated with metal shredding activities was found to have exited the property boundary and contaminated surrounding areas. Subsequent soil and sediment samples from the areas surrounding the property revealed TTLC exceedances of lead, zinc, copper, and cadmium.

Two facilities were required to install an impermeable concrete cap over part of the property due to contamination found in both the soil and groundwater, which was attributed to their metal shredding activities. Three facilities required soil cleanup due to the presence of contaminants associated with metal shredding activities.

Two facilities have had soils collected and analyzed by DTSC in areas where metal processing and storage operations occur, revealing STLC and TTLC exceedances for lead, copper, zinc, and cadmium. During DTSC's 2015 inspection of Schnitzer, soil samples collected from bare ground where scrap metal was stored or being processed, from piles of swept material from paved surfaces, and from areas adjacent to and under the joint products plant where the non-ferrous metals are removed from metal shredder aggregate, were found to exceed regulatory thresholds for metals.

DTSC inspections at Ecology found similar soil contamination. DTSC observed metal processing operations being conducted on bare ground, stained soils accumulating on paved surfaces, and piles of contaminated soils. DTSC collected samples from these areas, and found that the piles often exceeded TTLCs and STLCs for lead, cadmium, copper, and zinc.

Four metal shredding facilities have had fires on their properties, either in the metal shredding machinery or in piles of scrap metal, with a total of six known fires over the past 10 years. Two of the four had more than one fire from 2009 to 2013.

Several of the facilities were found to have had accidents that resulted in releases of hazardous constituents to the air, or to have had ongoing emissions of hazardous constituents resulting from their routine, normal operations. DTSC found that the explosion in the air pollution control system at SA Terminal Island resulted in the release of an estimated 52 pounds per hour of VOCs, and approximately 28.3 tons of particulate matter, over the course of the 120 days that the shredder was in operation after the explosion. DTSC found that the normal, routine operations at Sims had resulted in emissions of light fibrous material from that facility since at least 2009, when the material was found in the ponds at the neighboring Cargill Salt facility. Samples collected of the LFM were found to contain zinc, lead, and copper. The off-site release of this material was found to demonstrate the illegal disposal of hazardous metal shredder residue.

These examples show that while each metal shredding facility is under the jurisdiction of environmental and health agencies, each of those agencies implements a program that is tailored to the priorities that have been established for its district. Notably, the metal shredding facilities in SCAQMD have been required to install and maintain RTO units to control the emissions of VOCs because SCAQMD has identified the emission of VOCs as a priority in its district. BAAQMD does not require the use of RTO, but allows the use of air scrubbers to control the emission of all pollutants, including VOCs. SJVAPCD does not mandate control of VOCs at all.

Given the similarity of the material being shredded, and the common use of a hammer mill to shred the vehicles, appliances and other scrap metals, each metal shredding facility is likely to emit similar pollutants, from its similar processes, to the air, water, and soil surrounding its facilities. These jurisdictional differences indicate that unequal levels of public health or environmental protection may result near the metal shredding facilities.

These jurisdictional differences, coupled with the continued effect of DTSC's "f letters" and OPP 88-6, have resulted in inadequate regulatory oversight of the operations being conducted at the metal shredding facilities.

3 ANALYSIS REQUIRED TO ADOPT REGULATIONS

Pursuant to HSC Sections 25150.82(d)(3)(A) through 25150.82(d)(3)(D), the Metal Shredding Facilities Law requires DTSC to prepare an analysis addressing specific factors relating to activities that would be subject to the alternative management standards, if promulgated, or to existing hazardous waste control law.

DTSC, in its evaluation of the metal shredding facilities and their hazardous waste management activities, has determined that the activities that would most significantly relate to the establishment of alternative management standards or to the requirements of existing hazardous waste control law would be the hazardous waste treatment and storage activities that have been historically “authorized” or otherwise exempted from regulation as a result of OPP 88-6. Therefore, as required by the Metal Shredding Facilities Law, these hazardous waste management activities are the subject of this Analysis.

The following sections present DTSC’s analysis of the factors specified in the Metal Shredding Facilities Law as they pertain to the treatment and storage of metal shredder wastes. All of these wastes are hazardous wastes, and all are activities that would otherwise require a hazardous waste permit or other form of authorization from DTSC to perform. Any alternative management standards proposed would be substituted for the hazardous waste management requirements and permitting standards that apply to these types of hazardous waste management activities under existing statutes and regulations. (Note that the disposal of CTMSR to landfills, which would otherwise require a hazardous waste permit to perform if not for the nonhazardous classifications provided in the “f letters,” is discussed in Section 5.0.)

3.1 Types of Hazardous Waste and Estimated Amounts That Are Managed as Part of the Activity

Health and Safety Code Section 25150.82(d)(3)(A) requires DTSC, if it intends to promulgate alternative management standards, to prepare an analysis of the types of hazardous waste and the estimated amounts of each hazardous waste that are managed as part of the activity. Unless alternative management standards are developed, these activities would be regulated by the hazardous waste management requirements and permitting standards that apply to these types of hazardous waste management activities under existing statutes and regulations.

Metal Shredder Aggregate: The facilities treat the aggregate using physical separation processes to separate ferrous and non-ferrous metals. Except in two instances where the metal shredding facilities claimed the information was confidential business information, each of the facilities provided an estimate of the amount of scrap metal it processed in 2014 (the year prior to the survey responses. According to the surveys, the incoming scrap composition typically consists of end-of-life vehicles (20 to 50 percent), appliances (10 to 70 percent), and other forms of scrap metal (9 to 40 percent).

The total amount of metal shredder aggregate estimated to be processed by all the metal shredding facilities in 2014 was 1.9 million tons. This amount was assumed to be equivalent to the amount of scrap metal received; in other words, the weight of the material before it is shredded in the hammer mill would be the same as the weight of the material after it is shredded. This may overestimate the actual amount of metal shredder aggregate, depending on how much of the scrap metal that is received includes scrap metal that is already “clean” and does not require shredding or separation before being

managed as sorted ferrous or non-ferrous metals. However, the estimated amount correlates well with the amount of CTMSR that was reported as alternative daily cover in the same year. To the extent the aggregate contains hazardous wastes, some portion of the estimated amount of aggregate would be a measure of hazardous waste, depending on specific circumstances.

Metal Shredder Residue: After the metal shredder aggregate has been treated to separate the ferrous and non-ferrous metals, the portion that remains is referred to as “metal shredder residue.”

The total amount of metal shredder residue estimated to be generated by all of the metal shredding facilities is 536,000 tons. According to the survey responses, the metal shredding facilities provided, the amount of metal shredder residue generated by each facility was reported to range from 29 to 38 percent of the facility’s total scrap metal throughput. To approximate the amount of metal shredder residue being generated in 2014, an average of 33.5 percent was applied to the estimated amount of metal shredder aggregate being generated. Again, although it may not provide a precise amount, the calculated estimate correlates well with the amount of CTMSR that was reported as alternative daily cover in the same year.

CTMSR: After the metal shredder waste has been chemically treated, the facilities store it in piles at their facilities. Later, it is loaded onto trucks and transported to solid waste landfills, where it is disposed or used as alternative daily cover. According to information reported to CalRecycle by the solid waste landfills that use CTMSR for alternative daily cover, an estimated 517,000 tons of CTMSR were used as alternative daily cover in 2014. This number does not include the amount of CTMSR sent to H.M. Holloway by SA Bakersfield. CTMSR received by H.M. Holloway is disposed of, and is not used for alternative daily cover. The amount of CTMSR sent to H.M. Holloway by SA Bakersfield in 2014 was approximately 25,000 tons. The total estimated amount of CTMSR generated by metal shredding facilities in 2014 was 542,000 tons.

Quantities of Hazardous Waste Managed at Metal Shredding Facilities: Table 6 summarizes the Quantities of Throughput and Waste Generation from Metal Shredding Facilities reported for 2014. The amount of scrap metal shredded annually was reported by each metal shredding facility in the questionnaires provided to DTSC. The amount of metal shredder aggregate generated is considered to be the same as the amount of scrap metal shredded, because no ferrous or non-ferrous materials have yet been removed. Metal shredder residue remains once the ferrous and non-ferrous metals have been removed. The amount of chemically treated metal shredder residue that was transported offsite for disposal was also reported in the questionnaires from each facility. CalRecycle provides a public record of the amount of CTMSR being used as alternative daily cover. Additional data was provided by the landfills in response to DTSC’s survey. The other values in Table 6 were calculated as functions of the known data. Because some facilities claimed that their production and generation volumes were confidential business information, some of the values in Table 6 are estimates based on overall industry averages. Although some of the values are estimated, they provide a reliable approximation of the scale of hazardous waste management activities being conducted at the metal shredding facilities.

Table 6. Quantities of Throughput and Waste Generation and Management at Metal Shredding Facilities				
Facility	Scrap Metal Shredded (Tons)	Metal Shredder Aggregate Generated and Treated (Tons)^b	Metal Shredder Residue (Approximate Tons)^c	CTMSR Disposed (Tons)^d
SA TERMINAL ISLAND	330,000	330,000	110,550	115,172
SCHNITZER STEEL PRODUCTS^a	582,000 ^g	582,000 ^f	195,000 ^f	195,000 ^e
SA ANAHEIM	247,000	247,000	82,745	87,093
SIMS METAL MANAGEMENT^a	358,000 ^g	358,000 ^f	120,000 ^f	120,000 ^e
SA BAKERSFIELD	83,000	83,000	27,805	24,567
ECOLOGY AUTO PARTS	264,000	264,000	N/A	N/A

^a Some information was claimed as Confidential Business Information. Estimates based on overall industry averages were used to in place of data that was unavailable.
^b Amount assumed to be the same as the amount of scrap metal processed.
^c Calculated based on the industry's estimate that the amount of metal shredder residue generated by each facility ranged from 29 to 38 percent of its total throughput. An average of 33.5 percent was applied to approximate the amount generated.
^d Based on information provided to CalRecycle on the amount of CTMSR that was reported to be used as alternative daily cover.
^e Estimated from amount of CTMSR used as alternative daily cover reported to CalRecycle.
^f Calculated using the estimated amount of CTMSR used as alternative daily cover as reported to CalRecycle.
^g Calculated using the estimated amount of metal shredder residue, using the ratio of metal shredder residue to total throughput of 33.5 percent.

Hazards to Human Health or Safety or to the Environment Posed by Reasonably Foreseeable Mismanagement of Those Hazardous Wastes and Their Constituents

The risks and hazards associated with the management and mismanagement of hazardous wastes are directly related to the hazardous constituents present in the hazardous waste and the characteristics the hazardous waste exhibits. California regulates waste based on the toxicity and hazard to humans and to other biological organisms. The risk posed by hazardous wastes is also a function of the routes of release into the environment and the potential exposure that can take place as a result of that release.

Chemical Hazards of Hazardous Waste Constituents in Metal Shredder Wastes

The primary hazardous waste constituents in metal shredder wastes, shown in previous DTSC sampling and in the treatability study, are lead, copper, and zinc. Each of these contaminants is present at concentrations that exceed their respective STLCs and TTLCs, and the soluble concentrations are only decreased in CTMSR—but even then, not to levels below the STLC. Cadmium has also occasionally been observed in some samples at levels that exceed its STLC. Historically, metal shredder wastes have also contained mercury and PCBs, but these constituents have not recently been found in chemical testing performed.

The primary health and environmental concerns with these hazardous waste constituents are as follows:

Lead: Lead can present health hazards if it is inhaled, ingested, or absorbed as particles.¹⁰⁷ Inhalation presents the greatest risk, because the body absorbs higher levels of lead through this exposure pathway. Lead is absorbed and stored in bones, blood, and tissues. Bones can be demineralized by lead, which replaces other natural elements in the bone structure.

Lead poisoning can happen if a person is exposed to very high levels of lead over a short period of time. This can cause abdominal pain, fatigue, weakness, memory loss, and pain or loss of feeling in the hands and/or feet. Exposure to high levels of lead may cause anemia, weakness, and kidney and brain damage. Prolonged exposure to lead can cause abdominal pain, nausea, and changes in personality, and can increase the risk for high blood pressure, heart disease, kidney disease, and reduced fertility. Very high levels of lead exposure can cause death. The U.S. Department of Health and Human Services, US EPA, and the International Agency for Research on Cancer (IARC) have determined that lead is probably cancer-causing in humans.¹⁰⁸

Generally, children tend to show signs of severe lead toxicity at lower levels than adults. Lead poisoning has occurred in children whose parents accidentally brought home lead dust on their clothing. Neurological effects and mental retardation have also occurred in children whose parents may have job-related lead exposure. Lead can cross the placental barrier, which means that the fetuses of pregnant women who are exposed to lead are also exposed. Lead can damage a developing baby's nervous system and even low-level lead exposures in developing babies have been found to affect behavior and intelligence. Lead exposure can cause miscarriage, stillbirths, and infertility.

Cadmium: Cadmium has an inhalation hazard that can cause pulmonary irritation.¹⁰⁹ Long-term exposure to cadmium through inhalation or oral ingestion can cause kidney disease due to the build-up of cadmium in the kidneys. Similarly, cadmium is classified by US EPA as a probable human carcinogen, with animal studies concluding increased rates of lung cancer due to chronic exposure.¹¹⁰

Cadmium (as an oxide, chloride, or sulfate) will exist in the air as particles or vapors from high-temperature processes. It can be transported long distances in the atmosphere, where it will deposit (wet or dry) onto soils and water surfaces. Cadmium and its compounds may travel through soil, but its mobility depends on several factors such as pH and the amount of organic matter in the soil, which will vary depending on the local environment. Generally, cadmium binds strongly to organic matter, where it will be immobile in soil and be taken up by plant life, eventually entering the food supply.

Copper: Exposure to high doses of copper can cause liver and kidney damage and even death.¹¹¹ Long-term exposure to copper dust can irritate the nose, mouth, and eyes, and cause headaches, dizziness,

¹⁰⁷ See Health effects of Lead, The National Institute for Occupational Safety and Health (NIOSH), available at <https://www.cdc.gov/niosh/topics/lead/health.html>

¹⁰⁸ Toxicological Profile for Lead, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 2007.

¹⁰⁹ Toxicological Profile for Cadmium, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 2012.

¹¹⁰ See www.epa.gov/sites/production/files/2016-09/documents/cadmium-compounds.pdf

¹¹¹ See Public Health Statement for Copper, U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry, 2004.

nausea, and diarrhea. If water that contains higher than normal levels of copper is consumed, it can cause nausea, vomiting, stomach cramps, or diarrhea. It is not known if copper can cause cancer in humans. US EPA does not classify copper as a human carcinogen because there are no adequate human or animal cancer studies.

Elemental copper does not break down in the environment. Copper can be found in plants and animals, and at high concentrations in filter feeders such as mussels and oysters. Copper is also found in a range of concentrations in many foods and beverages that we eat and drink, including drinking water. When copper and copper compounds are released into water, the copper that dissolves can be carried in surface waters either in the form of copper compounds or as free copper or, more likely, copper bound to particles suspended in the water. Even though copper binds strongly to suspended particles and sediments, there is evidence to suggest that some water-soluble copper compounds do enter groundwater. When copper is released into soil, it can become strongly attached to organic material and other soil components (clay, sand, etc.) in the top layers of soil, and may not move very far when it is released. Copper that enters water eventually collects in the sediments of rivers, lakes, and estuaries.

Zinc: Zinc exposure can cause stomach cramps, anemia, and changes in cholesterol levels.¹¹² Inhaling large amounts of zinc (as dusts or fumes) can cause a specific short-term disease called metal fume fever. However, DHHS and IARC have not classified zinc for carcinogenicity, and US EPA has determined that zinc is not classifiable as to its human carcinogenicity. Zinc is not listed by the State of California as a naturally occurring or synthetic chemical that is known to cause cancer or birth defects or other reproductive harm.

Zinc dust can travel in the air and be deposited by rain and snow. Depending on the type of soil, some zinc compounds can move into the groundwater and into lakes, streams, and rivers. The zinc dissolved in water can build up in fish and other organisms.

Research conducted by US EPA has shown that zinc is a strong aquatic pollutant.¹¹³ Inherent water quality parameters like pH, hardness, and alkalinity change the biological activity of zinc. This is significant because calcium hardness and carbonate alkalinity are both important factors in governing the toxicity of zinc to fish. In the US EPA study, the sensitivity of various fish species to zinc was found to vary by a factor of 2.7 between hard and soft water.

The rulemaking documents that established California's hazardous waste criteria stated that "[z]inc appears to have low toxicity to higher animals, but is highly toxic to fish, especially in soft waters. Moreover, zinc has a synergistic, toxic effect with copper compounds on fish. Zinc is an essential nutrient for plants and animals, but also has an appreciable phytotoxicity which is dependent on soil pH. Liming the soil reduces the phytotoxic effects of zinc. There is a recommended limit of 2.0 milligrams of zinc per liter of water applied to limed soils."¹¹⁴

¹¹² See Toxic Facts for Zinc, U.S. Department of Health and Human Services, The Agency for Toxic Substances and Disease Registry (ATSDR), U.S. Department of Health and Human Services, available at: <https://www.atsdr.cdc.gov>

¹¹³ See Holcombe, G.W. and Andrew, R.W., The Acute Toxicity of Zinc to Rainbow and Brook Trout: Comparisons in Hard and Soft Water, Ecological Research Series, Research and Development. US EPA Environmental Research Lab, Duluth, MN. EPA-600/3-78-094PB-289 939, October 1978.

¹¹⁴ See Final Statement of Reasons, Criteria for Identification of Hazardous and Extremely Hazardous Wastes, Department of Health Services, R-45-78, July 20, 1984, p. 22.

Hazards from Reasonably Foreseeable Releases of Metal Shredder Wastes

The hazards to human health or safety or to the environment posed by hazardous wastes that exceed any of the TTLCs and STLCs are associated both with the toxic constituents that are present in excess of the TTLC as well as how the hazardous waste is being managed.

Wastes that contain constituents that exceed their respective TTLCs can pose hazards to human health and the environment if managed in ways that do not prevent them from being released into the environment. In addition, wastes that contain constituents that exceed their respective STLCs can pose hazards to human health and the environment if mismanaged in ways that allow the soluble constituents to migrate via surface or groundwater to sensitive aquifer systems such as drinking water supplies or aquatic wildlife environments.

The Department of Health Services (DHS) described potential routes of release of and exposure to particulate toxics, for which TTLCs were developed. The potential routes include:

- Surface run-off and contamination of land and water
- Direct discharge into waterways
- Volatilization of organics
- Airborne dispersal before, during, and after disposal
- Direct on-site land contamination
- Long-term solubilization

As further explained in the rulemaking establishing the hazardous waste criteria, “It was decided to consider the potential impacts on land, resulting from improper disposal of particulate toxic wastes, in establishing TTLC values. The most direct impact of indiscriminate disposal is contamination of the land and the attendant potential impact on organisms which contact the land. These can include persons, animals, or plants.”¹¹⁵

In its rulemaking documents in which the STLCs were established, DHS explained that “the establishment of the STLC was based upon the potential for soluble substances from improperly disposed wastes to migrate via surface or groundwater to sensitive aquifer systems such as drinking water supplies or aquatic wildlife environments. Several steps can be envisioned in such a process: (a) dissolving of toxic substance from the waste by the leaching action of rain, surface water, ground water, or landfill leachate; (b) movement of the resulting extractant from the disposal area; (c) attenuation (dilution) of toxic substance in the extractant through soil absorption or through mixing with ground or surface waters; and (d) pollution of the aquifer.”¹¹⁶

The establishment of the STLCs and TTLCs assumed that the “proper” management of hazardous wastes would prevent releases consistent with the potential routes of dissemination and exposure listed above. The primary method of controlling the hazards posed by the hazardous constituents in the waste would be to manage it so that releases cannot occur that could allow it to contaminate land or water, and potentially come into contact with human or biological receptors.

¹¹⁵ See Final Statement of Reasons, Criteria for Identification of Hazardous and Extremely Hazardous Wastes, Department of Health Services, R-45-78, July 20, 1984, pp. 95 – 98.

¹¹⁶ See Final Statement of Reasons, Criteria for Identification of Hazardous and Extremely Hazardous Wastes, Department of Health Services, R-45-78, July 20, 1984, pp. 89–91.

The hazardous waste management requirements that would otherwise apply to the metal shredder wastes are all designed to prevent the release of the hazardous waste and hazardous waste constituents into the environment. In all cases, the management of hazardous waste from the point of its generation through its treatment and storage, and ultimately to its transportation to a disposal facility, is required to be performed inside tanks or containers so that the hazardous constituents are controlled and contained. In some cases, these containment standards can be accomplished by performing them inside buildings that meet the standards for containment buildings (see Article 29, Chapter 14, Title 22, California Code of Regulations, Section 66264.1101 et seq.), or in units that meet specific design and operating standards to prevent the release of hazardous wastes into the environment (e.g., waste piles designed and operated in accordance with Article 12, Chapter 14, Title 22, California Code of Regulations, Section 66264.250 et seq.).

The information presented in Section 2.3 demonstrates that metal shredder wastes are not currently managed within tanks or containers, inside containment buildings that meet the Article 29 standards, nor in waste piles that meet the design and operating standards in Article 12. At metal shredding facilities, the metal shredder wastes are not being managed in accordance with existing hazardous waste requirements for transfer, storage, or treatment of hazardous wastes. This has allowed hazardous wastes to be released, causing potential impacts to human health and the environment.

3.2 Complexity of Treatment and Storage Activities at Metal Shredding Facilities

Health and Safety Code Section 25150.82(d)(3)(B) requires DTSC, if it intends to promulgate alternative management standards, to prepare an analysis of the complexity of the activity, and the amount and complexity of operator training, equipment installation and maintenance, and monitoring that are required to ensure that the activity is conducted in a manner that safely and effectively manages each hazardous waste

Complexity of Treatment Activities

Ferrous and Non-ferrous Metal Separation – For ferrous metal separation, the amount of charge placed on the electromagnet and the rate at which the metal shredder aggregate is passed under the magnet affect the efficiency and effectiveness of the retrieval of ferrous metal. For non-ferrous metal separation, the equipment's air flow, timing, and feed rates that account for the density of materials all affect the efficiency and effectiveness of the retrieval and separation. The efficiency or effectiveness of the removal of the ferrous and non-ferrous metals does not affect the amount or toxicity of the hazardous constituents in the metal shredder aggregate or the subsequent metal shredder residue. It may, based on the mass of the metals that are not removed, effectively decrease the concentrations of the hazardous constituents in the remaining wastes.

The most complex aspects of the ferrous and non-ferrous metal separation processes, with regards to containment of hazardous wastes, appear to be controlling releases of hazardous wastes from the processes. Observations by DTSC and other regulatory agencies as noted in Section 2.3 have documented the release of LFM and particulate matter from the separation processes, and have also documented metal shredder aggregate falling outside of the separation process and off of conveyor systems throughout the facilities.

Chemical Stabilization – Chemical stabilization is a common chemical treatment process. It is used to stabilize soluble concentrations of metals in a variety of circumstances and wastes (for site remediation,

as well as mandated treatment standards for land disposal restrictions for many hazardous wastes). Stabilization is a common remediation technology employed at state and federal Superfund sites. US EPA estimates that 23 percent of the source control remedies performed at these sites between 1982 and 2005 involved the use of solidification or stabilization, and 94 percent of the solidification/stabilization remediations performed included inorganic binders such as cement, fly ash, lime, phosphate, soluble silicates, or sulfur.

The most complex aspect of the chemical treatment of metal shredder residue is due to its highly heterogeneous composition. Metal shredder residue is a mixture of materials (including plastics, rubber, foam, fabric, carpet, glass, wood, road dirt, and debris, along with a small amount of residual metal). These materials are present in a complex assortment of sizes, shapes, and densities with various physical and chemical properties. Each sample of metal shredder residue can be composed of different ratios and sizes of these materials, making the application of the treatment chemicals and even distribution of them throughout the metal shredder residue more difficult.

The chemical stabilization treatment of the metal shredder residue requires careful control of the application rates of silicate solution and alkaline cement to achieve the needed stabilization of the soluble lead, cadmium, copper, and zinc. The treatment process requires an accurate delivery of the required cement and sodium or potassium silicate mixture to the residue for the treatment to be effective. The effectiveness of the treatment, and the immobilization of the soluble metals, are directly affected by how the treatment process is carried out. Higher concentrations of lead, cadmium, copper, or zinc can result from insufficient application of treatment chemicals.

Hazardous Waste Sampling and Analysis – In addition to the complexity of the application of the treatment chemicals, the methods to verify or validate the effectiveness of the treatment are also complex. Not only is each sample likely to contain different proportions of the material that it is composed of, but the techniques used to take samples must account for the composition of the waste.

Sample preparation and laboratory procedures to measure the concentrations of the chemical constituents are also complex. Because the metal shredder residue is composed of many different materials, it is uniquely heterogeneous, and it is extremely difficult to collect and prepare samples for analysis that are representative of this waste stream. The sample preparation procedures require the sample to be milled to a consistent particle size before mixing with the specified extraction liquid. The varying composition requires special milling equipment to reduce the particle size of the material, and additional time spent by the laboratory staff to ensure the sample can pass through the designated sample sieve. Laboratory staff must also pay close attention to the required procedures to decide whether any of the sample is considered extraneous (not needing to be analyzed) or needs to be retained and processed with the remainder of the sample. Significant variation in analytical results can occur if samples are not collected or prepared for analysis as required to address the unique heterogeneous nature of this waste stream.

Complexity of Storage Activities: Storage of the metal shredder aggregate, the metal shredder residue, and CTMSR at the metal shredding facilities is in piles due to the volume of the waste being managed. Where these piles contain hazardous wastes, they must be managed in compliance with regulations. The requirements for storage of hazardous waste in waste piles are much more complex than what is currently practiced at the metal shredding facilities. To store hazardous waste in a waste pile, the waste pile must be designed and managed in accordance with the Waste Pile standards in Article 12 of Chapter

14, Title 22, California Code of Regulations, Section 66264.250 et seq. These standards include but are not limited to an impermeable liner beneath the pile, a leachate collection system, a leak detection system, and an ongoing monitoring program to detect the migration of contaminants from the waste pile. Storage of hazardous waste in waste piles that are not designed or managed in accordance with the prescribed standards allows for contamination of soils, leakage of contaminants into the subsurface, and the potential for migration of hazardous constituents via surface water runoff and air dispersion throughout the site as well as off-site.

Amount and Complexity of Operator Training Associated with Treatment and Storage of Metal Shredder Wastes

As described above, the operational personnel at the metal shredding facilities must be familiar with, and be trained on, the treatment processes and equipment to ensure they are performing efficiently and effectively.

Improper or inadequate screening of incoming waste scrap metals to confirm they have been adequately de-polluted could result in hazardous materials remaining in the scrap metal that is being fed into the hammer mill. These hazardous materials would further contaminate the metal shredder wastes, potentially exposing operational personnel to unexpected risks and hazards as they operate the equipment used to treat the wastes. There have also been occasions that resulted in catastrophic results. For instance, explosions have occurred within the hammer mill that could have been caused by compressed gas cylinders or explosive ordnance that was not detected in the incoming waste scrap metal being detonated by the hammer mill. These explosions create tremendous risk to the hammer mill operator, potentially causing injury or death, and they could also result in the hammer mill or its pollution control equipment becoming disabled, resulting in process stoppage and release of hazardous constituents into the environment.

Improperly operated ferrous and non-ferrous separation processes could result in ferrous and non-ferrous metals remaining in the metal shredder residue, increasing the amount of metal shredder residue requiring chemical treatment, increasing the amount of CTMSR requiring disposal, and decreasing the profitability of the metal shredding facility's metal recovery operation.

The chemical treatment system is automated to reflect belt scale and speed, but it does not measure the amount of contaminants present to adjust the treatment chemicals accordingly. Therefore, operational personnel must be trained to inspect the metering pump system and associated tank gauges in the chemical treatment system to ensure that the required amount of the sodium or potassium silicate solution and cement is added to metal shredder residue in the pug mill to achieve the required treatment outcomes. Failure to operate the chemical treatment system correctly could result in potential harm. CTMSR that is insufficiently treated could result in contamination at the solid waste landfill and possible harm to the landfill personnel who come in contact with it.

Operational personnel must also be trained on the operation and maintenance of all pollution control equipment, and in the facilities' pollution control best management practices, to ensure that they are functioning properly and are not allowing for discharges that exceed permit standards or allowable limits. Failure to properly operate and maintain pollution control equipment, or to implement pollution control best management practices, could result in releases of hazardous waste or hazardous waste

constituents that could expose people to health risks, contaminate the environment, or injure or harm other biological receptors outside the facilities' boundaries.

Required Monitoring to Ensure That Treatment and Storage of Metal Shredder Wastes Are Conducted in a Manner Which Safely and Effectively Manages Each Hazardous Waste

As discussed above, the treatment processes, and the pollution control equipment and pollution control best management practices, must be constantly monitored to ensure they are being operated and implemented effectively. Properly operating pollution control devices reduce emissions from the equipment and the potential for off-site migration and resulting risks due to inhalation, dermal absorption, air deposition, or surface water runoff. Local air districts require periodic analysis of the air emissions to verify that the equipment is operating properly and that emissions are within the allowable limits. Similarly, the RWQCBs require routine monitoring of surface water discharges (if any), and industrial sewer discharges (if any). This monitoring is also intended to verify that wastewater treatment systems are operating properly and that the discharges are within allowable limits. At some metal shredding facilities that have previous cases of soil contamination, the RWQCBs have also required groundwater to be monitored (where subsurface contamination has been confirmed). This monitoring is intended to identify migration of contaminants and potential threats to groundwater or drinking water sources.

3.3 Chemical and Physical Hazards Associated with Treatment and Storage

Health and Safety Code Section 25150.82(d)(3)(C) requires DTSC, if it intends to promulgate alternative management standards, to prepare an analysis of the chemical or physical hazards that are associated with the treatment and storage of metal shredder wastes and the degree to which those hazards are similar to, or different from, the chemical or physical hazards that are associated with the production processes that are carried out in the facilities that produce the hazardous waste that is managed as part of the activity.

The primary chemical hazards associated with the treatment and storage of metal shredder wastes are posed by the elevated soluble and total levels of lead, cadmium, copper, and zinc that are present in the wastes. The waste management practices that are common to the metal shredding facilities do not sufficiently contain or control the metal shredder aggregate, which allows the aggregate and its constituents to be released into the environment (both on and off-site). Metal shredder facility waste management practices have resulted in LFM and particulate containing the contaminants being released onto and outside of the metal shredding facilities. They have also resulted in the dispersion of metal shredder wastes outside of waste treatment equipment, arguably creating circumstances of unintentional disposal when the metal shredder waste is released or becomes separated from the waste treatment equipment or storage areas.

The greatest chemical hazards these hazardous waste constituents pose is when they or the waste they are within are not contained or otherwise controlled, and they are allowed to be released into the environment. This can result in contamination of the metal shredding facilities and potentially the areas near the metal shredding facilities, and may result in both the public and other biological organisms coming into contact with or being exposed to these hazardous constituents, and potentially suffering negative health impacts and harm.

The physical hazards associated with the treatment and storage of metal shredder wastes are hazards that would be common to the operation of large industrial equipment that is managing large amounts of material. The operation of the ferrous and non-ferrous separation processes and equipment must be done in conformance with Cal/OSHA worker safety requirements. DTSC collected reported incidents of worker injury reported to Cal/OSHA but did not find any incidents of accident or injury associated with the operation of the ferrous and non-ferrous separation equipment. DTSC also identified a 2004 fire at Vasco Road Landfill in Livermore in a pile of CTMSR that was being stored for use as alternative daily cover (which is further discussed in Section 5 of this Analysis). Fires in this waste would result in large plumes of dense smoke consistent with the burning of plastics and other synthetic materials that comprise the majority of the metal shredder wastes. The chemical constituents in this smoke can harm those who come in contact with it by, for example, exacerbating existing respiratory problems.

Additional chemical hazards associated with the treatment and storage of metal shredder residue and CTMSR are associated with the sodium or potassium silicate and alkaline cement treatment chemicals. The Material Safety Data Sheet for one brand of silicate solution indicates that it has no fire or explosion hazard, but also indicates that mist or sprays from the solution can cause chest discomfort and coughing; that direct contact can cause eye irritation; that prolonged or repeated contact can remove body oils from skin causing slight irritation; and that swallowing large amounts can cause nausea and vomiting. The Material Safety Data Sheet for cement indicates that it has no fire or explosion hazard but that inhalation of dust should be avoided, and that the cement can cause irritation of the eyes, skin and respiratory tract. Ingestion can also cause irritation of the gastrointestinal tract, which could be introduced to the scrap metal feed as MRSR.

Degree to Which Hazards Are Similar to, or Different From, Chemical or Physical Hazards Associated with Production Processes Carried Out in Facilities That Produce Metal Shredder Wastes

The metal shredder aggregate and metal shredder residue are produced at the same locations where their treatment and storage take place. They are not being produced at a different location, and are not transported to the metal shredding facilities to be treated. Landfill disposal of CTMSR, which occurs at locations other than the metal shredding facilities, is discussed in Section 5 of this Analysis.

3.4 Types of Accidents That Might Reasonably Be Foreseen During Treatment and Storage

Health and Safety Code Section 25150.82(d)(3)(D) requires DTSC, if it intends to promulgate alternative management standards, to prepare an analysis of the types of accidents that might reasonably be foreseen to occur during the management of particular types of hazardous waste streams, the likely consequences of those accidents, and the reasonably available actual accident history associated with the activity. In the context of this Analysis, the focus has been on accidents related to the treatment and storage of metal shredder wastes. As defined in Section 66260.10 of Title 22, California Code of Regulations, an accidental occurrence is an accident, including continuous or repeated exposure to conditions, which results in bodily injury, property damage or environmental degradation neither expected nor intended from the standpoint of the insured.

The types of accidents that might reasonably be foreseen to occur during the treatment and storage of metal shredder wastes include the following:

- Spills or releases of metal shredder wastes outside of conveyor systems and the ferrous and non-ferrous metal separation equipment
- Spills or releases of metal shredder residue and CTMSR outside of conveyor systems and the metal shredder residue treatment equipment
- Spills or releases of sodium or potassium silicate treatment solution outside the containers and tanks it is stored in
- Spills or releases of alkaline cement outside the containers and tanks it is stored in
- Failure of air pollution control equipment
- Fires in piles of the stored metal shredder waste, or in the metal shredder waste treatment equipment
- Meteorological events with high winds causing the wind-borne dispersal of metal shredder wastes outside the boundaries of the metal shredding facilities
- Earthquakes that could result in collapse or damage of buildings or equipment at the metal shredding facilities where metal shredder wastes are managed
- Flooding associated with local or regional events or unanticipated rainfall events

Likely Consequences of Accidents Reasonably Foreseen to Occur During Treatment and Storage of Metal Shredder Wastes

DTSC considered the likely consequences of the accidents reasonably foreseen to occur during the treatment and storage of metal shredder wastes. The waste management practices that are common to the metal shredding facilities do not sufficiently contain or control the metal shredder wastes, which has consistently allowed the metal shredder wastes and their constituents to be released into the environment, both on-site and off-site.

The consequence of any of the accidents listed above related to spills or releases of metal shredder wastes would be a contribution of additional contaminants to areas already impacted by releases of metal shredder wastes and their constituents, as well as to additional areas possibly well outside of the facility or areas in proximity that may already be impacted. The significance of the consequence of some of the more catastrophic events is amplified by the waste management practices being used by the metal shredding facilities. Because the metal shredder wastes are largely not contained at the facility, there is no factor that would limit or inhibit their release to the environment well outside of the facility boundaries, which could potentially result in more widespread impacts of the event.

The consequences of spills or releases of sodium or potassium silicate solution or alkaline cement would be localized in the area of the spill, likely limited to on-site impacts, and could result in both worker health and safety concerns, and could contribute additional chemical contaminants to areas already impacted by releases of metal shredder wastes and their constituents.

Reasonably Available Actual Accident History Associated with Treatment and Storage of Metal Shredder Wastes

In its search for accident history related to the treatment and storage of metal shredder wastes, DTSC could not find any records of accident events specifically related to the subject activities. The only accidents at locations associated with the subject activities were a fire and explosion in 2007 at SA Terminal Island (in the air pollution control equipment used to control emissions from its hammer mill) and a fire in 2004 at Vasco Road Landfill in Livermore (in a pile of CTMSR that was being stored for use

as alternative daily cover). All other available accident history at metal shredding facilities was related to either the storage of vehicles, appliances, or other scrap metal prior to its processing in the facilities' hammer mill (2007 and 2012 incidents at Sims Metal Management in Redwood City), or to fires and explosions in a facility's hammer mill (a 2012 incident at Sims Metal Management in Redwood City). None of these accidents occurred in the treatment or storage of metal shredder wastes.

3.5 Demographics of Communities Around Metal Shredders

Health and Safety Code Section 25150.82(d)(3)(E) requires DTSC, if it intends to promulgate alternative management standards, to prepare an analysis of the types of locations where hazardous waste management activities associated with metal shredding and management of treated metal shredder waste may be carried out and the types of hazards or risks that may be posed by proximity to the land uses described in Section 25227 of the Health and Safety Code. The six metal shredding facilities are located in the cities of Anaheim, Bakersfield, Colton, Long Beach, Oakland, and Redwood City. These cities are some of California's most densely populated communities, and together they account for 10 percent of the state's population. According to City-Data.com, the majority of California's industrial workforce is located in the major manufacturing centers of Los Angeles–Long Beach–Orange County and the San Francisco–Oakland–San Jose area. Demographic information related to the areas where each metal shredding facility is located is presented in Table 7.

Table 7.			
Demographics of Metal Shredding Facility Locations ^a			
	Population ^a	Unemployment Rate ^b	Poverty Rate ^c
Anaheim	351,043	5.4%	16.5%
Bakersfield	376,380	8.4%	19.8%
Colton	54,712	5.8%	22.1%
Oakland	420,005	5.4%	20.4%
Redwood City	84,950	2.9%	9.4%
Long Beach	470,130	5.9%	20.6%
^a United States Census Bureau, July 1, 2016 ^b California Employment Development Department, Labor Market Information Division, August 2017 ^c United States Census Bureau, 2015 American Community Survey, 5 Year Estimates			

Proximity of Treatment and Storage of Metal Shredder Wastes to Land Uses Described in Section 25227 of the Health and Safety Code

Section 25227 of the Health and Safety Code lists the following sensitive land uses:

- 1) Residences, including mobile homes or factory-built housing constructed or installed for use as permanently occupied human habitation;
- 2) Hospitals for humans;
- 3) Schools for persons under 21 years of age;
- 4) Day care centers for children; and
- 5) Any permanently occupied human habitation, other than those used for industrial purposes.

A Geographical Information System (GIS) tool was used to evaluate the proximity of sensitive receptors (child care facilities, health care facilities, census housing data, and kindergarten through twelfth-grade schools, as identified in section 25227(c)(1)(B), Health and Safety Code) to metal shredding facilities and landfills that accept CTMSR. The location of each of the identified land uses was marked by geographic coordinates, and the property boundary was used for the metal shredding facilities and landfills. A tool was developed that found the closest sensitive receptor to each of the metal shredding facilities and landfills. In the case of residences, the tool evaluated the distance between the property boundary of the metal shredding facility or landfill and land parcels that are designated as residential, whether an occupied residential structure was on the parcel or not.

The following images of Schnitzer Steel in Oakland and Simi Valley Landfill in Simi Valley show the results of the geographic information system (GIS) mapping for the facilities and landfills. The location and proximity of child care facilities, health care facilities, residential housing, and schools are shown for the two facilities. Images for the additional facilities are included in Appendix C.



GIS mapping of Schnitzer Steel Products, Oakland CA, showing proximity to sensitive receptors.



GIS mapping of Simi Valley Landfill, Simi Valley CA.

Table 8 displays the results of DTSC’s analysis, showing the closest distance between the metal shredding facilities and any of the identified land uses.

Table 8.				
Distance to Sensitive Receptors				
Location	Hospital for Humans	Schools (For Persons Under 21 Years of Age)	Day Care Centers (Children)	Residences
	Closest (in miles)	Closest (in miles)	Closest (in miles)	Closest (in miles)
SA Terminal Island	1.37	1.22	1.22	1.01
SA Anaheim	0.4	1.1	1.1	0.18
SA Bakersfield	1.6	1.4	1.12	0.1
Ecology Auto Parts	0.48	0.5	0.5	0.06
Sims Metal Management	1.58	1.57	1.79	0.73
Schnitzer Steel	0.35	0.12	0.39	0.23
Altamont Landfill	No health care facilities within 5 miles	3.8	No day care facilities within 3 miles	0.79
Holloway Landfill	3.89	3.59	No Day care facilities within 3 miles	3.68
Vasco Road Landfill	No health care facilities within 5 miles	1.37	1.85	0.02
Chiquita Canyon Landfill	0.91	1.2	0.91	0.12
Simi Valley Landfill	1.33	0.34	1.11	0.75

Table 8 shows that some of the metal shredder facilities or landfills where wastes are managed have sensitive land uses located within a mile of the facility. Sensitive land uses that are in close proximity would be especially vulnerable to releases that occur at metal shredding facilities or landfills.

Types of Potential Hazards Posed by Proximity of Metal Shredder Waste Activities to Land Uses Described in Health and Safety Code § 25227

The most likely hazard or risk posed by proximity to residences, hospitals, schools, day care centers, and other human habitation is the risk posed by off-site releases of hazardous waste, hazardous waste constituents, or treatment reagents. Releases of metal shredder waste and metal shredder waste constituents occur either as a result of routine, ongoing treatment or storage activities, or as a result of accidental occurrences. The proximity of these residential land uses to sites where metal shredder waste is being managed increases the risk and likelihood of exposure to those releases.

Regarding the potential impact of releases, it is important to consider the ambient background conditions that exist in communities near the metal shredding facilities evaluated and the landfills that accept CTMSR. To assess ambient conditions, DTSC used the CalEnviroScreen version 3.0 (CES) screening tool, created for CalEPA by the Office of Environmental Health Hazard Assessment (OEHHA). CES is a geospatial screening tool that evaluates a variety of factors, such as unemployment, potential exposures to pollutants, adverse environmental conditions, and the prevalence of certain health conditions, within census-designated tracts in California. Each census tract is assigned a unique CES score that incorporates the pollution and population factors specific to that census tract; a higher CES score indicates a greater burden on the community from activities occurring in the surrounding environment.¹¹⁷ Vulnerable communities are identified by CalEPA as geographic areas with CES scores between the 75th and 100th percentiles.¹¹⁸ The percentile indicates how each specific census tract ranks in relation to all of the census tracts throughout California (e.g., if a census tract is in the 80th percentile, it ranked higher than 80 percent of the remaining census tracts in California). Access to the mapping tool and additional information on the mapping tool development and application of indicators can be accessed on OEHHA's Web page.¹¹⁹

DTSC used the addresses of the metal shredding facilities and landfills that accept CTMSR to identify the census-designated tracts they are in, allowing the CES score and respective pollution and population information to be extracted. Census tract information for each metal shredding facility and landfill that accepts CTMSR is provided in Tables 9 and 10, respectively.

¹¹⁷ See Faust, J., August, L., Bangia, K., Galaviz, V., Leichty, J., Prasad, S., Schmitz, R., Slocombe, A., Welling, R., Wieland, W., and Zeise, L. Update to the California Communities Environmental Health Screening Tool, CalEnviroScreen 3.0. CalEPA OEEHA, January 2017.

<https://oehha.ca.gov/media/downloads/calenviroscreen/report/ces3report.pdf>

¹¹⁸ See Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De León), April 2017.

¹¹⁹ See OHEHA <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>

Table 9. CalEnviroScreen 3.0 Population and Pollution Characteristics Near Metal Shredding Facilities				
Facility Name & Address	CalEnviroScreen Percentile Range ^a	Population in Census Tract	Pollution Burden Percentile ^b	Population Characteristics Percentile ^c
SA Recycling, Terminal Island 901 New Dock Street Terminal Island, CA 90731	Not evaluated; low population, and health data are unreliable	61	99%	Incomplete evaluation; only asthma and cardiovascular disease contained data
SA Recycling, Anaheim 3200 East Frontera Street Anaheim, CA 92806	96 – 100%	6,488	97%	78%
SA Recycling, Bakersfield 2000 East Brundage Lane Bakersfield, CA 93307	96 – 100%	3,378	86%	99%
Ecology Auto Parts, Inc. DBA Pacific Rail Industries 785 East M Street Colton, CA 92324	96 – 100%	4,268	97%	96%
Sims Metal Management 699 Seaport Boulevard Redwood City, CA 94063	61 – 65%	2,108	86%	42%
Schnitzer Steel Products 1101 Embarcadero West Street Oakland, CA 94607	Not evaluated; low population, and health data are unreliable	71	63%	Incomplete evaluation; only asthma and cardiovascular disease contained data
^a The CES score for each census tract is the product of multiplying the pollution burden by population characteristics. The CES percentile range displayed allows for a relative ranking of CES scores for all census tracts throughout California. ^b Pollution burden is the average of the seven <u>exposure indicator percentiles</u> (ozone concentrations, PM 2.5 concentrations, diesel particulate matter emissions, drinking water contaminants, use of certain high-hazard and high-volatility pesticides, toxic releases from facilities, and traffic density) and the average of the five <u>environmental effect indicator percentiles</u> (toxic cleanup sites, groundwater threats from leaking underground storage sites and cleanups, hazardous waste facilities and generators, impaired water bodies, and solid waste sites and facilities). Note that the environmental effect indicator value was given half the weight of the exposure indicator when calculating the pollution burden value. ^c Population characteristics is the average of the three <u>sensitive population indicator percentiles</u> (asthma emergency department visits, cardiovascular disease as indicated by emergency department visits for heart attacks, and low birth-weight infants) and the average of the five <u>socioeconomic factor indicator percentiles</u> (educational attainment, housing burdened low income households, linguistic isolation, poverty, and unemployment).				

Three of the six metal shredding facilities are in census tracts with CES scores that fall between the 96th and 100th percentiles, meaning they are not only located in disadvantaged communities in California but are among those most burdened by pollution and population characteristics (SA Recycling in Anaheim, SA Recycling in Bakersfield, and Ecology Auto Parts; Table 9). Four of the six metal shredding facilities have a calculated pollution burden greater than 86 percent, and three of the six metal shredding facilities have a calculated population characteristic burden greater than 78 percent (Table 9). The location of these metal shredding facilities in disadvantaged communities demonstrates that any release of metal shredder wastes or metal shredder waste constituents would impact populations that are already burdened by other environmental factors, and those populations may exhibit greater sensitivity

due to a variety of factors. The population and pollution characteristics near landfills that accept CTMSR are shown in Table 10.

Table 10. CalEnviroScreen 3.0 Population and Pollution Characteristics Near Landfills That Accept CTMSR				
Facility Name & Address	CalEnviroScreen Percentile Range ^a	Population in Census Tract	Pollution Burden Percentile ^b	Population Characteristics Percentile ^c
Altamont Landfill & Resource Recovery 10840 Altamont Pass Livermore, CA 94550	41 – 45%	7,081	93%	16%
H.M. Holloway Surface Mine Landfill 13850 Holloway Road Lost Hills, CA 93249	86 – 90%	3,937	95%	64%
Vasco Road Sanitary Landfill 4001 N. Vasco Road Livermore, CA 94550	41 – 45%	7,081	93%	16%
Chiquita Canyon Sanitary Landfill 29201 Henry Mayo Drive Castaic, CA 91384	66 – 70%	3,110	66%	59%
Simi Valley Landfill & Recycling Center 2801 Madera Road Simi Valley, CA 93065	31 – 35%	8,420	50%	24%
Potrero Hills Landfill 3675 Potrero Hills Lane Suisun City, CA 94585	56 – 60%	6,808	52%	55%
<p>^a The CES score for each census tract is the product of multiplying the pollution burden by population characteristics. The CES percentile range displayed allows for a relative ranking of CES scores for all census tracts throughout California.</p> <p>^b Pollution burden is the average of the seven <u>exposure indicator percentiles</u> (ozone concentrations, PM 2.5 concentrations, diesel particulate matter emissions, drinking water contaminants, use of certain high-hazard and high-volatility pesticides, toxic releases from facilities, and traffic density) and the average of the five <u>environmental effect indicator percentiles</u> (toxic cleanup sites, groundwater threats from leaking underground storage sites and cleanups, hazardous waste facilities and generators, impaired water bodies, and solid waste sites and facilities). Note that the environmental effect indicator value was given half the weight of the exposure indicator when calculating the pollution burden value.</p> <p>^c Population characteristics is the average of the three <u>sensitive population indicator percentiles</u> (asthma emergency department visits, cardiovascular disease as indicated by emergency department visits for heart attacks, and low birth-weight infants) and the average of the five <u>socioeconomic factor indicator percentiles</u> (educational attainment, housing burdened low income households, linguistic isolation, poverty, and unemployment).</p>				

One of the six landfills that accepts CTMSR is located in a disadvantaged community (H.M. Holloway Surface Mine Landfill). Three of the six landfills have a calculated pollution burden greater than 93 percent, and three of the six landfills have a calculated population characteristic burden between 55 percent and 64 percent, with the remaining three below 24 percent. While the CES scores and respective calculated pollution and population characteristic burdens are lower for landfills, the same

conclusion regarding the populations' lowered ability to tolerate additional off-site releases could be made based on population size.

DRAFT

4 DEMONSTRATIONS REQUIRED TO ADOPT REGULATIONS

Pursuant to HSC Sections 25150.82(e)(1) through 25150.82(e)(4), the Legislature directed DTSC to make certain demonstrations in order to be authorized to adopt any alternative management standards. According to the Metal Shredding Facilities Law, DTSC cannot adopt alternative management standards unless it can make one of the following demonstrations:

1. The requirements that the alternative management standards replace are not significant or important in either of the following situations (Health and Safety Code Section 25150.82(e)(1)):
 - a. Preventing or mitigating potential hazards to human health or safety or to the environment posed by the activity; or
 - b. Ensuring that the activity is conducted in compliance with other applicable requirements of this chapter and the regulations adopted pursuant to this chapter.
2. A requirement is imposed and enforced by another public agency that provides protection of human health and safety and the environment that is as effective as, and equivalent to, the protection provided by the requirement, or requirements, that the alternative management standards replace (Health and Safety Code Section 25150.82(e)(2)).
3. Conditions or limitations imposed as part of the alternative management standards will provide protection of human health and safety and the environment that are equivalent to the requirement, or requirements, that the alternative management standards replace (Health and Safety Code Section 25150.82(e)(3)).
4. Conditions or limitations imposed as part of the alternative management standards accomplish the same regulatory purpose as the requirement, or requirements, that the alternative management standards replace, but at less cost or with greater administrative efficiency, and without increasing potential risks to human health or safety or to the environment (Health and Safety Code Section 25150.82(e)(4)).

DTSC must therefore satisfy one of the above required demonstrations in order to adopt any regulations establishing alternative management standards.

4.1 Hazardous Waste Management Requirements That Any Proposed Alternative Management Standards Would Replace

Each of the demonstrations in Section 25150.82(e) asks DTSC to analyze the requirements that the alternative management standards would replace, which are the existing hazardous waste management requirements. DTSC must therefore identify the existing hazardous waste management requirements that apply to metal shredding facilities. Any person who stores, treats, or disposes of hazardous waste must obtain either a full permit or a standardized permit from DTSC, unless the operation qualifies for coverage under a permit by rule. A full permit is a type of permit that is generally required for hazardous waste facilities that are managing federally regulated hazardous wastes, as well as for certain types of hazardous waste facilities managing California-regulated hazardous wastes (e.g., used oil recycling facilities). A standardized permit is a type of permit that is generally available for California facilities managing hazardous wastes that are not federally regulated. A facility with a standardized permit must comply with most of the operational requirements applicable to a full-permit facility, but the permit application process has been simplified. A permit by rule establishes management standards for

covered facilities as a class, rather than on a facility-specific basis. The following is a description of the permit standards that would apply to metal shredding facilities under a full or a standardized permit.

Facility-wide Standards

Article 2. General Facility Standards – The requirements in this article ensure that a metal shredding facility is being operated according to standards that apply to all hazardous waste facilities. It includes operating requirements such as obtaining an identification number and conducting a waste analysis. It also includes inspection requirements, personnel training, location standards (relative to seismic faults and floodplains, e.g.), and construction quality standards (to ensure the constructed units meet or exceed all design criteria and specifications in the permit). Design standards must also be addressed for issues such as foundations, low-permeability soil liners, geomembranes (flexible membrane liners), leachate collection and removal systems and leak detection systems, and final cover systems.

Article 3. Preparedness and Prevention – The requirements in this article ensure that a metal shredding facility is located, designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of metal shredder waste or metal shredder waste constituents to air, soil, or surface water.

Article 4. Contingency Plan and Emergency Procedures – The requirements in this article ensure a metal shredding facility has a plan and procedures in place for responding to emergencies.

Article 5. Manifest System, Recordkeeping, and Reporting – The requirements in this article ensure that a metal shredding facility is keeping accurate and complete records to document the disposition of metal shredder wastes under its management.

Article 7. Closure and Post-closure – The requirements in this article ensure that a metal shredding facility has developed a plan for when the facility eventually will close (and for post-closure if metal shredder wastes will remain), the required elements of that plan, and that the plan satisfies the requirements to certify that closure is complete.

Article 8. Financial Requirements – The requirements in this article ensure that a metal shredding facility has preserved sufficient financial resources to carry out its closure plan and certify closure of the facility, as well as to carry out a post-closure plan if applicable. This article also specifies insurance requirements to ensure a metal shredding facility has resources available to respond to sudden and non-sudden releases.

Article 9. Use and Management of Containers – The requirements in this article ensure that a metal shredding facility manages hazardous wastes in containers safely.

Article 10. Tank Systems – The requirements in this article ensure that a metal shredding facility manages metal shredder wastes in tanks (if used) safely.

Article 17. Environmental Monitoring and Response Programs for Air, Soil, and Soil-pore Gas for Permitted Facilities – The requirements of this article ensure that impacts resulting from metal shredder waste management activities are detected and responded to as quickly as possible.

Waste Pile Standards

As presented in both Section 1 and Section 3, the common way that metal shredder facilities store metal shredder wastes is in waste piles. In addition to the above requirements, “land disposal”¹²⁰ of metal shredder waste is subject to additional requirements; some generally apply to all land disposal methods, and some are specific to the method being used. “Land disposal method” is defined in Section 66260.10, Title 22, California Code of Regulations as “disposal of hazardous wastes on or into the land, including, but not limited to, landfill, surface impoundment, *waste piles*, deep-well injection, land spreading and co-burial with municipal garbage” (emphasis added), as well as “storage of hazardous wastes on or in the land, such as *waste piles* and surface impoundments, other than neutralization and evaporation ponds, for longer than one year” (emphasis added). “Pile or waste pile” is defined in that same section of regulations as “any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage and that is not a containment building.”

Because metal shredder wastes are stored in waste piles, the following articles in Chapter 14, Title 22, California Code of Regulations would apply to metal shredding facilities:

Article 6. Water Quality Monitoring and Response Programs for Permitted Facilities – The requirements in this article ensure that metal shredder waste constituents are not migrating from the waste pile, and mandate that the metal shredding facility perform corrective action when releases are detected.

Article 12. Waste Piles – The requirements in this article ensure that the metal shredder waste being stored in waste piles does not migrate via wind, surface water, or groundwater, and specify monitoring and leak detection requirements.

Waste Management Unit Specific Standards Applicable to Metal Shredding Facilities

Containment Building Standards: Many of the metal shredder waste management activities at metal shredding facilities are not conducted in containers or tanks or other devices that would prevent the release of metal shredder wastes and metal shredder waste constituents into the environment. One method to contain potential releases is to conduct the metal shredder waste management activities inside a “Containment Building.” A “Containment Building” is, according to Section 66264.1100, Title 22, California Code of Regulations, “a completely enclosed, self-supporting structure that is designed and constructed of manmade materials” meeting specified design standards, “has controls sufficient to prevent fugitive dust emissions,” and “is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel or equipment.” None of the metal shredding facilities evaluated by DTSC have installed or constructed a building that meets the design standards required by the regulation and would meet the definition of a containment building. If a metal shredding facility chose to use a containment building to demonstrate that it was conducting treatment in a building that was equivalent to a container or tank or other device, it would need to meet the standards applicable to Containment Buildings found in Article 29 in Chapter 14.

¹²⁰ According to Section 66260.10, Title 22, California Code of Regulations, “‘Land disposal’ means placement in or on the land, except in a corrective action management unit, and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes.”

Article 16. Miscellaneous Unit Standards: The metal shredding facilities are also using metal shredder waste management methods for which DTSC has not established specific management standards (e.g., conveyor systems used to transport metal shredder wastes between locations where it is being stored and treated). DTSC applies the standards applicable to Miscellaneous Units for any metal shredder waste management activities that are conducted in units for which no specific standards have been developed. The standards applicable to Miscellaneous Units are found in Article 16 in Chapter 14:

The requirements in this article ensure that the unit is located, designed, constructed, operated, maintained, and closed in a manner that ensures protection of human health and the environment. This article establishes performance and operating standards for hazardous waste management units that do not fit into any of the other unit descriptions. The applicable standards include requirements for monitoring, testing, analytical data, inspections, response, and reporting procedures and frequency.

The above hazardous waste permit standards are applied through a review of an application submitted by the facility operator to DTSC, unless the facility is covered by a permit by rule. The review is followed by the development of tailored specific permit conditions that are incorporated into an operations plan, and that detail the requirements applicable to the metal shredder facility, the metal shredder wastes being managed, the equipment and management methods being used, and the operator conducting the metal shredder waste management activities. These elements of the operations plan form the basis of the metal shredding facility's permit, and would provide the grant of authorization for the metal shredding facility to operate.

4.2 Demonstrations Required to Adopt Alternative Management Standard Regulations

The demonstrations in Section 25150.82(e) require DTSC to compare the alternative management standards to the requirements the alternative management standards would replace. In preparing this Analysis and its demonstrations, DTSC contemplated whether the Legislature intended DTSC to compare possible alternative management standards to the requirements currently in place under the "f letters" and OPP 88-6. DTSC dismissed this approach because the legislative intent of the Metal Shredding Facilities Law stated that "[i]t is the intent of the Legislature that the conditional nonhazardous waste classifications, as documented through the historical 'f letters,' be revoked and that metal shredding facilities be thoroughly evaluated and regulated to ensure adequate protection of human health and the environment." Furthermore, the regulation authorizing the "f letters" (subdivision (f) of Section 66260.200, Title 22, California Code of Regulations) merely addresses how waste is classified, not how it is managed. OPP 88-6 does contain such standards, but it is intended as policy for DTSC only, and is not authorized by any law. DTSC therefore must compare any proposed alternative management standards to existing hazardous waste control law.

4.2.1 First Demonstration Required by HSC § 25150.82(e)(1)

Pursuant to HSC Sections 25150.82(e)(1) through 25150.82(e)(4), the Legislature directed DTSC to make certain demonstrations in order to be authorized to adopt any alternative management standards. According to HSC Section 25150.82(e)(1), DTSC cannot adopt alternative management standards under the law's authority unless the requirements which the alternative management standards would replace are not significant or important in either of the following situations:

- a. Preventing or mitigating potential hazards to human health or safety or to the environment posed by the activity; or
- b. Ensuring that the activity is conducted in compliance with other applicable requirements of this chapter and the regulations adopted pursuant to this chapter.

Under this demonstration, DTSC must first evaluate whether permit requirements for metal shredding facilities are significant or important in 1) preventing or mitigating potential hazards to human health or safety and the environment or 2) ensuring compliance with other hazardous waste requirements.

Risks Addressed by Permit Standards Are Significant

Based on DTSC's analysis, the current treatment and storage practices of metal shredding facilities allow for releases of metal shredder wastes and their constituents into the environment. Releases also occur throughout the facilities' entire operational areas. These releases have resulted in significant soil contamination at each of the sites in areas of the metal shredding facilities where pavement had not been installed. For those metal shredding facilities which are paved, DTSC has not evaluated the construction or integrity of the pavement. The heavy metals stored on pavement and equipment used to transport metals easily degrade most types of pavement over time. The pavement's long-term integrity is therefore unknown.

In addition, as described in the information DTSC received from the RWQCBs (presented in Section 2.3), the pavement at most facilities has not been present for the entire operational history. In some cases, pavement was required in response to releases or enforcement actions. Soil contamination is likely to be present beneath the paved surfaces at all of them because these facilities lacked suitable safeguards to prevent releases of the metal shredder wastes.

DTSC has also identified (as presented in Section 2.3) many documented incidents of the dispersion of metal shredder wastes outside of facility boundaries. These emissions of light fibrous materials have been found to exceed regulatory thresholds when the LFM have been chemically tested.

DTSC has determined that the permitting standards are significant and important in addressing the soil and air releases identified above. Permit requirements are comprehensive, as outlined in Section 4.1. They address every aspect of hazardous waste management and would be tailored to each facility's operations. The installation of pavement would protect against further contamination of soil beneath the facilities, and approved treatment processes and structures would mitigate releases to areas outside of the facility perimeter. DTSC's permit application and review process will correct the potential for releases before they can result in impacts to human health or the environment.

DTSC has also determined that the permitting standards would ensure that metal shredding waste management is conducted in compliance with the Hazardous Waste Control Law and its implementation regulations. The permit mandates the most robust management standards that can govern a metal shredding facility. The permit addresses every aspect of hazardous waste management and ensure comprehensive oversight of the facility, providing the best guarantee that Chapter 6.5 of the Health and Safety Code and Title 22, California Code of Regulations are followed. Storage, treatment, and disposal are all overseen by a permit's authority. No other level of oversight is as equipped to ensure compliance with hazardous waste management as a facility permit issued by DTSC.

Based on these factors, DTSC cannot conclude that the existing hazardous waste management regulations and the hazardous waste facility standards are not significant or important in either:

- 1) preventing or mitigating potential hazards to human health or safety or to the environment, or
- 2) ensuring that the activity is conducted in compliance with other applicable requirements of Chapter 6.5 of the Health and Safety Code and Title 22, California Code of Regulations. DTSC was therefore unable to make this demonstration.

4.2.2 Second Demonstration Required by HSC § 25150.82(e)(2)

According to HSC Section 25150.82(e)(2), DTSC cannot adopt alternative management standards under the law's authority unless a requirement is imposed and enforced by another public agency that provides protection of human health and safety and the environment that is as effective as, and equivalent to, the protection provided by the requirement, or requirements, that the alternative management standards replace. In analyzing this second demonstration, DTSC evaluated whether the requirements imposed and enforced by other public agencies are equivalent to, or as effective as, the existing hazardous waste management regulations and the hazardous waste facility standards that are presented in detail in Section 4.1 above. As presented in Section 2.3, there are several environmental regulatory agencies that oversee or exercise jurisdiction over some activities at metal shredding facilities. These other environmental regulatory agencies exercise their jurisdiction and authority over the environmental media they are mandated to protect (e.g., the requirements implemented and enforced by the local air districts are intended to protect air quality, and the requirements implemented and enforced by the RWQCBs are intended to protect water quality). Still other agencies, such as Cal/OSHA, implement and enforce requirements intended to protect worker health and safety. None of these agencies oversee the entirety of the metal shredding facilities' treatment and storage of metal shredder wastes.

DTSC implements and enforces requirements intended to ensure that the treatment and storage of hazardous wastes are performed in a manner that protects the broader spectrum of public health and safety and the environment. The metal shredding facilities' generation and management of metal shredder wastes are all hazardous waste management activities. DTSC is the primary regulatory agency that oversees and regulates the treatment, storage, and disposal of hazardous wastes. No other agency provides oversight as broad as DTSC.

Lastly, DTSC's determination that metal shredder waste is hazardous is relied upon by other agencies. These agencies determine the scope of their respective authorities based on DTSC's classifications. No other agency can therefore regulate metal shredding facilities absent the regulatory involvement of DTSC and its requirements as the first line of defense for risks to human health and the environment.

Based on this, DTSC was not able to conclude that the requirements imposed and enforced by other public agencies are equivalent to, or as effective as, existing hazardous waste management regulations and hazardous waste facility standards.

DTSC was therefore unable to make the demonstration required by HSC Section 25150.82(e)(2).

4.2.3 Third Demonstration Required by HSC § 25150.82(e)(3)

According to HSC Section 25150.82(e)(3), DTSC cannot adopt alternative management standards under the law's authority unless conditions or limitations imposed as part of the alternative management standards will provide protection of human health and safety and the environment equivalent to the requirement, or requirements, that the alternative management standards replace.

DTSC evaluates here whether any alternative management standards could achieve an equivalent level of protection as the existing hazardous waste management regulations and the hazardous waste facility standards described in detail in Section 4.1 above. The highest level of protection is offered by a hazardous waste facility permit. These permits are tailored to ensure that permitted facilities are located, designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned releases to the environment.

As discussed throughout this Analysis, the current storage and treatment practices of metal shredding facilities have allowed for the release of metal shredder wastes and their constituents into the environment and their dispersal throughout the facilities' entire operational areas. These releases have resulted in significant amounts of soil contamination at each of the sites as well as impacts outside of facility boundaries.

Based on the observations of releases at metal shredding facilities, in addition to operational standards that are intended to prevent releases, alternative management standards must require the use of containment buildings that meet the Chapter 14, Article 29 standards for Containment Buildings, the pavement and liner requirements for Waste Piles in Chapter 14, Article 12, the environmental monitoring requirements for Water Quality Monitoring and Response Programs for Permitted Facilities in Chapter 14, Article 6, and the general requirements for Preparedness and Prevention in Chapter 14, Article 3 facility standards. These detailed requirements are not established within the regulations. Rather, the regulations establish the general objectives that are to be achieved, but the detailed requirements that would be carried out at each site are developed as part of the permitting process.

These permits must also consider the variability between facilities' operations, treatment equipment, pollution control equipment and practices, and environmental setting and proximity to nearby sensitive land uses, such as residences, schools, day care centers, and hospitals. Permits are also the only way to develop and apply standards to waste management units and activities for which specific standards do not exist. The development of a permit, and the application of the general permit standards to the site and the specific operations, equipment, and operator, tailor the hazardous waste management requirements in a way that can account for each facility's unique operations and location. In DTSC's view, this has been and continues to be the most effective method to achieve protection of human health or safety and the environment from risks and hazards posed by the treatment and storage of metal shredder wastes.

Considering the waste management practices that are being implemented by the metal shredding facilities, DTSC cannot envision a set of alternative management standards that could provide the required amount of detail within the regulations to achieve the intended safeguards and protections. The hazardous waste management requirements for permitted facilities are tailored or adapted to the industry-specific circumstances through the administration of the unique permit standards. Absent this tailoring, the safeguards and protections that could be achieved through alternative management

standards would not be considered “equivalent” to those provided by the hazardous waste management requirements for permitted facilities.

DTSC was therefore unable to make the demonstration required by HSC Section 25150.82(e)(3).

4.2.4 Fourth Demonstration Required by HSC § 25150.82(e)(4)

According to HSC Section 25150.82(e)(4), DTSC cannot adopt alternative management standards under the law’s authority unless conditions or limitations imposed as part of the alternative management standards accomplish the same regulatory purpose as the requirement, or requirements, that the alternative management standards replace, but at less cost or with greater administrative efficiency, and without increasing potential risks to human health or safety or to the environment.

DTSC evaluated whether any conditions or limitations that could be imposed as part of the proposed alternative management standards could accomplish the same regulatory purpose as the existing hazardous waste management regulations and the hazardous waste facility standards, regardless of their cost or administrative efficiency.

As described in the discussion of the Second and Third Demonstrations (see Sections 4.2.2 and 4.2.3 above), metal shredding facilities’ treatment and storage of metal shredder wastes has allowed the release of metal shredder wastes and their constituents into the environment and throughout the facilities’ operational areas.

DTSC has previously adopted alternative management standards of other hazardous wastes to promote administrative efficiency and lower costs (e.g., the Standards for Universal Waste Management in Chapter 23 of Title 22, California Code of Regulations or the Requirements for Units and Facilities Deemed to Have a Permit by Rule in Chapter 45 of Title 22, California Code of Regulations). In those cases, DTSC could make the required demonstration that reduced compliances costs and added administrative efficiency offered by those regulations did not sacrifice the necessary protections to human health and safety and to the environment. DTSC was able to make the demonstrations because the quantities of hazardous waste being managed under those alternative management standards were much smaller. In addition, the types of waste management activities being used with those wastes were limited, and because of that, detailed operating requirements could be developed and included in the alternative management standards that were adopted.

DTSC evaluated requirements that apply to permitted facilities to assess whether DTSC can propose a less costly or more administratively streamlined option that would not increase potential risks to human health or the environment.

Article 7. Closure and Post-closure – The requirements in this article ensure that metal shredding facilities develop a plan for when the facility eventually will close (and for post-closure, if hazardous wastes will remain). The article specifies the required elements of those plans, and the requirements to certify that closure is complete.

As described in this Analysis, the metal shredding facilities have been designed and operated in a manner that has resulted in significant surface and subsurface contamination. The facilities also manage significant quantities of hazardous wastes. Upon closure, these facilities may require a significant amount of waste disposal and environmental cleanup. In DTSC’s experience, a closure plan becomes more complicated, and its contents more critical, when larger volumes of hazardous waste and numbers

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of hazardous waste units are present at a permitted hazardous waste facility. In addition, a closure plan is increasingly more complicated when the soil beneath waste management units, or beyond waste management units, has been contaminated with hazardous wastes or constituents of the hazardous wastes. As documented in the Analysis, each metal shredding facility manages significant quantities of metal shredder waste. The shredder waste management areas encompass large proportions of their sites. As also documented in the Analysis, there have been significant releases of metal shredder wastes over the facilities' many years of operation, which has contaminated not only those areas where metal shredder wastes have been managed, but also areas well outside the metal shredder waste management areas, including areas outside of their site boundaries. These facts make closure of metal shredding facilities complex and expensive and in need of significant regulatory oversight. The lack of a robust closure plan could result in unaddressed long-term contamination at a site that could impact public health and the environment, with the cost of remediation to be paid for by public funds, if the contamination is remediated at all.

Closure plans for metal shredding facilities will require significant effort to prepare and are likely to require significant review and feedback from DTSC, as well as revisions based on that feedback. DTSC has imposed limited closure requirements in other alternative management standards it has adopted. In those instances, the closure requirements are either overseen by CUPAs or self-implemented and verified afterwards by DTSC. DTSC has included closure requirements in other alternative management standards it has previously adopted, such as its Universal Waste standards and its Permit by Rule standards. In those cases, the volumes of hazardous waste being managed are much more limited. In addition, the types of waste management activities and the types of waste management equipment being used are also more limited, and DTSC was able to tailor the regulations to include sufficient detail for them to be self-implemented, and later verified by either DTSC or a CUPA as being complete.

Because of the volume of metal shredder waste involved, the number of metal shredder waste management units present, and the amount of contamination that exists, DTSC does not believe a self-implementing or post-implementation verification could achieve an equivalent standard of protecting human health and the environment. A permit is necessary.

Article 8. Financial Requirements – The requirements in this article ensure that permitted metal shredding facilities preserve sufficient financial resources to carry out their closure plan and certify closure of the facility, as well as to carry out an approved post-closure plan if applicable. This article also specifies insurance requirements to ensure the facility has resources available to respond to sudden and non-sudden releases.

As described in this Analysis, the historical operation of the metal shredding facilities in their locations has resulted in significant surface and subsurface contamination. Because of this, the cost of closing the facilities, as well as potential post-closure and corrective action costs, are likely to be substantial. If the metal shredding facilities fail to set aside sufficient funds to pay for the costs of closure, post-closure and corrective action, the costs are likely to fall on California taxpayers and fee payers.

DTSC has imposed financial assurance requirements in other alternative management standards it has adopted. In those instances, the financial assurance mechanisms are for far lower values than metal shredding operations, management, and closure would entail because the amounts of hazardous waste are much smaller and the costs of closure much lower.

The metal shredding facilities manage very large amounts of metal shredder waste. They also employ a large number of metal shredder waste management units. Finally, each of the metal shredding facilities reviewed has significant amounts of soil contamination. The costs of closure (and, potentially, corrective action) may be significant. DTSC believes administering financial assurance requirements through alternative management standards would jeopardize California taxpayers and fee payers, increasing their risk of being required to pay the price of closing and cleaning up the metal shredding facilities. The permitting process will go further to ensure accurate financial assurance is implemented under stricter oversight.

Article 6. Water Quality Monitoring and Response Programs for Permitted Facilities; and Article 17. Environmental Monitoring and Response Programs for Air, Soil, and Soil-pore Gas for Permitted Facilities:

The requirements in these articles, applicable to surface impoundments, waste piles, land treatment units, or landfills, ensure that metal shredder waste constituents are not migrating from the metal shredder waste management units, and mandate that corrective action be performed when releases are detected.

As described in this Analysis, the metal shredding facilities have caused significant environmental contamination. In addition, the metal shredding facilities' current metal shredder waste management activities (e.g., management of hazardous wastes in piles) continue to contaminate the environment. The environmental monitoring programs described in this article are essential to both define the extent of contamination and to determine whether the releases from the metal shredding facilities are migrating off-site and posing a threat to the public and the environment, including groundwater. DTSC believes the environmental monitoring requirements are essential to protect human health and safety and the environment from the impacts of releases that occur during management of hazardous wastes. DTSC also believes administering the environmental monitoring requirements through alternative management standards would increase potential risks to human health or the environment. Requirements that could be implemented as alternative management standards would need to incorporate all of the detail necessary to ensure that the monitoring to be performed collects sufficient samples of the appropriate environmental media, in the appropriate locations, and to ensure that they are chemically analyzed for the contaminants of concern. Except in very limited cases, these details cannot be generalized or anticipated, but must be developed based on specific information. This is why the environmental monitoring requirements for permitted facilities are developed based on specific information that is gathered and evaluated as part of the permitting process.

Article 12. Waste Piles – The requirements in this article ensure that the metal shredder waste being stored in waste piles does not migrate via wind, surface water, or groundwater. The article specifies design and operating standards for the storage of metal shredder waste in waste piles, and specifies monitoring and leak detection requirements.

As presented in this Analysis, most of the management of metal shredder wastes is taking place in waste piles. This historical practice has resulted in significant environmental contamination and migration of contaminants from the metal shredder wastes, including LFM. DTSC believes the design and operating requirements for waste piles are essential to protect human health and safety and the environment from threats posed by the storage of metal shredder waste in waste piles on ground surfaces. DTSC also believes administering the waste pile requirements through alternative management standards would increase potential risks to human health or the environment.

Article 29. Containment Buildings – The requirements in this article ensure that metal shredder wastes managed in containment buildings are not released into the environment. The article establishes the design and operating standards for containment buildings.

The only management standard that DTSC could envision that would limit the risks and hazards posed by the storage of metal shredder waste in waste piles would be a prohibition on the use of waste piles. Releases from the metal shredder waste treatment and storage activities at the metal shredding facilities could be significantly controlled if they were conducted within containment buildings that met the Article 29 standards.

As described in this Analysis, the metal shredding facilities manage significant quantities of hazardous wastes. The design and construction of containment buildings that meet the Article 29 standards becomes more complicated, and the contents of proposed plans more critical, when larger volumes of hazardous wastes are being managed at the permitted hazardous waste facility. In addition, the shredder waste management areas encompass large proportions of their sites, which would require larger structures to contain the metal shredder waste management operations and releases from those operations.

The design plans for containment buildings at the metal shredding facilities will require significant effort to prepare, and are likely to require significant review and feedback from DTSC, with revisions based on that feedback. DTSC is aware of occasions where generators without permits have been able to install containment structures that meet their secondary containment requirements for container and tank storage. However, those instances involve much smaller quantities of hazardous wastes and far smaller containment buildings.

Because of the large volume of metal shredder waste involved and the large number of metal shredder waste management units that would need to be covered by a containment building, DTSC does not believe a containment building requirement that is self-implementing could control the potential risks to human health and the environment.

Based on these factors, DTSC cannot conclude that any alternative management standard DTSC could propose, or any conditions or limitations that could be imposed as part of those alternative management standards, could accomplish the same regulatory purpose as the existing hazardous waste management regulations and the hazardous waste facility standards, regardless of their cost or administrative efficiency. DTSC is therefore unable to make this demonstration.

4.3 Conclusions of the Required Demonstrations

DTSC evaluated the hazardous waste management activities at metal shredding facilities, and analyzed those activities to determine the hazards and risks that are posed to the surrounding communities. Based on those evaluations and analyses, the Metal Shredding Facilities Law authorizes DTSC to adopt alternative management standards if it can satisfy one of the demonstrations required by HSC Sections 25150.82(e)(1) through 25150.82(e)(4). DTSC has assessed each of the four demonstrations to determine whether alternative management standards would provide adequate safeguards for human health and safety and the environment.

In the first demonstration, DTSC evaluated whether the requirements of existing hazardous waste control law, including the requirement to obtain a permit to conduct hazardous waste treatment and

storage activities, are significant or important in preventing or mitigating potential hazards to human health or safety and the environment, or in ensuring compliance with other hazardous waste requirements.

DTSC found that the current practices for treatment and storage of hazardous waste at the facilities have allowed for releases of metal shredder wastes and their constituents into the environment. DTSC documented releases that resulted in soil contamination, contaminated storm water runoff, and emissions of light fibrous materials outside the boundaries of the facility. DTSC found that current practices create potential hazards to human health or safety and the environment.

DTSC determined that the existing permitting standards would ensure that metal shredding waste is managed in compliance with existing hazardous waste control law. The facility permit mandates the most robust management standards that can govern a metal shredding facility. No other level of oversight is as equipped to prevent or mitigate potential hazards to human health or safety and the environment, or to ensure compliance with other hazardous waste requirements, as a facility permit issued by DTSC; however depending on certain factors, a permit by rule may provide adequate protections.

In the second demonstration, DTSC evaluated whether the requirements imposed and enforced by other public agencies are equivalent to, or as effective as, the existing hazardous waste control law. Several public agencies exercise jurisdiction and provide regulatory oversight of metal shredding facilities, including local air districts, the regional water boards, and the CUPAs. However, DTSC found that none of these agencies oversee the entire range of hazardous waste management activities at the metal shredding facilities.

DTSC found that the requirements of hazardous waste control law are the most effective means to ensure that hazardous waste management activities are performed in a manner that protects the broader spectrum of public health and safety and the environment. DTSC is the primary regulatory agency that oversees and regulates the treatment, storage, and disposal of hazardous wastes.

Further, those other agencies rely upon DTSC's determination that metal shredder waste is hazardous waste. The scope of the agencies' respective authorities is then based on DTSC's determination. Therefore, no other agency can regulate metal shredding facilities absent the regulatory involvement of DTSC.

In the third demonstration, DTSC evaluated whether conditions or limitations could be developed that would provide protection of human health and safety and the environment equivalent to the requirement, or requirements, of existing hazardous waste control law. DTSC determined that the highest level of protection of human health and safety and the environment is offered by a hazardous waste facility permit.

These permits are tailored to ensure that facilities are located, designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned releases to the environment. These detailed requirements are not established within the regulations. Rather, the regulations establish the general objectives that are to be achieved at the facility, but the detailed requirements that would be established at each permitted site are developed as part of the hazardous waste permitting process.

DTSC found that the hazardous waste permit is the most effective method to achieve protection of human health or safety and the environment from risks and hazards posed by the treatment and storage of hazardous wastes. Absent this industry-specific tailoring, any safeguards and protections that could be developed would not be considered “equivalent” to those provided by the hazardous waste management requirements for permitted facilities.

In the fourth demonstration, DTSC evaluated whether conditions or limitations could be imposed that would accomplish the same regulatory purpose as the requirement, or requirements, of existing hazardous waste control law, but at less cost or with greater administrative efficiency, and while preventing potential risks to human health or safety or to the environment.

DTSC evaluated requirements that apply to permitted facilities to assess whether DTSC could propose a less costly or more administratively efficient option that would not increase potential risks to human health or the environment. Requirements on permitted facilities include Closure and Post-closure plans, Financial Assurance, and Environmental Monitoring and Response Programs.

DTSC found that because of the volume of metal shredder waste involved, the number of metal shredder waste management units present, and the amount of contamination that already exists, no self-implementing or post-implementation verification of these requirements could achieve an equivalent standard of protection for human health and safety and the environment, unless key conditions can be addressed to ensure effectiveness of a permit by rule.

Based on these four determinations, DTSC cannot conclude that alternative management standards would provide adequate safeguards for human health and safety and the environment:

- DTSC was not able to conclude that the existing hazardous waste management regulations are not significant or important in preventing or mitigating potential hazards to human health or safety or to the environment, or in ensuring that the activity is conducted in compliance with other applicable requirements.
- DTSC could not conclude that the requirements imposed and enforced by other public agencies are equivalent to, or as effective as, existing hazardous waste management regulations and hazardous waste facility standards.
- DTSC did not find any safeguards and protections that could be achieved through alternative management standards that would be considered “equivalent” to those provided by the hazardous waste management requirements for permitted facilities.
- DTSC found that any alternative management standards, conditions, or limitations that DTSC could propose would not accomplish the same regulatory purpose as existing hazardous waste management regulations and the hazardous waste facility standards, regardless of their cost or administrative efficiency.

DTSC has shown that there is no factual basis to make any of the four demonstrations required by the Metal Shredding Facilities Law. Therefore, DTSC will not adopt regulations to establish alternative management standards under the authority of the Metal Shredding Facilities Law.

5 CLASSIFICATION AND DISPOSAL OF CTMSR

Subdivision (i) of Section 25150.82 of the Health and Safety Code authorizes the alternative management standards adopted by DTSC to allow Chemically Treated Metal Shredder Residue to be classified and managed as nonhazardous waste. In order for this allowance to occur, DTSC's analysis must demonstrate that classification and management as hazardous waste is not necessary to prevent or mitigate potential hazards posed by CTMSR to human health or safety or to the environment.

CTMSR is currently disposed in six landfills (although 22 landfills are authorized to accept the waste for disposal). Altamont Canyon Landfill and Simi Valley Landfill typically receive approximately 60 percent of the state's total CTMSR for disposal.¹²¹ The six California landfills currently accepting CTMSR for disposal or for use as alternative daily cover (ADC) are shown in Table 11.

Table 11. Landfills Accepting CTMSR			
Landfill	Amount Accepted in 2014	Amount Accepted in 2015	Amount Accepted in 2016
Altamont Landfill & Resource Recovery 10840 Altamont Pass Livermore, CA 94550	163,402	146,058	167,179
Simi Valley Landfill & Recycling Center 2801 Madera Road Simi Valley, CA 93065	142,727	141,677	151,633
Vasco Road Sanitary Landfill 4001 Vasco Livermore, CA 94550	94,969	73,137	83,785
Chiquita Canyon Sanitary Landfill 29201 Henry Mayo Drive Castaic, CA 91384	60,351	73,406	85,999
Potrero Hills Landfill 3675 Potrero Hills Lane Suisun City, CA 94585	56,137	43,198	30,612
H.M. Holloway Surface Mine Landfill Lost Hills, CA 93249	24,396	N/A	N/A

The H.M. Holloway Landfill is an industrial landfill that does not accept municipal solid waste and does not use CTMSR as alternative daily cover. At Altamont and Vasco Road landfills, CTMSR is also used to

¹²¹ See Disposal Reporting System, California Solid Waste Statistics, CalRecycle, available at: <http://www.calrecycle.ca.gov/lgcentral/Reports/DRS>

absorb free liquids from other liquid or semi-solid wastes. Wastes which have free liquids are mixed with CTMSR until the combined material has greater than 50 percent solids by volume. The solidified waste is then transported to the active face of the landfill for use as ADC.

In the surveys they completed, the landfills reported that, except for rare occasions, CTMSR is used almost immediately for ADC and is not stored for periods exceeding two weeks or in amounts exceeding 300 tons at any of the landfills. The information from their surveys also indicated that the handling of CTMSR used as ADC at each of the landfills is similar. Upon arrival, the load of CTMSR is deposited in piles near the active face of the landfill where putrescible municipal wastes are being deposited. The municipal wastes are deposited into cells which contain one day's waste. As the cell is filled, the waste is compacted and then covered with CTMSR. At the end of each working day, the active face is completely covered with CTMSR that acts as a daily cover. ADC is placed over the municipal wastes at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. The handling at H.M. Holloway is different, because it does not accept municipal solid waste that requires the use of ADC, but instead disposes CTMSR directly.

5.1 Regulatory Oversight of Disposal of CTMSR

5.1.1 Water Quality: Regulation of Landfills by RWQCBs

According to the Santa Ana RWQCB: "The State Water Resources Control Board (SWRCB) issued two General Permits (General Industrial Activities Storm Water Permit and the General Construction Activity Storm Water Permit) to address most of the industrial facilities and the construction-sites within California. Individual storm water permits were adopted by a number of regional boards, including the Santa Ana Regional Board in Region 8. The regional boards administer the State's General Permits and the regional board's individual permits. The Santa Ana Regional Board adopted a sector-specific General Permit for storm water discharges from certain industrial facilities identified by the Standard Industrial Classification (SIC) Code 5093, specifically identifying metal scrap recyclers (excluding recycling facilities that only receive recyclable materials where no processes are performed on the metal scrap other than sorting, compaction, storage and transport). This sector-specific permit (R8-2012-0012, CAG 618001) was adopted on February 10, 2012."¹²² The Industrial General Permit (2014-0057-DWQ) became effective on July 1, 2015.

Per information provided by the SWRCB, facilities are required to obtain permit coverage under the Industrial General Permit (IGP) if they operate under a SIC code that is subject to the permit. Typically, recyclers fall into SIC 5015 or 5093, and landfills fall under SIC 4953, which all generally require permit coverage. These industrial activities are federally defined, and the IGP lists applicable activities in "Attachment A" of the general permit order (2014-0057-DWQ).¹²³

A facility covered under the IGP is assigned a Waste Discharge Identification (WDID) number, and a facility with Notice of Intent (NOI) coverage is required to adhere to all requirements in the IGP. Facilities with NOI coverage are generally required to create and implement a storm water pollution prevention plan (SWPPP) and site map, conduct monitoring and reporting, and install best management practices. The facilities would be required to identify monitoring locations in the SWPPP and site map,

¹²² https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/index.html

¹²³ Electronic correspondence between DTSC and the SWRCB.

and would be responsible for making those determinations, which are addressed in Section X of the permit.¹²⁴

Sampling and monitoring requirements are outlined in Section XI.B. of the permit. The discharger is required to sample two Qualifying Storm Events (QSEs) from July 1 to December 31, and two QSEs from January 1 to June 30 of the Reporting Year, and report results in the Storm Water Multiple Application and Report Tracking System (SMARTS). A QSE is defined as a storm event that produces a discharge for at least one drainage area and is preceded by 48 hours with no discharge from any drainage area at the industrial facility.¹²⁵

Similarly, the Santa Ana Region 8 sector-specific permit (R8-2012-0012, CAG 618001) addresses the monitoring, reporting and permit requirements in Sections I through X in the “Monitoring and Reporting Program No. R8-2012-0012” section of the permit. The test methods and minimum levels of constituents are provided in a revision of Table 3.¹²⁶ A facility would need to maintain all requirements of the permit to stay in compliance.

5.1.2 Solid Waste: Regulation of Landfills by CalRecycle and Local Enforcement Agencies

Municipal solid waste landfills are required to cover the “active face” of the landfill with earthen material at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. The active face is the working surface of a landfill where solid wastes are deposited during operation. Vectors include insects, rodents, or other animals capable of transmitting the causative agents of human disease.

CalRecycle has approved 11 types of earthen materials for use as alternative daily cover and established Alternative Daily/Intermediate Cover Guidelines to govern their use. The local enforcement agency must approve the use of any ADC on a site-by-site basis.

Section 41781.3 of the Public Resources Code states that the use of solid waste for beneficial reuse, including use as ADC, constitutes diversion through recycling, and is not considered disposal. In addition to CTMSR, CalRecycle has approved other waste-derived materials for use as ADC including construction and demolition waste, contaminated sediments, municipal waste water treatment plant sludge, and shredded tires. In total, CTMSR accounts for approximately 15 percent of all waste materials diverted for use as ADC statewide.¹²⁷

5.1.3 Air Quality: Regulation of Landfills by Local Air Districts

Local Air Districts also regulate activities at solid waste landfills related to the handling, storage, transportation and disposal of CTMSR. The solid waste landfills are required to employ management practices that minimize the fugitive emissions of dirt and debris from the downstream processes. Each

¹²⁴ Ibid.

¹²⁵ Ibid.

¹²⁶

https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/docs/scrap_metal/REVISED_TABLE_3.pdf

¹²⁷ Alternative Daily Cover White Paper, California Integrated Waste Management Board, October 2009.

particulate-emitting operation at a landfill is required to be abated to the extent necessary to ensure compliance with the Ringelmann No. 1 limitation. Controls include use of water sprays and dust suppressants at the active face of the landfill and for stockpiles at the rate and frequency necessary to ensure compliance with limits for visible emissions of particulate matter and to prevent wind erosion from these areas.

5.2 Hazardous Waste Management Activities

Transportation: CTMSR is transported from metal shredding facilities to California solid waste landfills by nonhazardous waste transporters in loads of 20 to 25 tons using standard end-dump trailers. CTMSR continues to exhibit hazardous waste characteristics, even after chemical treatment to stabilize the soluble metals in the waste. If the “f letters” were not in place, transportation of CTMSR would be regulated as a hazardous waste management activity, and a transporter would be required to be registered as a California hazardous waste transporter, to comply with all hazardous waste transportation regulations, and to accompany each shipment with a Uniform Hazardous Waste Manifest.

Landfill Management: CTMSR is managed at solid waste landfill facilities. There are two primary dispositions of the chemically treated metal shredder waste at landfills: disposal and use as alternative daily cover. CTMSR is either disposed along with the other solid wastes shipped to the landfill facility, or it is used as alternative daily cover. As previously discussed, CTMSR continues to exhibit hazardous waste characteristics, even after chemical treatment to stabilize the soluble metals in the waste. If the “f letters” were not in place, its disposal or use as alternative daily cover would be regulated as a hazardous waste management activity, and a metal shredding facility could not send CTMSR to a solid waste landfill. Instead, the waste would need to be sent to a hazardous waste landfill that has a hazardous waste facility permit issued by DTSC to conduct this activity, or to a landfill site that has received a variance from DTSC to accept this waste. Alternately, CTMSR could be transported to a landfill in another state or jurisdiction where it may not be regulated as a hazardous waste. In that case, the receiving facility would need to hold the appropriate authorization from the jurisdiction where it is located.

5.3 Assessment of Hazards Associated with Transportation of CTMSR

The hazards associated with the transportation of CTMSR to landfills include:

- A release of CTMSR to the environment if an accident occurs during transport to the landfill
- A release of CTMSR, or particulate from the waste, if the waste is not appropriately covered during transport

As discussed previously, CTMSR exceeds STLCs for zinc and occasionally for lead, and TTLCs for lead, zinc, and copper. These hazardous constituents can pose risks and hazards to public health and the environment if CTMSR were to be released into the environment.

Reasonably foreseeable releases of CTMSR, or of particulate from CTMSR, could occur if a truck transporting CTMSR is involved in an accident and the contents of its load are spilled, or if CTMSR is not adequately covered or contained during transport, and thus can be carried out of the truck due to wind dispersion.

The concerns of release during transport may be reduced if there is assurance that trucks remain covered during transport, and if CTMSR remains moist. California Vehicle Code Section 23114 requires that the operator of any vehicle on California's roadways must prevent any of the vehicle's contents from dropping, sifting, leaking, blowing, spilling, or otherwise escaping from the vehicle. These requirements apply equally to both hazardous wastes and nonhazardous wastes.

In addition, for trucks transporting CTMSR:

- Drivers must be adequately trained in the risks and hazards associated with CTMSR to ensure that they adequately respond to any transportation incidents.
- Transportation companies must possess adequate insurance coverage to be able to pay for costs associated with any accidents or transportation incidents.
- Shipments of CTMSR need to be adequately tracked from point of generation to disposal location to ensure that they are received and disposed of at the landfill as intended.

The regulatory requirements that would otherwise be applicable to the transportation of CTMSR if it is considered nonhazardous waste may be adequate, on their own, to ensure the prevention of the associated risks to public health and the environment. As was stated previously, most metal shredding facilities use a variety of best management practices to minimize the risks and hazards related to the transportation of CTMSR, and to the extent that they are used they are not adequate.

Although the requirements that govern the transportation of hazardous waste are designed to address all of the identified concerns, DTSC has also determined they are not necessary, specifically because the requirements in the Vehicle Code effectively regulate the release of CTMSR or hazardous constituents of CTMSR from vehicles during transportation. Additionally, based on its assessment, DTSC has not seen evidence of accidents or other transportation incidents that warrant the hazardous waste transportation requirements.

5.4 Assessment of Hazards Associated with CTMSR Use or Disposal at Landfills in California

The hazards associated with the acceptance and use or disposal of CTMSR at landfills include the migration of contaminants via leachate and groundwater, the migration of contaminants via surface water, and the migration of contaminants via the air. Each of these potential pathways is discussed in detail in the following sections.

5.4.1 Migration of Contaminants via Leachate and Groundwater

Contaminants in wastes that have been disposed to landfills have the potential to migrate via leachate and impact the subsurface and, potentially, groundwater and drinking water sources. Leachate is water in the landfill that either emanates from the moisture content of the disposed wastes or enters the landfill through rainfall that percolates through the waste and picks up soluble contaminants from the waste and ADC. If not captured in the landfills' systems designed to capture it, or if the systems are damaged or fail to perform as designed, the leachate can migrate into the environment, seeping to the surface or deep below ground surface to threaten groundwater and drinking water.

STLC is used to identify wastes that are hazardous due to the solubility of its regulated constituents. DTSC's Waste Extraction Test was designed to mimic the conditions a waste would be expected to

encounter in a solid waste landfill environment. The test serves as a predictor of the mobilization of hazardous constituents from wastes disposed in a solid waste landfill.

CTMSR has historically exceeded STLCs for zinc and occasionally for lead. It has also, for most of the past 30 years, been disposed or used as ADC in certain solid waste landfills that were authorized to receive it. Because both metal shredder residue and CTMSR have been disposed for a long period of time in some solid waste landfills, DTSC could reasonably assume that the leachate from those landfills would contain elevated levels of lead and zinc.

To validate this assumption, DTSC evaluated a comparative analysis, provided by one of the landfills, which compared leachate from landfills that accepted CTMSR for use as ADC with landfills that did not. Additionally, DTSC assessed leachate and surface water quality results using publicly available leachate and surface water monitoring data from SWRCB.

Geo-Logic Associates Comparative Leachate Study

In response to DTSC’s requests for information in preparation for this Analysis, Republic Services, owner and operator of several landfills in California (some of which use CTMSR as ADC), commissioned Geo-Logic Associates (Geo-Logic)¹²⁸ in 2014 to prepare a study to compare leachate from landfills that do accept CTMSR to landfills that do not. Geo-Logic concluded that landfills that accepted and used CTMSR as ADC did not have increased metals in leachate when compared to landfills that did not accept any CTMSR. Since Geo-Logic did not provide the raw data they used to draw these conclusions, DTSC was unable to confirm the report’s analysis or conclusions.

Geo-Logic compared leachate data from the landfills shown in Table 12 below:

Table 12. Landfill Data Used by Geo-Logic Comparative Leachate Study			
Landfill	Location	Received CTMSR	Number of Years CTMSR in the Landfill
Forward/Austin Landfill	Manteca, CA	Yes	20 years
Vasco Road Landfill	Livermore, CA	Yes	22 years
Ox Mountain Landfill	Half Moon Bay, CA	No	N/A
Keller Canyon Landfill	Pittsburg, CA	No	N/A

The narrative in Geo-Logic’s report offered the following data conclusions (excerpted here):

DTSC Comparative Leachate Analysis

Since lead and zinc in CTMSR have historically exceeded STLCs, DTSC conducted a comparative evaluation of the concentrations of lead and zinc in leachate from the landfills that accepted CTMSR to concentrations in leachate from landfills that had never accepted CTMSR. Leachate data for landfills was accessed through SWRCB’s GeoTracker system. Quarterly reports from February 2005 to March 2017

¹²⁸ Evaluation of Metal Shredding Residue Waste for Alternative Daily Cover, Geo-Logic Associates, January 21, 2014.

were reviewed from Vasco Road Landfill (Vasco Road), which accepts CTMSR. Monitoring reports from February 2005 to October 2016 were reviewed for Ox Mountain Landfill (Ox Mountain), which never accepted CTMSR. Analyte concentrations are shown in Table 13.

For Vasco Road, DTSC also evaluated lead and zinc concentrations in the leachate over time. There was a weak trend of decreasing concentrations of lead and zinc in the leachate during the time period evaluated. The decreasing trend is considered weak because 84 percent of the samples for lead were non-detect (r-squared of -0.35), and 52 percent of the samples for zinc were non-detect (r-squared of -0.34).

ProUCL 5.1 (US EPA) was used to conduct the comparative statistical analysis, using the Kaplan-Meier nonparametric method for the large numbers of non-detect values and the Gehan and Tarone-Ware tests (for non-detects and multiple detection limits) in two-sample hypothesis testing. Comparable hypothesis testing for lead concentrations was not found to be significantly different between Vasco Road and Ox Mountain. However, the zinc concentration was found to be significantly different, with Ox Mountain showing higher average zinc concentrations compared to Vasco Road. These comparisons of the concentrations of soluble metals in the leachate from landfills that accept CTMSR and those that do not accept CTMSR do not indicate that the soluble metals in CTMSR are solubilizing and migrating in the municipal solid waste landfills.

DTSC's assumption that the leachate from the landfills in which CTMSR has been consistently disposed of or used as ADC would show higher soluble lead and zinc results was not confirmed by the leachate data analyzed. DTSC concludes from this analysis that constituents from CTMSR are not migrating from the solid waste landfills.

Table 13. Landfill Leachate Analyte Concentrations for a Landfill That Accepts CTMSR and a Landfill That Does not accept CTMSR						
Analyte	Vasco Road			Ox Mountain		
	Number of Samples	Average Concentration (µg/L)	Number of Non-detects	Number of Samples	Average Concentration (µg/L)	Number of Non-detects
Lead	176	6.9	147	52	3.2	19
Zinc	176	9.8	91	51	19.3	6

5.4.2 Migration of Contaminants via Surface Water

Contaminants in wastes that have been disposed to landfills have the potential to migrate via surface water runoff during periods of rainfall. The surface water runoff, if not captured in the landfills' systems designed to capture it, or if the systems are damaged or fail to perform as designed, can migrate into the environment. Any off-site migration could contaminate the surface water drainages of the solid waste landfills and potentially migrate off-site, where it can come into contact with people or animals, or contaminate the environment. Because CTMSR is currently being disposed in some solid waste landfills, DTSC could reasonably assume that the surface water runoff from the solid waste landfills in which CTMSR is being disposed or used as ADC would contain elevated levels of constituents in CTMSR.

Similar to the leachate data evaluation from landfills that do, and do not, accept CTMSR, DTSC examined storm water sampling data for lead and zinc, since these were known constituents in CTMSR that exceeded STLC values. DTSC evaluated whether the averages of the reported sample results were statistically different from Simi Valley Landfill (Simi Valley), which accepts CTMSR, and from Sunshine Canyon Landfill (Sunshine Canyon), which does not accept CTMSR. Storm water monitoring data is dependent upon rainfall events, which are unpredictable and do not always result in sufficient water volume to sample, which is why the landfills chosen for the storm water evaluation differ from those used for the leachate evaluation. Storm water monitoring data from landfills was accessed from SWRCB's SMARTS database. Data contained in the SMARTS database is self-reported by the holders of the storm water permits. Where available, DTSC corroborates the data in the SMARTS database against respective laboratory reports uploaded by the permit holders. Analyte concentrations from those reports are shown in Table 14.

For Simi Valley, sample results for lead and zinc from 2008 to 2014 were uploaded for five qualifying storm events. In 2014, water samples were collected from two different locations around Simi Valley. Data on lead was available, but zinc was not analyzed in all sampling events. For Sunshine Canyon, sample results for lead and zinc from 2013 to 2017 were uploaded for 17 qualifying storm events. ProUCL 5.1 (US EPA) was used to conduct the comparative statistical analysis.¹²⁹ Visual data comparisons were also conducted utilizing box-whisker and quantile-quantile plots. Comparable hypothesis testing results for lead and zinc concentrations were not found to be significantly different between Simi Valley and Sunshine Canyon. These comparisons demonstrate that the concentrations of soluble metals in the surface water runoff from landfills that accept CTMSR and those that do not accept CTMSR are not significantly different.

DTSC's hypothesis that the surface water at solid waste landfills in which CTMSR has been disposed or used as ADC would have higher concentrations of lead and zinc migrating via surface water into the environment was not confirmed by the analysis of surface water data. DTSC concludes from this analysis that constituents from CTMSR do not appear to be migrating from the solid waste landfills via surface water.

For Leachate: For Vasco Road, DTSC also evaluated lead and zinc concentrations in the leachate. A visual inspection of the data indicated that there was weak trend of decreasing concentrations of lead and zinc in the leachate during the time period evaluated. The decreasing trend is considered weak because 84 percent of the samples for lead were non-detect, and 52 percent of the samples for zinc were non-detect.

ProUCL 5.1 (US EPA) was used to conduct the comparative statistical analysis of lead and zinc concentrations in the leachate.¹³⁰ Visual data comparisons were also conducted utilizing box-whisker and quantile-quantile plots. Comparable hypothesis testing for lead concentrations was not found to be significantly different between Vasco Road and Ox Mountain. However, the zinc concentration was

¹²⁹ US EPA's ProUCL software used the Kaplan-Meier nonparametric methods for Gehan, Tarone-Ware, and Wilcoxon-Mann-Whitney tests in two-sample hypothesis testing

¹³⁰ US EPA's ProUCL software used the Kaplan-Meier nonparametric method for the large numbers of non-detect values and the Gehan and Tarone-Ware tests (for non-detects and multiple detection limits) in two-sample hypothesis testing.

found to be significantly different, with Ox Mountain showing higher average zinc concentrations compared to Vasco Road. These comparisons of the concentrations of soluble metals in the leachate from landfills that accept CTMSR, and those that do not accept CTMSR, do not indicate that the soluble metals in CTMSR are solubilizing and migrating in the municipal solid waste landfills.

Table 14.
Storm Water Monitoring Analyte Concentrations from a Landfill That Accepts CTMSR and a Landfill That Does Not Accept CTMSR

Analyte	Simi Valley Landfill			Sunshine Canyon Landfill		
	Number of Samples	Average Concentration (ug/l)	Number of Non-detects	Number of Samples	Average Concentration (ug/l)	Number of Non-detects
Lead	6	11.9	0	17	39.1	0
Zinc	4	200	0	17	829	0

5.4.3 Migration of Contaminants from Landfills via Air

Contaminants in wastes that have been disposed to landfills have the potential to migrate through airborne dispersion from wind. Windborne particulate dispersion, if not prevented through the landfills' management practices, can migrate into the environment, contaminating the area surrounding the active face of the landfill, including the surface water drainages of the solid waste landfills. It could also potentially migrate off-site, where it could come into contact with people or animals, or contaminate the environment.

If CTMSR being disposed or used as ADC in solid waste landfills, or particulates from it, were to migrate through the air, DTSC could reasonably assume that measurable concentrations of contaminants commonly found in CTMSR would also be found in samples of air collected at the landfill. DTSC could also reasonably assume that measurable concentrations of the same contaminants would be found in storm water samples, since particulate migrating from a source will come to rest downwind at a distance that varies by particle size, density, wind speed, and topography.

As discussed above, DTSC did not observe a statistical difference between concentrations of contaminants commonly found in CTMSR in surface water samples collected at a landfill that accepted CTMSR and a landfill that did not. The surface water analysis is evidence that DTSC's hypothesis of windborne dispersion is not confirmed, and that chemically treated metal shredder waste, and constituents from the waste, do not appear to be migrating via air from the landfills where it is being placed or disposed.

In addition to the analysis of the surface water data, DTSC contracted to collect air samples at two landfills that receive CTMSR: Vasco Road Landfill and Simi Valley Landfill. The sampling was based on previous air studies conducted at three metal shredding facilities, and was designed to determine the

potential for migration of particulate matter from the two landfills.¹³¹ Sampling was conducted at the landfills between August and September of 2017.¹³²

The air samples were analyzed for TSP, PM 10, and PM 2.5, and the collected particulate matter samples were further analyzed for metals, including lead. Samples from both landfills frequently exceeded the annual or 24-hour ambient air quality standards for PM10 or PM2.5. Lead is the major metal contaminant of concern which has an established regulatory threshold. However, the sampling results showed that the highest concentration of lead at either landfill was 0.0161 ug/m³. This value is just over 1/10 of the National Ambient Air Quality Standard for lead of 0.15 ug/m³ (3-Month Average). Further, DTSC's review of the data indicated that the measured lead concentrations were well below National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits and the OSHA Permissible Exposure Limits of 0.050 mg/m³.¹³³

Based on DTSC's review of the air monitoring data from the shredders and landfills, DTSC does not expect CTMSR or contaminants commonly found in CTMSR to migrate off-site at a landfill via the pathway of windborne particle dispersion. The measured concentrations of hazardous metals in the air monitoring samples collected from the landfills were skewed towards the larger particle sizes (which are not expected to travel long distances before dropping out of the air). Based on these results, DTSC does not expect the CTMSR used as ADC, nor contaminants commonly contained in it, to migrate off-site at a landfill via windborne particulate dispersion. The measured concentrations of hazardous metals in samples collected from the landfills were also skewed toward the larger particle sizes based on the differences between the TSP and smaller sizes, and were in general even lower than the concentrations measured at the shredder facilities. This supports DTSC's assumption, based on the air sampling data collected from the metal shredding facilities, that neither CTMSR used as ADC, nor contaminants commonly contained in it, would be expected to migrate off-site at a landfill via windborne particulate dispersion.

5.5 Evaluation Findings and Conclusions

CTMSR exceeds hazardous waste regulatory threshold levels. The metal shredding industry, through its treatability study, has demonstrated that it can improve the performance of the treatment, but that it still cannot achieve a reduction in soluble levels below STLCs for zinc and, in some instances, lead. It also verified that the chemical treatment cannot affect the total concentrations of lead, copper, or zinc.

In evaluating the potential hazards and possible harm that could be associated with the management of this residue when disposed in solid waste landfills for the past 30 years, DTSC has concluded that its continued disposal as nonhazardous waste, including its use as ADC, has not resulted in harm to human health or safety or to the environment, and that there is no evidence available that demonstrates its ability to contribute to the solubilization and migration of heavy metals from the solid waste landfills into which it has been placed as a nonhazardous waste.

¹³¹ See Air Monitoring Summary Reports for SA Recycling – Terminal Island, SA Recycling – Bakersfield, and Sims Metal Management, December 2016, available at: <http://www.dtsc.ca.gov/HazardousWaste/MetalDocLib.cfm>

¹³² See Sampling and Analysis Plans for Air Sampling at Vasco Road Landfill and Simi Valley Landfill, August 2017, available at: <http://www.dtsc.ca.gov/HazardousWaste/MetalDocLib.cfm>

¹³³ See "NIOSH Pocket Guide to Chemical Hazards"; Department of Health and Human Services, Center for Disease Control and Prevention, National Institute for Occupational Safety and Health, 2010.

However, although CTMSR is identified as a hazardous waste, DTSC believes that the classification and management of it as a hazardous waste is not necessary to prevent or mitigate potential hazards to human health or safety or to the environment posed by it, if appropriate conditions are developed.

DTSC therefore concludes that CTMSR does not need to be classified and managed as a hazardous waste to prevent or mitigate potential hazards to human health or safety or to the environment. As a result, DTSC concludes that it may continue to be classified as a nonhazardous waste, and continue to be disposed of, or used as ADC, in solid waste landfills in California with certain limitations. Because DTSC's conclusions are based on comparative analyses using data from landfills that are currently receiving CTMSR, DTSC's conclusions would continue to be supported only if the solid waste landfills to which CTMSR is sent meet the same general description as those to which it has been sent historically. The landfills that have historically received CTMSR have disposed or used as ADC in a composite-lined portion of their solid waste landfill unit which meet all requirements applicable to disposal of municipal solid waste in California after October 9, 1993, and the landfills are authorized to accept it by the appropriate RWQCB.

DRAFT

6 CONCLUSION

DTSC has prepared this report to evaluate and analyze metal shredding facilities and the wastes they generate, in order to identify the most appropriate level of regulatory oversight necessary to protect public health and safety and the environment. DTSC's purpose in issuing this report is to describe the public health and environmental threats posed by metal shredding facilities and their wastes and to begin the process of ensuring that these facilities comply with existing hazardous waste control law, so that the important public health and environmental protections that existing law provides are afforded to the communities near these facilities.

In conducting the evaluation of metal shredding facilities and their hazardous waste management practices, DTSC found numerous examples of accidents, improper hazardous waste storage, soil contamination, and hazardous waste releases outside the facilities that were found to be contaminating the surrounding community. DTSC noted an explosion in the air pollution control system at the SA Recycling facility in Terminal Island in 2007 that resulted in the release of contaminants to the community; the Los Angeles County District Attorney's Office reached a \$2.9 million settlement for those violations. DTSC identified releases of light fibrous material from the Sims facility in Redwood City in 2012, with light fibrous material subsequently found in ponds at the neighboring Cargill Salt facility; DTSC referred the case to the California Attorney General's Office, and Sims agreed to pay \$2.4 million to settle the civil environmental enforcement action. DTSC also noted a series of fires at Sims in 2013 that resulted in shelter-in-place orders for nearby residents. At the Schnitzer facility in Oakland in 2015, DTSC inspectors collected samples from areas where scrap metal was stored or being processed and found exceedances for chromium, lead, nickel, zinc, and copper. Also in 2015, DTSC conducted an inspection at the Ecology facility in Colton and found similar releases and contamination. DTSC is evaluating appropriate enforcement actions for these facilities.

DTSC then performed an analysis of the treatment and storage activities at the metal shredding facilities, the chemical and physical hazards that those activities present, the types of accidents that could occur, and the risks those activities pose to nearby communities. DTSC found that the hazardous waste management activities pose substantial risks to nearby communities. DTSC next evaluated whether alternative management standards—alternative regulations to existing hazardous waste control law—could be developed that would provide adequate protection for human health and safety and the environment. DTSC showed through a series of demonstrations that the most appropriate level of regulation for facilities of this size, that are managing hazardous wastes of these types and in these volumes, is a hazardous waste permit. As a result of this analysis, DTSC will not be adopting alternative management standards as authorized by the Metal Shredding Facilities Law.

DTSC also evaluated the longstanding practice of disposal of chemically treated metal shredder waste in municipal landfills to identify threats and risks that would warrant a change in these practices. DTSC found no evidence of migration from landfills that have been accepting this material for over 30 years. DTSC evaluated the potential for migration of the waste through air dispersion, surface water runoff, and leaching into groundwater. DTSC found minimal impacts to air from the standard management practices at the landfills. Comparing surface water and leachate data from landfills that receive the waste with data from landfills that have never accepted the waste, DTSC found no discernable difference in the data from the compared landfills, which indicates that there is no additional risk posed by continued disposal of the waste in municipal landfills under specified conditions. DTSC concluded that

classification of CTMSR as a hazardous waste is not necessary to prevent or mitigate potential hazards to human health or safety or to the environment posed by the treated metal shredder waste. DTSC intends to promulgate regulations that exclude CTMSR from classification as a hazardous waste under separate statutory authority.

DTSC's evaluation and analysis of metal shredding facilities and their hazardous waste management practices have demonstrated that, although the Metal Shredding Facilities Law authorized DTSC to adopt management standards as an alternative to the existing hazardous waste management requirements, the risks and hazards posed by the hazardous waste management activities conducted at metal shredding facilities require the protections that can only be provided by the existing hazardous waste management requirements. This report is intended to serve as a basis for establishing enforceable requirements for metal shredding facilities through a hazardous waste permit. Through the formal permitting process, DTSC will ensure that these facilities come into compliance with existing law, and that adequate protections are developed and implemented for human health and safety and the environment. DTSC intends to work with the metal shredding industry and other stakeholders during a transition period to develop and implement the new permitting requirements.

DTSC looks forward to working in an open and cooperative way with the public, the regulated community, and other stakeholders in the permitting process and when the department announces its proposed rulemaking. DTSC is committed to work transparently to implement safeguards for public health and safety and the environment. DTSC anticipates conducting public workshops on the proposed regulatory action in early 2018, and DTSC welcomes input from all stakeholders.

**APPENDIX A: DTSC QUESTIONNAIRE RESPONSES FROM ALL SHREDDERS
(REDACTED)**

SIMS METAL MANAGEMENT REDWOOD CITY RESPONSE 7/17/15

DTSC METAL SHREDDING QUESTIONNAIRE 5/8/15

- 1. Describe your facility’s scrap metal acceptance policy and describe all materials you bring into your facility for shredding, metals recovery or both

The Redwood City Facility of Sims Metal Management (Sims) purchases mainly shreddable ferrous scrap that is managed in the Shredder. The Facility’s scrap metal acceptance policy is described as follows: The Facility maintains a Prohibited Materials List (see attached) that clearly identifies items prohibited from purchase with inbound material. Regular suppliers are informed of Prohibited Materials through their Account Managers. They are required to sign a Scrap Acceptance Agreement (see attached) through which they certify that they will not send the facility Prohibited Materials. Suppliers such as peddlers who do not execute a Scrap Acceptance Agreement warrant that their inbound materials do not contain Prohibited Materials. The scale operator also provides peddlers and other suppliers the list of Prohibited Materials in both English and Spanish. In addition, for all suppliers: The Facility has prohibited materials signage located at the entrance to the Facility. Loads are inspected at the scale and by inspectors in the unloading areas. Material handlers also assist in the inspection process. If prohibited materials are identified in inbound materials during the inspection process the prohibited materials and/or the entire load are rejected.

- 2. How much material by weight did your facility shred from January 1, 2015 through January 1, 2015. Include the percentage of total materials shredded annually for each of the following: vehicles, appliances, and other forms of scrap metal.

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #2 is considered Proprietary Confidential Business Information by Sims.

[REDACTED]

- 3. What type of shredder (e.g., the model, brand, and its horse power) is used by your facility?

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #3 is considered Proprietary Confidential Business Information by Sims.



**4. Is your facility’s shredder equipped with an Air Pollution Control Device (APCD)?
How else does our facility control any particulate emissions throughout the facility?**

The Shredder at the Redwood City Facility has an Air Pollution Control Device (APCD) which is a permitted source with the BAAQMD. The APCD collects emissions from the Shredder from the Undermill Oscillator (UOM) and directs the air through a cyclone and then a wet scrubber system. This system is more fully described in response to Question 6.

The Facility utilizes multiple BMPs for fugitive dust control including buildings and other structures, coverings or containment around conveyor systems, fabric covered fencing with candy cane tops, sprinklers, dust bosses, sweepers, and manual sweeping/portable vacuum units. Sims is currently working with the BAAQMD on the finalization of the Redwood City Facility Emissions Minimization Plan (EMP) which addresses fugitive emissions in accordance with the BAAQMD Regulation 6. Rule 4: Metal Recycling and Shredder Operations (see attached Draft EMP).

5. Provide a copy of all permits and other forms of authorization issued to your facility by any governmental entity related to metal shredding activities.

Sims Metal Management Redwood City Permits

- BAAQMD - Air Permit – Shredder - attached
- DTSC - Certified Appliance Recycler Permit - attached
- RWQCB - Industrial Storm Water Permit – Notice of Intent(NOI) attached
- San Mateo County Environmental Health - CUPA Permit - attached
- State of CA DOSH – Air Pressure Tanks/LPG Gas Permits attached
-

6. Describe the ferrous metals separation process, including how shredded material is sent to the ferrous metals separation process, the type of magnet used, if any and under what circumstances would materials exiting the ferrous metals separation process be reintroduced. Also indicate if your facility recovers ferrous metals from any material that is not shredded at your facility. If so, please describe that process. Please include representative pictures of the ferrous recovery process and a site map of where activities occur when applicable.

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #6 is considered Proprietary Confidential Business Information by Sims.



[REDACTED]

7. Is the shredded material ever stored onsite before ferrous metal recovery occurs? Is so, on average how much and for how long is it stored, how is it stored (e.g., on a paved surface), and where in the facility is it stored?

The magnets are in line with the Shredder and thus ferrous metal recovery occurs immediately following shredding. There is some ferrous metal recovery in the Non-Ferrous Separation process including an over-band ferrous metal magnet on the final aggregate conveyor after treatment.

8. If ferrous metals recovery does not occur onsite, please respond to the following questions:

- How much shredded material is stored onsite?
- How long is shredded material stored onsite?
- How is the shredded material stored (e.g. on paved ground)?"?
- Where in the facility is the shredded material stored?
- Where is the shredded material sent (please include addresses)?

Not Applicable to the Redwood City Facility

9. Describe the nonferrous metals separation process at your facility, if any. Describe how aggregate (i.e. the shredded material remaining after ferrous metals separation) is introduced into that process, the type of system (s) used, where in your facility it occurs, and under what circumstances would materials exiting nonferrous metals separation processes be reintroduced. Also indicate if your facility recovers nonferrous metals from any material that is not shredded at your facility. Please provide a site map of where activities occur.

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #9 is considered Proprietary Confidential Business Information by Sims.

[Redacted content]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

10. Is aggregate ever stored onsite prior to or during the nonferrous metals separation process, if so, how much is stored and for how long? Identify where in your facility it is stored.

Aggregate is stored in Building E at the MRP. Approximately 2100 tons of aggregate could potentially be stored in the building but the Facility makes an effort to process the aggregate "to the ground" every day. Daily processing can range from 200 to 500 tons of aggregate. On average, there is no more than 300 tons present in the building each day.

11. If nonferrous metals recovered does not occur onsite, please respond to the following questions:

- How much aggregate is store onsite?
- How long is aggregate stored onsite:
- How is the aggregate stored (e.g., on pave ground)?
- Where in the facility is the aggregate stored? Where is the aggregate sent (please include addresses)?
- Describe the offsite transportation and if any Department of Transportation (DOT) requirements are followed.

This question is not applicable to the Redwood City Facility.

12. Describe how your facility chemically treats metal shredder waste. For the purposes of this document only, “metal shredder waste” shall mean the material remaining after metal recovery is complete. Include how metal shredder waste not chemically treated is sent to the treatment process, how screening is conducted, the type of equipment used to perform the chemical treatment, chemical formulas and doses, and the sampling and analysis performed on the chemically treated metal shredder waste to ensure adequate treatment.

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #12 is considered Proprietary Confidential Business Information by Sims.

[REDACTED]

13. Do landfills, regional water quality control boards, or other regulating authority impose any requirement on treated metal shredder waste sent for disposal or use as Alternative Daily Cover (ADC)? If so, what are the requirements?

The Redwood City Facility complies with all the requirements from the landfills for the management of treated metal shredder waste (treated auto shredder waste or TASW). Each landfill received approval from the Regional Water Quality Control Board to utilize this material as ADC at their landfill and to our knowledge follows the Waste Disposal Requirements (WDRs) under those approvals.

14. Is untreated metal shredder waste stored onsite prior to treatment? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?

No - All aggregate exiting the non-ferrous separation area immediately goes through treatment, so no untreated metal shredder waste is stored at the Facility.

- 15. Is treated metal shredder waste stored on site before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?**

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #15 is considered Proprietary Confidential Business Information by Sims.

[REDACTED]

- 16. How much treated metal shredder waste, if any, was transported offsite in the calendar year January 1, 2014, through January 1, 2015? List all destinations with addresses.**

CONFIDENTIAL BUSINESS INFORMATION (CBI) – The information provided in response to Question #16 is considered Proprietary Confidential Business Information by Sims.

[REDACTED]

[REDACTED]

- 17. Describe the offsite transportation of metal shredder wastes. Are there any DOT requirements followed during transportation?**

Treated metal shredder waste or TASW is shipped to the landfills by subcontracted trucks hauling end dumps. The empty trucks drive into an enclosed structure specifically designed and constructed to load TASW into the trailers. The doors of the structure are closed while the end dumps are loaded inside, in order to minimize fugitive emissions. Once loaded the trucks are tarped before they travel on-road to the landfills. The subcontracted trucks are required to comply with those California DOT requirements pertaining to vehicles hauling non-hazardous waste materials.



Schnitzer Steel Products Company
1101 Embarcadero West
Oakland, CA 94607

Metal Shredding Facility Questionnaire- Schnitzer Steel

1. Describe your facility's scrap metal acceptance policy and describe all materials you bring into your facility for shredding, metals recovery or both.

Schnitzer Steel recycles the following types of metal at our facility:

Ferrous Metals to Be Shredded

- Ferrous (Iron containing scrap) Metals of light gauges, grades and sizes.
 - a. End of life vehicles-depolluted only.
 - b. End of life appliances-depolluted only.
 - c. Ferrous demolition scrap.

Ferrous Metals to Be Sheared and/or Torch Cut (Not Shredded)

- Ferrous (Iron containing scrap) metals of heavy grades, gauges, and sizes.

Non-Ferrous Metals to Be Collected, Packaged, and Shipped to End Users (Not Shredded):

- Copper scrap metal
- Aluminum scrap metal
- Stainless steel scrap metal
- Some limited electronic scrap (Schnitzer Steel is an authorized E-waste collector)
- Lead acid batteries (purchased and resold as commodities; not shredded)

Schnitzer Steel has a robust written scrap acceptance policy which prohibits acceptance of hazardous materials and/or waste in our incoming scrap metal streams. This policy is designed to keep prohibited material out of Ferrous scrap streams and especially shredder feedstock. This policy includes, but is not limited to prohibitions on materials such as:

- Items with elemental Mercury.
- Batteries such as NiCad, Li Ion, Alkaline, etc.
- E-waste (Schnitzer Steel will purchase some electronic scrap for recycling as a separate commodity)
- Scrap with free-flowing liquids (i.e. used oil, etc.)
- Scrap with CFC's (i.e. Refrigerants)

- Scrap with PCBs (i.e. capacitors, ballasts, transformer oil, etc.)
- Military Munitions and other explosives.
- Scrap metal with asbestos
- Radioactive scrap metal
- Materials which contained hazardous materials or waste not meeting the definition of empty (22 CCR 66261.7)

See attached Schnitzer Steel's attached Scrap Acceptance Policy and attached ISRI material specification document.

2. How much material by weight did your facility shred from January 1, 2014 to January 1, 2015? Include the percentage of total materials shredded annually for each of the following: vehicles, appliances, and other forms of scrap metal.

Schnitzer considers the amount of metal shredded at our facility to be Confidential Business Information/Proprietary.

[REDACTED]

3. What type of shredder (e.g., the model, brand, and its horsepower) is used by your facility?

Riverside Engineering Model 122 x 102 which is 9000hp.

4. Is your facility's shredder equipped with an Air Pollution Control Device (APCD)? How else does your facility control any particulate matter emissions throughout the facility?

Yes, our shredder emissions are abated by a water spray system, irrigated cyclone scrubber (venturi scrubber), mist eliminator, moving dry belt filter, and simple cyclone (This simple cyclone is downstream of the magnets and is used to further remove non-metallic material from the shred prior to the conveyor that sends shred to the pile. By minimizing non-metallic in the shred, emissions are minimized when discharging shred to the stockpile.), and regulated by the BAAQMD under a Permit to Operate (PTO) for plant # 208.

Additionally, Schnitzer Steel Oakland is regulated by BAAQMD Regulation 6, Particulate Matter, Rule 4 Metal Recycling and Shredding Operations which is designed to minimize particulate

fugitive emissions from our operations. We have developed an Emissions Minimization Plan (EMP) in compliance with this rule. (Attached) BMP's to minimize fugitive emissions at our Oakland facility include but are not limited to the following:

- Frequent sweeping of paved traffic surfaces with a mobile sweeper to minimize dust from equipment traffic.
 - Frequent application of water to all traffic surfaces and stockpiles.
 - Use of Dust Boss mist turbines at key material handling areas to minimize fugitive emissions.
 - Enclosure of many material conveyance systems to minimize exposure to ambient wind and minimize generation of fugitive emissions.
 - Use of an industrial wheel wash at facility exit to minimize tracking of soil/sediment offsite.
 - Enforcement of a facility speed limit of no more than 5 miles per hour.
 - Maintaining a high moisture content in our Aggregate and Treated Auto Shredder Residue. (Typically 15 to 20% by weight)
 - Daily facility housekeeping in areas prone to fugitive emissions.
5. Provide a copy of all permits and other forms of authorization issued to your facility by any governmental entity related to metal shredding activities.

Copies of the following permits are attached:

- a) Notice of Intent Receipt Letter from the CA State Water Resources Control Board (Storm water permit)
 - b) EPA Generator Identification Number Verification (Hazardous Waste Generator)
 - c) Business License, City of Oakland
 - d) Bay Area Air Quality Management District (BAAQMD) Permit to Operate (PTO)
 - e) East Bay Municipal Utility District (EBMUD) Waste Water Discharge Permit
 - f) DTSC Certified Appliance Recycler Certificate
 - g) DTSC/CAL Recycle Electronic Waste Collector Registration
6. Describe the ferrous metals separation process, including how shredded material is sent to the ferrous metals separation process, the type of magnet used, if any, and under what circumstances would materials exiting the ferrous metals separation process be reintroduced. Also indicated if your facility recovers ferrous metals from any material not shredded at your facility. If so, please describe that process. Please include representative pictures of the ferrous recovery process and a site map of where activities occur when applicable.

The shredding process at Schnitzer is a continuous, in-line process from the infeed belt of the shredder hammermill to the outputs of ferrous shred and aggregate material. After shredder feed stock is processed through the hammermill, the resulting material is conveyed downstream for ferrous separation on a conveyor belt. Large, rotating drum electromagnets are used to separate most of the ferrous metal (e.g., steel and iron) from the nonferrous metals (e.g., copper, aluminum and stainless steel) and other non-metallic materials contained in the shredder output. The aggregate (the mixture of non-ferrous metal and non-metallic material remaining after removal of ferrous metal) is conveyed under the magnet drums to the aggregate output conveyor, while the ferrous metal is conveyed to the ferrous line conveyor. The ferrous material is then further cleaned of incidental, remaining rag and fiber via a closed loop air aspiration system which uses material density to further separate residual non-metallics from the ferrous shred. This enclosed system returns the separated material (which contains some nonferrous metals) to the aggregate output conveyor for further processing. A final quality assurance step involves a hand picking operation to remove copper and other nonferrous materials that may have been carried through the ferrous line prior to the radial conveyor stacker which stages the final shred product for export. Schnitzer Steel Oakland does not recover ferrous metal from any material that is not shredded onsite. See attached site map for location of shredder activities.

7. Is the shredded material ever stored onsite before ferrous metal recovery occurs? If so, on average how much and for how long is it stored, how is it stored (e.g. on a paved surface), and where in the facility is it stored?

No, see response to question number 6.

8. If ferrous metal recovery does not occur onsite, please respond to the following questions:
- How much shredded material is stored onsite?
 - How long is the shredded material stored onsite?
 - How is the shredded material stored?
 - Where in the facility is the shredded material stored?
 - Where is the shredded material sent (please include addresses)?

This question and sub questions are not applicable as Schnitzer Steel Oakland shreds and recovers ferrous onsite.

9. Describe the nonferrous metals separation process at your facility, if any. Describe how aggregate (i.e. the shredded material remaining after ferrous materials separation) is introduced into the process, the type of system(s) used, where in your facility it occurs, and under what circumstances would materials exiting nonferrous metals separation processes be

reintroduced. Also indicate if your facility recovers nonferrous metals from any material that is not shredded at your facility. Please provide a map of where activities occur.

Once the ferrous metal (or “shred”) has been separated from the shredder output, the remaining material (aggregate or “Nonferrous Raw”) moves through a series of trommels, screens and other “downstream” sizing equipment to separate and size the remaining materials into different fractions so that they can be further processed to optimize removal of nonferrous metals. These fractions are based on size. The sizing equipment separates the aggregate into 3/8” minus, 3/8” to 3/4”, 2.5”, and 2.5” to 5” fractions. The nonferrous metal is typically separated from the non-metallic material by eddy current separators (which create a means for magnetic separation of the nonferrous metals) and advanced mechanical separation methods (e.g., inductive or optical sensor sorting systems). An inductive sorter uses metal sensing technology to detect and target metals from nonmetals. An optical sensor uses infrared or visual light spectrum to detect and target shapes or specific nonmetallic metals from metals. Manual hand picking is also used at various points in the process to maintain quality and collect specific high value materials that cannot be recovered via mechanical means. After the majority of non-ferrous metals separation has occurred, the remaining material is sent through the shredder residue treatment process. Prior to exiting the treatment process a belt magnet is used to recover any remaining ferrous metals that were not removed in the ferrous metal recovery operations.

In-process material (i.e., material that has not yet reached the residue treatment process and that still contains recoverable nonferrous metals) may fall off moving conveyors and is periodically collected and placed back into the aggregate pile for reprocessing to further extract valuable metal.

Schnitzer Steel Oakland does not accept aggregate from other metal shredding facilities. On rare occasions, the facility accepts coarse screenings with recoverable metal from other Schnitzer feeder yards to recover economically valuable metal.

The majority of the conveyors in the non-ferrous recovery system have been covered to minimize the generation and/or escape of fugitive emissions. Additionally, an elevated, oscillating Dust Boss mister turbine has been installed to blanket the area in a mist of atomized water further minimizing fugitive emissions.

See attached facility map which indicates location of the non-ferrous recovery operations.

10. Is aggregate ever stored onsite prior to or during the nonferrous metals separation process? If so, how much is stored and for how long? Identify where in your facility it is stored.

Yes, aggregate processing is a more complex process than shredding metal. To ensure efficient recovery of non-ferrous metals and adequate treatment of the resulting residue (by maximizing metals recovery prior to treatment), the nonferrous metals separation process is necessarily slower than the shredding process. As a consequence, there is generally a stockpile of aggregate onsite awaiting non-ferrous metal separation and processing. On average, there may be 300 to 500 tons of aggregate stockpiled near the shredder and the non-ferrous separation plant. Aggregate is moved from the shredder output area to the non-ferrous separation plant via front end loader and rock trucks. The aggregate has a high moisture content due to the water added during the shredding process. Typically, the moisture content is 15 to 20% by weight. This high residual moisture content helps to minimize the amount of potential fugitive emissions from stockpiles and material handling. Additionally, the aggregate stockpile near the non-ferrous separation plant is wetted during plant operation by a Dust Boss turbine mister further reducing fugitive emissions.

See attached facility map which indicates the location of the aggregate storage stockpiles.

11. If non-ferrous metals recovery does not occur onsite, please respond to the following questions:

- How much aggregate is stored onsite?
- How long is aggregate stored onsite?
- How is the aggregate stored (e.g. on paved ground)?
- Where in the facility is the aggregate stored?
- Where is the aggregate sent (please include addresses)?
- Describe the offsite transportation and if any Department of Transportation (DOT) requirements are followed.

This question is not applicable as Schnitzer Steel conducts non-ferrous metals recovery onsite.

12. Describe how your facility chemically treats metal shredder waste. For the purposes of this document only, "shredder metal waste" shall mean the material remaining after metal recovery is complete. Include how metal shredder waste not chemically treated is sent to the treatment process, how screening is conducted, the types of equipment used to perform the chemical treatment, chemical formulas and doses, and the sampling and analysis performed on the chemically treated metal shredder waste to ensure adequate treatment.

Schnitzer Oakland treats its metal shredder residue prior to the final metal separation step. After all non-ferrous metal recovery is complete; the material is conveyed via covered belt to the treatment process. Shredder residue passes through an enclosure where a metered water

and silicate mixture is sprayed onto the material as it passes through. Next, the material passes through a second enclosure where the alkaline cement activator is applied along with additional water spray to aid in mixing and minimize the cement dust. Schnitzer currently uses a chemical dose of 0.3 lbs. of Metabond MCX 90 (silicate compound) chemical per ton of residue. Schnitzer then applies Portland cement at a rate 6 percent (120 pounds) by weight per ton of residue. The material then enters a pug mill with two large metal screws that mix the treatment chemicals and shredder residue. After exiting the pug mill, the material is transported via conveyor belt for final ferrous metal recovery by a belt magnet and is then added to the treated shredder residue stockpile for transport offsite.

As discussed in the DTSC requested May 2012 report "Treatment of Auto Shredder Residue" written by Dr. George Trezek et al., the process for treatment of auto shredder residue is similar to "Stabilization Treatment" as described by the EPA. According to EPA, "Stabilization has been shown to be effective for a wide range of constituents including lead, arsenic, and chromium" (USEPA, 2009).¹ Stabilization is a process that chemically renders metals less soluble, thereby reducing their leachability in a landfill situation. It should be noted that the Metal Recycling industry, in cooperation with the DTSC, is performing a concurrent treatability study of Metal Shredder Residue to demonstrate the effectiveness of the industry treatment process, determine optimum treatment chemical ratios, and identify appropriate treatment standards. The treatment process, chemistry, and efficacy will be discussed in detail in the forthcoming treatability study report. Additionally, DTSC staff is involved and will continue to be involved with this ongoing process.

Schnitzer collects daily samples of treated shredder residue which are composited into samples for various types of analysis. These analyses include total PCBs for every 1000 tons of shredder residue, quarterly metals leachability analysis using landfill leachate, and occasional total metals analysis as requested by the landfills.

13. Do landfills, regional water quality control boards, or other regulating authority impose any requirements on treated metal shredder waste sent for disposal or use as Alternative Daily Cover (ADC)? If so, what are the requirements?

Yes, both Waste Management's Altamont landfill and Republic's Vasco Road landfill require Schnitzer to perform periodic analysis related to their material acceptance policies and their respective WDRs.

Republic Service's Vasco Road Landfill requires Schnitzer to conduct a quarterly landfill leachate extraction test for Lead, Zinc, Cadmium, Chromium, Nickel, and Copper. This process utilizes landfill supplied leachate (From Vasco Road) to provide a realistic simulation of the landfill conditions that the material will be subject to. In addition, Schnitzer performs total PCB analysis for every 1000 tons of treated shredder residue on an ongoing basis.

Waste Management’s Altamont landfill requires total metal analysis for Cadmium, Chromium, Lead, Copper, and Mercury for profile renewal every three years. Waste Management also requires total PCB analysis for every 1000 tons of treated shredder residue on an ongoing basis.

14. Is untreated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored, and where on the facility is it stored?

Schnitzer Steel does not store untreated metal shredder waste onsite, nor does Schnitzer Steel dispose of untreated shredder waste. All treated shredder residue is transported offsite for beneficial reuse as alternative daily cover (ADC).

15. Is treated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?

Although shredder residue is typically shipped offsite Monday through Friday, there is always some amount of material onsite. Typically, there is anywhere from 250 to 500 tons of treated shredder residue onsite awaiting transport to the landfill for use as alternative daily cover. Typically, 20 loads per day are transported offsite to the landfill. This material is accumulated in a stockpile near the treated shredder residue output belt of the treatment system and is indicated on the attached facility site map.

16. How much treated metal shredder waste, if any, was transported offsite in the calendar year January 1, 2014 through January 1, 2015? List destinations with addresses.

- 1) Republic Services, Vasco Road Landfill
4001 N. Vasco Rd.
Livermore, CA 94550

Schnitzer considers the amount of treated metal shredder waste to be Confidential Business Information/Proprietary.

- 2) Waste Management, Altamont Landfill
10840 Altamont Pass Road
Livermore, CA 94551

Schnitzer considers the amount of treated metal shredder waste to be Confidential Business Information/Proprietary.

17. Describe the offsite transportation of metal shredder wastes. Are there any DOT requirements followed during transportation?

Treated Metal Shredder Residue is loaded into end dump trailers for transport to the above-mentioned landfills for beneficial reuse as alternative daily cover (ADC). The high residual moisture content of this material helps to minimize generation of fugitive emissions (typically 15 to 20%). All trucks exiting the facility must pass through an industrial wheel wash to minimize tracking of material offsite. These trailers are tarped prior to leaving the site to contain material during transport to the landfill.

Standard DOT requirements related to the movement of goods, safe operation of tractor and trailer, proper license/endorsements of drivers apply. Auto Shredder Residue is not a RCRA hazardous waste; therefore, no DOT Hazardous Materials Rules apply. All Shredder Waste transported is documented with a standard Bill of Lading (BOL).

¹ USEPA, (2009) *Technology Performance Review: Selecting and Using Solidification/Stabilization Treatment for Site Remediation*, document EPA/600/R-09/148.

DTSC QUESTIONNAIRE
METAL SHREDDING FACILITIES
SA RECYCLING TERMINAL ISLAND FACILITY
901 New Dock Street, Terminal Island, CA 90731

- 1. Describe your facility’s scrap metal acceptance policy, and describe all materials you bring into your facility for shredding, metals recovery, or both.

The SA Recycling material acceptance policy is contained in the attached document titled “Supplier Source Control Procedure” (revised 3/27/15). (See Attachment 1)

The facility receives every type of scrap metal material including Automobiles, consumer and industrial appliances, manufacturing scrap, curbside collection scrap, demolition scrap, consumer/homeowner scrap, industrial scrap. The facility receives scrap from industrial accounts, including materials from other scrap metal recycling facilities. All materials received meet the definition of “scrap metal” under title 22, CCR, section 66260.10.

The “Supplier Source Control Procedure” document contains a Prohibited Materials List which details the types of materials that are not accepted at the shredder. Automobiles must have all fluids drained to the extent practical, and batteries and mercury switches removed. Appliances such as refrigerators must be properly depolluted prior to being sent to the shredder infeed area. In some circumstances, appliances and vehicles will be de-polluted on site, pursuant to applicable law, in a specially designated area, prior to being sent to the shredder.

Items removed/recovered from the de-polluting process including waste oil, diesel/gasoline fuel, batteries, capacitors etc. are all managed under separate programs per State regulations.

- 2. How much material by weight did your facility shred from January 1, 2014, through January 1, 2015? Include the percentage of total materials shredded annually for each of the following: vehicles, appliances, and other forms of scrap metal.

A total weight of approximately 300,000 MT of material was shredded for the year 2014.

Annual percentages of material are as follows:

Vehicles:	42.16%
Appliances/Tin:	43.63%
Other/Misc:	14.21%

- 3. What type of shredder (e.g., the model, brand and its horsepower) is used by your facility?

Shredder is manufactured by Riverside Engineering. Model RIV 122X112 Mega Shredder. 9,000 horse power.

4. *Is your facility's shredder equipped with an Air Pollution Control Device (APCD)?*

Yes. The shredder is controlled by a four-stage air pollution control system (APCS), which has a Permit to Operate (R-G27566, attached) issued by the South Coast Air Quality Management District.

APCS Stage One

Shredder overhead exhaust system hood designed to capture at least 90% of all particulate matter (PM) and volatile organic compounds (VOC's), and send those emissions through to the second stage.

APCS Stage Two

Dust/Mist Collector – Custom designed and manufactured, Model No. TAME-40K-2008, dual parallel compartments designed to capture oils, PM and moisture present in the exhaust stream.

- Mist Eliminating Wall manufactured by UDC and poly pad (coarse PM, moisture and oils control)
- Drop Safe Rigid Pocket Bag Filters (Microscopic water molecules filtration)
- DP-40 Synthetic PM Filters (additional PM filtration at MERV 8)
- Legacy PM Filters (additional PM filtration at MERV 11)
- HydroVee, High Efficiency PM Filters (additional PM filtration at MERV 15)

APCS Stage Three

40K SCFM Regenerative Thermal Oxidizer (RTO) - The 40K SCFM RTO, Model No. RETOX 40.0 RTO095 was manufactured by CECO-ADWEST Technologies.

APCS Stage Four

HEE Environmental Chemical Scrubber - The vertical, counter-current chemical scrubber neutralizes the exhaust from the RTO.

How else does your facility control any particulate emissions throughout the facility?

Terminal Island employs a number of measures to control particulate matter emissions, as follows:

The entire shredding chamber is enclosed and connected to the air pollution control system. Many of the conveyors and magnet systems are all covered or enclosed. All shredded material (Aggregate) that is processed following ferrous metal removal, including Treated Auto Shredder Residue (TASR), is staged within covered containment buildings.

Material stacking areas are swept periodically throughout the day, as necessary. The sweeping is performed with a mechanical broom. During operations, the mechanical broom is used to

maintain the outer boundary of the intake piles of feedstock material by pushing material on the edge of the piles back toward the center of the pile.

A TYMCO sweeper is used to clean-up the entrances and driveways in the yard on a regular basis, as necessary throughout the day. There are track-out devices (to minimize dirt track-out) for all of the trucks that exit the facility.

Water is applied extensively to the yard haul roads and piles of materials throughout the day with a water truck, as necessary. The entire facility is concrete paved, and is designed to collect all of the water and direct it to an industrial waste water facility where the water is recycled for re-use onsite.

Most incoming trucks that are self-dumping are doused with water before unloading scrap metal to minimize airborne emissions during the unloading process

The Metals Recovery Plant (MRP) is equipped with dust collectors to control particulate matter emissions during the non-ferrous metals recovery process. The MRP utilizes a series of pulse-jet type dust collectors on all of its cyclones to control particulate emissions. Many of the process areas are enclosed as well as the aggregate and TASR staging areas.

5. *Provide a copy of all permits and other forms of authorization issued to your facility by any governmental entity related to metal shredding activities.*

Terminal Island holds SCAQMD Permits to Operate for the shredder (R-G27565), the MRP (R-G18947), and the shredder APCS (R-G27566). The facility also holds a CAR Permit and an NOI issued by the State Water Resources Control Board. Copies of permits are provided. (See Attachment 2)

6. *Describe the ferrous metals separation process, including how shredded material is sent to the ferrous metals separation process, the type of magnet used, if any.*

The shredder feed materials, including automobiles and appliances, are loaded onto the conveyor and conveyed into the enclosed shredding chamber (vented to the Air Pollution Control System). The shredder shreds the cars and scrap metal materials into fist sized pieces. (Everything exits the shredder chamber through eight-inch square openings.) This stream of material collectively is called "Aggregate".

All shredded Aggregate exits the shredder onto a shaker table, which then transfers the materials to a single conveyor belt. That single flow of Aggregate is split into two equal streams of material and continues through two parallel processing lines. Each stream is run over a first drum magnet (Steinert Drum Magnet, 60-inch diameter by 96-inch wide). The magnetic fraction, which primarily consists of steel and iron materials, is conveyed via a short length shaker table to a second identical Steinert drum magnet, which further separates the magnetic fraction from the non-magnetic fraction. The two non-magnetic fractions are combined and run through a similar but smaller magnetic recovery system consisting of two 24-inch diameter by 48-inch-wide drum magnets. The non-magnetic Aggregate contains non-magnetic metals such as aluminum,

copper, zinc and stainless steel. After the magnetic separation process, the aggregate is conveyed to a trommel where the oversized fraction (pieces typically larger than 4-5 inches) is screened out. The oversized materials are re-shredded on a daily basis. The screened aggregate is conveyed to the Interim Aggregate Staging Building.

...and under what circumstances would materials exiting the ferrous metals separation process be reintroduced?

The non-magnetic aggregate fraction is screened through a trommel, and all materials over 4- 5 inches are returned to the shredder in-feed for re-shredding.

Materials that have accumulated on and under the conveyor belts and picking stations and related equipment described above are returned to the shredder in-feed for re-shredding.

Also, indicate if your facility recovers ferrous metals from any material that is not shredded at your facility. If so, please describe that process and a site map of where activities occur when applicable.

The Terminal Island facility receives all types of scrap metal, including prepared and unprepared materials that are not shredded at the facility. The prepared materials, including HMS (Heavy Melt Steel) and P&S (Plate and Structural) are received and stockpiled for future shipment via bulk vessels. The unprepared materials are sheared or cut in the areas designated for those activities on the site map. The facility operates a 2,000 ton guillotine type shear which is used to size longer pieces of steel into lengths typically under 5 feet. Scrap materials that are too big to fit into the shear or contain metal that is too thick to cut with the shear, are sent to a designated torch cutting area.

After processing to reduce the size and length of the scrap metal, the material is transferred to the "prepared" stockpiles to await shipment via bulk vessels.

Please include representative pictures of the ferrous recovery process and a site map of where activities occur when applicable.

- Site Map (See Attachment 3)
- Magnet Photos (See Attachment 4)

7. *Is the shredded material ever stored onsite before ferrous metal recovery occurs? If so, on average how much and for how long is it stored, how is it stored (e.g., on a paved surface), and where in the facility is it stored?*

No, shredder output is always processed in-line after it leaves the shredder. Material may temporarily be located on a conveyance system in the event of an emergency shut-down; however, it is not stored in the system.

8. *If ferrous metals recovery does not occur onsite, please respond to the following questions:*

How much shredded material is stored onsite?

How long is shredded material stored onsite?

How is the shredded material stored (e.g., on paved ground)?

Where in the facility is the shredded material stored?

Where is the shredded material sent (please include addresses)?

Not-applicable

9. *Describe the nonferrous metals separation process at your facility, if any. Describe how aggregate (i.e., the shredded material remaining after ferrous metals separation) is introduced into that process, the type of system(s) used, where in your facility it occurs,*

Aggregate materials exiting the shredder go through the ferrous recovery stage described above in question #6 and then are conveyed by an enclosed conveyor to the first aggregate staging building (enclosed, covered, concrete floor). At the Interim Aggregate Staging Building, aggregate materials are loaded onto a 45 ton Terex dump truck via a front-end wheel loader. The Terex truck transfers the material to the enclosed, covered Primary Aggregate Staging Area in the non-ferrous metal recovery plant (MRP) building. From the covered Primary Aggregate Staging Area, the aggregate material is loaded onto a track feeder that meters the flow of the aggregate into the MRP.

In the first step of the non-ferrous recovery process, aggregate is separated into three size fractions through the use of screens and trommels.

Each of these three size fractions continues through the MRP, which utilizes three types of technology to separate and recover non-ferrous materials, as well conventional magnets for residual ferrous material recovery.

The three technologies used for non-ferrous metal recovery include:

1. Eddy- current magnetic separators for most aluminum, zinc and copper materials
2. Sensors (air actuated) for stainless and copper wire
3. Density separators for fine copper materials

.....and under what circumstances would materials exiting nonferrous metals separation processes be reintroduced.

Materials that accumulate under or on the equipment are in-progress materials and are routinely returned to the MRP infeed area using front-end loaders and skid-steer type tractors. Any recovered product that does not meet a quality standard is returned to the aggregate in-feed area for re-processing. There are several product streams that require a second pass through the MRP.

Also indicate if your facility recovers nonferrous metals from any material that is not shredded at your facility. Please provide a site map of where activities occur.

The facility does not typically receive or handle any non-ferrous material other than what is generated from the shredding activity. The facility does not receive any previously shredded material from another location for non-ferrous recovery through the MRP.

10. *Is aggregate ever stored onsite prior to or during the nonferrous metals separation process? If so, how much is stored and for how long? Identify where in your facility it is stored.*

Yes, aggregate is staged in two locations on site: The Interim Aggregate Staging Building and the Primary Aggregate Staging Area (as designated on the site map).

The amount of aggregate on site ranges from 1,000 to 4,000 tons. Aggregate is typically processed through the MRP within 7 to 10 days of production.

11. *If nonferrous metals recovery does not occur onsite, please respond to the following questions:*

Not Applicable

- *How much aggregate is stored onsite?*
- *How long is aggregate store onsite?*
- *How is the aggregate stored (e.g., on paved ground)?*
- *Where in the facility is the aggregate stored?*
- *Where is the aggregate sent (please include addresses)?*
- *Describe the offsite transportation and if any Department of Transportation (DOT) requirements are followed.*

12. *Describe how your facility chemically treats metal shredder waste. For the purposes of this document only, "metal shredder waste" shall mean the material remaining after metal recovery is complete. Include how metal shredder waste not chemically treated is sent to the treatment process, how screening is conducted, the types of equipment used to perform the chemical treatment, chemical formulas and doses, and the sampling and analysis performed on the chemically treated metal shredder waste to ensure adequate treatment.*

Treatment of aggregate that has been fully processed for recovery of non-ferrous metal occurs in-line at the end of the non-ferrous metals recovery process. Residual materials from all of the various non-ferrous recovery steps as previously described are combined on a single, scaled (weigh belt) conveyor which delivers material to the treatment auger. A proprietary silicate-phosphate liquid is applied first. Silicate-phosphate is drawn from a tote into a foamer/tank where it is blended with a 9 – 13x volume of water. This solution is pumped from the foamer tank and is combined with the metal shredder waste in the auger chamber. The auger blends and pushes the treated material toward the cement feeds. The proprietary, non-hydraulic cement is formulated to reduce the leachability of metals. The incoming weigh belt scale is used

to control the by-weight cement allocation, 9.0 – 10.0%, at the treatment auger. Cement is fed into the auger chamber from adjacent silos and applied to the material in the remaining length of the auger chamber, approximately five (5) meters, before being deposited onto the outgoing conveyor. The auger mixes and blends the material with the cement and silicate phosphate solution. The total residence time in the auger is approximately 60 seconds. Fully treated material is then passed under a magnet for final ferrous metal recovery and then conveyed to the enclosed, paved TASR staging area before loading and transport to the receiving landfill.

Sampling of the treated metal shredder waste occurs approximately six (6) meters from the exit of the treatment auger chamber. Samples are taken manually from the conveyor and added to a composite, shift sample, each half-hour. Samples from a given week are combined - mixed, coned and quartered – before being submitted to the receiving laboratory for analysis of volatile organic compounds (VOCs) via EPA method 8260B, poly-chlorinated biphenyls (PCBs) via EPA method 8082, and soluble cadmium, chromium, copper, lead, mercury, nickel and zinc via the Waste Extraction Test (WET). One such weekly composite sample is analyzed per month.

The Terminal Island facility is participating in an ongoing MSR Treatability Study that is evaluating the effectiveness of the treatment process and will serve as a basis for uniform, statewide treatment standards appropriate to TASR.

13. *Do landfills, regional water quality control boards, or other regulating authority impose any requirements on treated metal shredder waste sent for disposal or use as Alternative Daily Cover (ADC)? If so, what are the requirements?*

TASR is shipped to two landfills: Chiquita Canyon Landfill in Castaic CA, and Simi Valley Landfill in Simi CA. Both landfills operate under the jurisdiction of the Los Angeles Regional Water Quality Control Board. There are sampling and analysis and reporting requirements specified by the Waste Discharge Requirements (WDRs) of the receiving landfills for treated auto shredder waste (TASR) regardless of whether it is employed as alternative daily cover (ADC) or disposed of as waste. SA's understanding is that essentially all of the TASR received at both of these landfills is used as ADC.

The landfill is required to record the quantity of TASR deposited each month and the number of loads deposited from each generator. The landfill must report the TASR laboratory analysis results provided by the generator, in addition to those from the landfill's own monitoring per the WDR's.

Per the WDR's the analysis of TASR samples include analysis of volatile organic compounds via EPA method 8260B, polychlorinated biphenyls via EPA method 8082, and soluble cadmium, chromium, copper, lead, mercury, nickel and zinc via the Waste Extraction Test (WET).

The WDRs for Simi Valley Landfill also specify the sampling procedure and SA has adopted this procedure, as described above. Composite samples of TASR are collected daily; one (1)-pound sample each half-hour per shift. Samples from a given week are combined – mixed, coned and quartered – before being submitted to the receiving laboratory. One weekly composite sample, prepared as described, is submitted per month for the above-mentioned analyses.

Additionally, Simi Valley Landfill requires that one such sample, per quarter, be analyzed for the solubility of the full suite of "CAM-17" metals using the Synthetic Precipitation Leaching Procedure (EPA method 1312).

14. *Is untreated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?*

There is no untreated shredder waste stored on-site. At the conclusion of the non-ferrous recovery process, fully processed aggregate is conveyed directly to the treatment process and treated in-line as discussed above.

15. *Is treated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?*

TASR is staged for shipment in the MRP building under a roof on a concrete floor. There is typically 1,500 - 2,000 tons of TASR on site at any one time, which is approximately one week's worth of production. TASR is typically transported off-site within 5 to 7 days of production.

16. *How much treated metal shredder waste, if any, was transported offsite in the calendar year January 1, 2014, through January 1, 2015? List all destinations with addresses.*

From January 1st, 2014 to January 1st, 2015, the facility shipped 115,172 tons of treated metal shredder waste to two (2) landfills:

- Simi Valley Landfill
2801 Madera Rd
Simi Valley, CA 93065
- Chiquita Canyon Landfill
29201 Henry Mayo Drive
Castaic, CA 91384

37,662 tons of treated metal shredder waste shipped to Chiquita Canyon Landfill.

77,510 tons of treated metal shredder waste shipped to Simi Valley Landfill.

17. *Describe the offsite transportation of metal shredder wastes. Are there any DOT requirements followed during transportation?*

Treated metal shredder waste is transported on a non-hazardous waste manifest. Material is loaded into end dumps and a tarpaulin placed over the exposed surface. The transportation activity is conducted in compliance with the US Department of Transportation regulations and the Federal Motor Carrier Safety Administration (49 CFR Parts 300-399).

DTSC QUESTIONNAIRE
METAL SHREDDING FACILITIES
SA RECYCLING BAKERSFIELD FACILITY
2000 East Brundage Lane, Bakersfield CA 93387

- 1. Describe your facility's scrap metal acceptance policy, and describe all materials you bring into your facility for shredding, metals recovery, or both.

The SA Recycling material acceptance policy is contained in the attached document titled "Supplier Source Control Procedure" (revised 3/27/15). (See Attachment 1)

The facility receives every type of scrap metal material including:

Automobiles, consumer and industrial appliances, manufacturing scrap, curbside collection scrap, demolition scrap, consumer/homeowner scrap, industrial scrap. The facility receives scrap from industrial accounts, including materials from other scrap metal recycling facilities. All materials received meet the definition of "scrap metal" under title 22, CCR, section 66260.10.

The "Supplier Source Control Procedure" document contains a Prohibited Materials List which details the types of materials that are not accepted at the shredder. Automobiles must have all fluids drained to the extent practical, and batteries and mercury switches removed.

Appliances such as refrigerators must be properly depolluted prior to being sent to the shredder infeed area. In some circumstances, appliances and vehicles will be de-polluted on site, pursuant to applicable law, in a specially designated area, prior to being sent to the shredder. Items removed/recovered from the de-polluting process including waste oil, diesel/gasoline fuel, batteries, capacitors, etc. are all managed under separate programs per State regulations.

- 2. How much material by weight did your facility shred from January 1, 2014, through January 1, 2015? Include the percentage of total materials shredded annually for each of the following: vehicles, appliances, and other forms of scrap metal.

A total weight of approximately 75,000 MT of material was shredded for the year 2014.

Annual percentages of material are as follows:

Vehicles:	52.34%
Appliances/Tin:	30.10%
Other/Misc:	17.56%

- 3. What type of shredder (e.g., the model, brand and its horsepower) is used by your facility?

Shredder is manufactured by The Shredder Company. Model #124-SXS Mega Shredder 6,000 Horse Power

4. *Is your facility's shredder equipped with an Air Pollution Control Device (APCD)?*

Yes. The shredder is controlled by a two-stage air pollution control system (APCS). Both the shredder and the APCS are included in permits to operate (S-1256-7-2 and S-1256-3-10) issued by the San Joaquin Valley Air Pollution Control District.

APCS Stage One

Shredder overhead, multi-hood exhaust system that captures particulate matter (PM) and volatile organic compounds (VOC's) and sends those emissions through the next stage.

APCS Stage Two

Dust/Mist Collector - Custom made, Model No. TAME-40K-2008, dual parallel compartments designed to capture oils, PM and moisture present in the gas stream.

Two-inch thick poly pad (coarse PM, and oils control)

HS Aluminum Filters (additional moisture control)

Moisture Separator Cell (PM and microscopic water molecules filtration)

DP-40 Synthetic PM Filters (additional PM filtration at MERV 8)

Very Plus (Total Filtration Solutions) High Efficiency PM Filters (additional PM filtration at MERV 15)

How else does your facility control any particulate emissions throughout the facility?

Bakersfield employs a number of measures to control particulate matter emissions, as follows:

Material stacking areas are swept periodically throughout the day, as necessary. The sweeping is performed with a mechanical broom. During operations, the mechanical broom is used to maintain the outer boundary of the intake piles by pushing material on the edge of the piles back toward the center of the pile.

A TYMCO PM-10 compliant sweeper is used to clean-up the entrances and driveways in the yard on a regular basis, as necessary throughout the day. Water is applied to the yard haul roads and piles of materials throughout the day with a water truck, as necessary.

Track out is monitored and managed in accordance to the San Joaquin Valley Air Pollution Control District Regulation VIII.

District's guidance for relevant source category is followed, as applicable.

The Metals Recovery Plant (MRP) is equipped with dust collectors to control particulate matter emissions during the non-ferrous metals recovery process, as necessary.

5. *Provide a copy of all permits and other forms of authorization issued to your facility by any governmental entity related to metal shredding activities.*

Bakersfield holds San Joaquin Valley Air Pollution Control District permits to operate the shredder and air pollution control system (1256-7-2) and the MRP (1256-3-10).

The facility also holds a CAR permit and an NOI issued by the State Water Resources Control Board. Copies of permits are provided in attachment 2.

6. *Describe the ferrous metals separation process, including how shredded material is sent to the ferrous metals separation process, the type of magnet used, if any*

The shredder feed materials, including automobiles and appliances, are loaded onto the conveyor using grapple cranes and front-end loaders and are conveyed into the hooded shredding chamber (vented to the Air Pollution Control System).

The shredder shreds the cars and scrap metal materials into fist sized pieces. (Everything exits the shredder chamber through eight-inch square grate openings.) This stream of material collectively is called "Aggregate". All shredded Aggregate exits the shredder onto a shaker table, which then transfers the materials to a single conveyor belt. That single flow of Aggregate is split into two equal streams of material and continues through two parallel processing lines. Each stream is run over a first drum magnet (SGM Drum Magnet, Model TMR-60"/98" 60 inch diameter by 98 inch wide). The magnetic fraction, which primarily consists of steel and iron materials, is conveyed via a short length shaker table to a second identical SGM drum magnet, which further separates the magnetic fraction from the non-magnetic fraction. The two non-magnetic fractions are combined onto a conveyer which runs under a 36 inch diameter by 48 inch wide magnetic tail pulley to recover residual magnetic steel and returns that steel to the larger SGM drum magnets via a conveyer.

The non-magnetic aggregate contains non-magnetic metals such as aluminum, copper, zinc and stainless steel. After the magnetic separation process, the Aggregate is conveyed to the concrete paved Aggregate staging area prior to being fed into the MRP.

.....and under what circumstances would materials exiting the ferrous metals separation process be reintroduced.

The MRP process screens out oversized Aggregate material (+ 5 inches), which is then returned to the shredder in-feed area for re-shredding.

Materials that have accumulated on and under the conveyor belts and picking stations and related equipment described above are returned to the shredder in-feed for re-shredding.

Also, indicate if your facility recovers ferrous metals from any material that is not shredded at your facility. If so, please describe that process and a site map of where activities occur when applicable.

The Bakersfield facility receives all types of scrap metal, including prepared and unprepared materials that are not shredded at the facility. The prepared materials, including HMS (Heavy Melt Steel) and P&S (Plate and Structural) are received and stockpiled for shipment to the SA Terminal Island facility or directly loaded into overseas shipping containers or shipped to domestic markets. The unprepared materials are sheared or cut in the areas designated for those activities on the site map. The facility operates a portable hydraulic "alligator" type shear mounted on a back-hoe type tractor which is used to shear longer pieces of steel into lengths typically under 5 feet.

Scrap materials that are too heavy to be cut by the shear are directed to a designated torch cutting area. After processing to reduce the size and length of the scrap metal, the material is loaded into trucks using an electro-magnet attached to a crane.

Please include representative pictures of the ferrous recovery process and a site map of where activities occur when applicable.

- Site Map (See Attachment 3)
- Magnet Photos (See Attachment 4)

7. *Is the shredded material ever stored onsite before ferrous metal recovery occurs? If so, on average how much and for how long is it stored, how is it stored (e.g., on a paved surface), and where in the facility is it stored?*

No, shredder output is always processed in-line after it leaves the shredder. Material may temporarily be located on a conveyance system in the event of an emergency shut-down; however, it is not stored in the system.

8. *If ferrous metals recovery does not occur onsite, please respond to the following questions:*

How much shredded material is stored onsite?

How long is shredded material stored onsite?

How is the shredded material stored (e.g., on paved ground)?

Where in the facility is the shredded material stored?

Where is the shredded material sent (please include addresses)?

Not Applicable.

9. *Describe the nonferrous metals separation process at your facility, if any. Describe how aggregate (i.e., the shredded material remaining after ferrous metals separation) is introduced into that process, the type of system(s) used, where in your facility it occurs, and under what circumstances would materials exiting nonferrous metals separation processes be reintroduced.*

Aggregate materials exiting the shredder go through the ferrous recovery stage, described above in question #6, and then are transferred by a conveyor directly to the aggregate staging area. From this staging area, the aggregate material is loaded onto a track feeder that meters the flow of the aggregate into the MRP plant.

The MRP uses a series of trommels and shaker screens to initially separate the aggregate into three different fractions based on size.

Each of these size fractions continues through the MRP, which utilizes three primary types of technology to separate and recover non-ferrous materials, as well as conventional magnets for the recovery of residual ferrous materials.

The three primary technologies used for the recovery of non-ferrous metals include:

1. Eddy- current magnetic separators for most aluminum, zinc and copper materials
2. Sensors (air actuated) for stainless and copper wire
3. Density separators for fine copper materials

.....and under what circumstances would materials exiting nonferrous metals separation processes be reintroduced.

Materials that accumulate under or on the equipment are in-progress materials and are routinely returned to the infeed area using front-end loaders and skid-steer type tractors. Any recovered product that does not meet a quality standard is returned to the aggregate in-feed area for re-processing. There are several product streams that require a second pass through the MRP.

Also indicate if your facility recovers nonferrous metals from any material that is not shredded at your facility. Please provide a site map of where activities occur.

The facility receives typical non-ferrous materials like aluminum and copper that is sorted and segregated into salable products, not associated with the shredder or MRP. The facility does not receive any previously shredded material from another location for non-ferrous recovery through the MRP.

10. *Is aggregate ever stored onsite prior to or during the nonferrous metals separation process? If so, how much is stored and for how long? Identify where in your facility it is stored.*

Yes, aggregate is staged on a concrete paved area. (As designated on the site map)

The amount of aggregate on site ranges from 300 to 800 tons, which equates to 3 to 10 days of production.

11. *If nonferrous metals recovery does not occur onsite, please respond to the following questions:*

Not Applicable.

- How much aggregate is stored onsite?
- How long is aggregate store onsite?
- How is the aggregate stored (e.g., on paved ground)?
- Where in the facility is the aggregate stored?
- Where is the aggregate sent (please include addresses)?
- Describe the offsite transportation and if any Department of Transportation (DOT) requirements are followed.

12. *Describe how your facility chemically treats metal shredder waste. For the purposes of this document only, "metal shredder waste" shall mean the material remaining after metal recovery is complete. Include how metal shredder waste not chemically treated is sent to the treatment process, how screening is conducted, the types of equipment used to perform the chemical treatment, chemical formulas and doses, and the sampling and analysis performed on the chemically treated metal shredder waste to ensure adequate treatment.*

Treatment of aggregate that has been fully processed for non-ferrous metals occurs in-line at the end of the non-ferrous metals recovery process. Residual materials from all of the various non-ferrous recovery steps as previously described are combined on a single, scaled (weigh belt) conveyor which delivers material to the treatment auger. A proprietary silicate-phosphate liquid is applied first. Silicate-phosphate is drawn from a tote into a foamer/tank where it is blended with a 9 – 13x volume of water. This solution is pumped from the foamer tank and is combined with the metal shredder waste in the auger chamber. The auger blends and pushes the treated material toward the cement feeds. The proprietary, non-hydraulic cement is formulated to reduce the leachability of metals. The incoming weigh belt scale is used to control the by-weight cement allocation, 9.0 – 10.0%, at the treatment auger. Cement is fed into the auger chamber from adjacent silos and applied to the material in the remaining length of the auger chamber, approximately five (5) meters, before being deposited onto the outgoing conveyor. The auger mixes and blends the material with the cement and silicate phosphate solution. The resident time in the auger is approximately sixty seconds. Fully treated material is then passed under a magnet for final ferrous metal recovery and then conveyed to a stacking conveyor. The treated aggregate (TASR) is then loaded into end dumps and then transported to the receiving landfill.

Treated metal shredder waste is sampled from the TASR staging area. Multiple grab samples, of 200 – 500 grams/each, are taken from random locations from the surface and accessible depths of the stored treated waste, per shift. These are added to a one (1)-gallon plastic bag during or following each shift of a production run; defined as consecutive or near-consecutive days during which the non-ferrous recovery plant is operated and metal shredder waste is treated. The resulting composite sample is coned and quartered before being submitted to the receiving laboratory. Analysis of this composite sample includes analysis of volatile organic compounds (VOCs) via EPA method 8260B, poly-chlorinated biphenyls (PCBs) via EPA method 8082, and

soluble cadmium, chromium, copper, lead, mercury, nickel and zinc via the Waste Extraction Test (WET). One such composite sample is analyzed per month.

The Bakersfield facility is participating in an ongoing MSR Treatability Study that is evaluating the effectiveness of the treatment process and will serve as a basis for uniform, statewide treatment standards appropriate to TASR.

13. *Do landfills, regional water quality control boards, or other regulating authority impose any requirements on treated metal shredder waste sent for disposal or use as Alternative Daily Cover (ADC)? If so, what are the requirements?*

There are reporting and sampling and analysis requirements specified by the Waste Discharge Requirements (WDRs) of receiving landfills. These WDRs apply to all treated auto shredder residue (TASR) deposited at the landfill, regardless of whether or not it is put to beneficial reuse.

The landfill is required to record the quantity of TASR deposited each month and the number of loads deposited from each generator. The landfill must also report the TASR laboratory analysis results provided by the generator, in addition to those from the landfill's own monitoring.

Analysis of TASR samples include analysis of volatile organic compounds via EPA method 8260B, polychlorinated biphenyls via EPA method 8082, and soluble cadmium, chromium, copper, lead, mercury, nickel and zinc via the Waste Extraction Test (WET). Results are reported to the receiving landfill quarterly and upon request.

14. *Is untreated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?*

There is no untreated shredder waste stored on-site. At the conclusion of the non-ferrous recovery process, processed aggregate is conveyed directly to the treatment process and treated in-line as discussed above.

15. *Is treated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?*

TASR is staged for shipment near the MRP plant on a concrete floor. There is typically 100-300 tons of TASR on site at any one time, which is approximately three days' worth of production.

16. *How much treated metal shredder waste, if any, was transported offsite in the calendar year January 1, 2014, through January 1, 2015? List all destinations with addresses.*

From January 1st, 2014 to January 1st, 2015, the facility shipped 24,567 tons of treated metal shredder waste to:

H.M. Holloway, Inc.
Office address:
2019 Westwind Drive, STE B
Bakersfield, CA 93301-3030

Landfill Facility address:
13850 Holloway Rd, Lost Hills, CA 93249

17. *Describe the offsite transportation of metal shredder wastes. Are there any DOT requirements followed during transportation?*

Treated metal shredder waste is transported on a non-hazardous waste manifest. Material is loaded into end dumps and a tarpaulin is placed over the exposed surface. The transportation activity is conducted in compliance with the US Department of Transportation regulations and the Federal Motor Carrier Safety Administration (49 CFR Parts 300-399).

DTSC QUESTIONNAIRE
METAL SHREDDING FACILITIES
SA RECYCLING ANAHEIM FACILITY
3200 E. Frontera Street, Anaheim, CA 92806

- 1. Describe your facility’s scrap metal acceptance policy, and describe all materials you bring into your facility for shredding, metals recovery, or both.

The SA Recycling material acceptance policy is contained in the attached document titled “Supplier Source Control Procedure” (revised 3/27/15). (See Attachment 1)

The facility receives every type of metal material including:

Automobiles, consumer and industrial appliances, manufacturing scrap, curbside collection scrap, demolition scrap, consumer/homeowner scrap, industrial scrap. The facility receives scrap from industrial accounts, including materials from other scrap metal recycling facilities. All materials received meet the definition of “scrap metal” under title 22, CCR, section 66260.10.

The “Supplier Source Control Procedure” document contains a Prohibited Materials List which details the types of materials that are not accepted at the shredder. Automobiles must have all fluids drained to the extent practical, and batteries and mercury switches removed. Appliances such as refrigerators must be properly depolluted prior to being sent to the shredder infeed area. In some circumstances, appliances and vehicles will be de-polluted on site, pursuant to applicable law, in a specially designated area, prior to being sent to the shredder. Items removed/recovered from the de-polluting process including waste oil, diesel/gasoline fuel, batteries, capacitors etc. are all managed under separate programs per State regulations.

- 2. How much material by weight did your facility shred from January 1, 2014, through January 1, 2015? Include the percentage of total materials shredded annually for each of the following: vehicles, appliances, and other forms of scrap metal.

A total weight of approximately 225,000 MT of material was shredded for the year 2014.

Annual percentages of material are as follows:

Vehicles:	39.25%
Appliances/Tin:	34.63%
Other/Misc:	26.11%

- 3. What type of shredder (e.g., the model, brand and its horsepower) is used by your facility?

Shredder is manufactured by The Shredder Company. Model #124-SXS Mega Shredder 7,000 Horse Power

4. *Is your facility's shredder equipped with an Air Pollution Control Device (APCD)?*

Yes. The shredder is controlled by a five-stage air pollution control system (APCS), which has a permit to construct (A/N 495678, attached) issued by the South Coast Air Quality Management District. The permit to operate is pending until a final compliance source test approval is granted by the SCAQMD.

APCS Stage One

Shredder overhead, multi-hood exhaust system that captures 90% of all particulate matter (PM) and volatile organic compounds (VOC's) and send those emissions through the second stage.

APCS Stage Two

Dust/Mist Collector - Custom designed and manufactured, Model No. TAME-40K-2008, dual parallel compartments designed to capture oils, PM and moisture present in the gas stream. VOC's are not controlled at this stage and are carried into stage three and four, and are abated in stage five, in the RTO.

- Mist Eliminating Wall manufactured by AAF International (initial moisture control)
- Two -inch thick poly pad (coarse PM, and oils control)
- HS Aluminum Filters (additional moisture control)
- Drop Safe Rigid Pocket Bag Filters (PM and microscopic water molecules filtration)*
- DP-40 Synthetic PM Filters (additional PM filtration at MERV 8)*
- HydroVee, High Efficiency PM Filters (additional PM filtration at MERV 15)*

*All PM filters in the TAME Unit indicated by an asterisk above will be removed if the Donaldson Baghouse listed below is in operation. The SCAQMD has directed additional PM testing of the Donaldson Baghouse, without PM filters in the TAME Unit. Additional PM testing will be completed by August 2015.

APCS Stage Three

This stage is a PM control stage that uses a 484-RF Donaldson Baghouse. This unit is a continuous duty dust collector with 484 oleophobic, bag-style filters designed to handle upwards of 100,000 SCFM applications with heavy dust loads.

APCS Stage Four

40K SCFM Regenerative Thermal Oxidizer (RTO). The 40K SCFM RTO, Model No. RETOX 40.0 RTO095, was manufactured by CECO-ADWEST Technologies.

APCS Stage Five

HEE Environmental Chemical Scrubber – The vertical, counter-current chemical scrubber neutralizes the exhaust from the RTO.

How else does your facility control any particulate emissions throughout the facility?

Anaheim employs a number of measures to control particulate matter emissions as follows:

- The shredding chamber is enclosed by a large hood.
- The ferrous magnet system is enclosed within a building.
- The entire Metals Recovery Plant (MRP) operation, from receipt of aggregate via conveyor through non-ferrous and ferrous recovery operations to loading out TARS in trucks, is conducted within an enclosed structure.

Material stacking areas are swept periodically throughout the day, as necessary. The sweeping is performed with a mechanical broom. During operations, the mechanical broom is used to maintain the outer boundary of the intake piles of feedstock material by pushing material on the edge of the piles back toward the center of the pile.

A TYMCO sweeper is used to clean-up the entrances and driveways on a regular basis, as necessary throughout the day. Water is applied to the yard haul roads and piles of materials throughout the day with a water truck, as necessary.

The entire facility is concrete paved and is designed to collect/divert all residual process water to an on-site waste water treatment facility, where the water is recycled for re-use on-site.

In addition to being completely enclosed in a building, the MRP is equipped with dust collectors to control particulate matter during the non-ferrous metals recovery process. The MRP uses a series of pulse-jet type dust collectors on all of its cyclones to control particulate emissions.

5. *Provide a copy of all permits and other forms of authorization issued to your facility by any governmental entity related to metal shredding activities.*

Anaheim holds SCAQMD permits to construct/operate the shredder (Permit to Construct/Modify No. 502884), the MRP (G16984), and the shredder APCS (Permit to Construct No. 495678). The facility also holds a CAR permit and an NOI issued by the State Water Resources Control Board. Copies of permits are provided in attachment 2.

6. *Describe the ferrous metals separation process, including how shredded material is sent to the ferrous metals separation process, the type of magnet used, if any,*

The shredder feed materials, including automobiles and appliances, are loaded onto the conveyor using grapple cranes and front-end loaders and are conveyed into the hooded shredding chamber (vented to the Air Pollution Control System).

The shredder shreds the cars and scrap metal materials into fist sized pieces. (All shredded material must exit the shredder chamber through eight inch square grate openings). This stream of material collectively is called "Aggregate".

All shredded Aggregate exits the shredder onto a shaker table, which then transfers the materials to a single conveyor belt. That single flow of Aggregate is split into two equal streams of material and continues through two parallel processing lines. Each stream is run over a first drum magnet (SGM Drum Magnet, Model TMR-60"/98" 60 inch diameter by 98 inch wide). The magnetic fraction, which primarily consists of steel and iron materials, is conveyed via a short length shaker table to a second identical SGM drum magnet, which further separates the magnetic fraction from the non-magnetic fraction. The two non-magnetic fractions are combined onto a conveyer which runs under a 36 inch diameter by 48 inch wide magnetic tail pulley to recover residual magnetic steel and returns that steel to the larger SGM drum magnets via a conveyer.

The non-magnetic Aggregate contains non-magnetic metals such as aluminum, copper, zinc and stainless steel. After the magnetic separation process, the Aggregate is conveyed to the enclosed MRP building where it is staged prior to being fed into the MRP.

...and under what circumstances would materials exiting the ferrous metals separation process be reintroduced?

The MRP process screens out oversized material (+ 5 inches) which can be returned to the shredder in-feed area for re-shredding.

Materials that have accumulated on and under the conveyor belts and picking stations and related equipment described above are returned to the shredder in-feed for re-shredding.

Also, indicate if your facility recovers ferrous metals from any material that is not shredded at your facility. If so, please describe that process and a site map of where activities occur when applicable.

The Anaheim facility receives all types of scrap metal, including prepared and unprepared materials that are not shredded at the facility. The prepared materials, including HMS (Heavy Melt Steel) and P&S (Plate and Structural) are received and stockpiled for shipment to the SA Terminal Island facility or loaded directly into overseas shipping containers or shipped to other domestic markets. The unprepared materials are sheared or cut in the areas designated for those activities on the site map. The facility operates a portable hydraulic "alligator" type shear mounted on a back-hoe type tractor which is used to size longer pieces of steel into lengths typically under 5 feet.

Scrap materials that are too heavy to be cut by the shear are directed to a designated torch cutting area. After processing to reduce the size and length of the scrap metal, the material is loaded into trucks using an electro-magnet attached to a crane.

Please include representative pictures of the ferrous recovery process and a site map of where activities occur when applicable.

- Site Map (See Attachment 3)
- Magnet Photos (See Attachment 4)

7. *Is the shredded material ever stored onsite before ferrous metal recovery occurs? If so, on average how much and for how long is it stored, how is it stored (e.g., on a paved surface), and where in the facility is it stored?*

No, shredder output is always processed in-line after it leaves the shredder. Material may temporarily be located on a conveyance system in the event of an emergency shut-down; however, it is not stored in the system.

8. *If ferrous metals recovery does not occur onsite, please respond to the following questions:*

How much shredded material is stored onsite?

How long is shredded material stored onsite?

How is the shredded material stored (e.g., on paved ground)?

Where in the facility is the shredded material stored?

Where is the shredded material sent (please include addresses)?

Not-applicable

9. *Describe the nonferrous metals separation process at your facility, if any. Describe how aggregate (i.e., the shredded material remaining after ferrous metals separation) is introduced into that process, the type of system(s) used, where in your facility it occurs,*

Aggregate materials exiting the shredder go through the ferrous recovery stage, described above in question #6, and then are transferred by a conveyor directly to the aggregate staging area within the 85,000 square foot MRP building (enclosed, covered, concrete floor). From this staging area, the aggregate material is loaded onto a track feeder that meters the flow of the aggregate into the MRP.

The MRP uses a series of trommels, shaker screens, and water tanks to initially separate the aggregate into different fractions based on size and density.

Each of these fractions continues through the MRP, which utilizes three primary types of technology to separate and recover non-ferrous materials, as well as conventional magnets to recover residual ferrous materials.

The three primary technologies used for non-ferrous metal recovery include:

1. Eddy- current magnetic separators for most aluminum, zinc and copper materials
2. Sensors (air actuated) for stainless and copper wire
3. Density separators for fine copper materials

.....and under what circumstances would materials exiting nonferrous metals separation processes be reintroduced.

Materials that accumulate under or on the equipment are in-progress materials and are routinely returned to the infeed area using front-end loaders and skid-steer type tractors.

Any recovered product that does not meet a quality standard is returned to the aggregate in-feed area for re-processing. There are several product streams that require a second pass through the MRP.

Also indicate if your facility recovers nonferrous metals from any material that is not shredded at your facility. Please provide a site map of where activities occur.

The facility receives typical non-ferrous materials like aluminum and copper that is sorted and segregated into salable products, not associated with the shredder or MRP. The facility does not receive any previously shredded material from another location for non-ferrous recovery through the MRP.

10. *Is aggregate ever stored onsite prior to or during the nonferrous metals separation process? If so, how much is stored and for how long? Identify where in your facility it is stored.*

Yes, aggregate is staged within the MRP Building. (As designated on the site map)

The amount of aggregate on site ranges from 500 to 1,500 tons, which equates to 3 to 5 days of production.

11. *If nonferrous metals recovery does not occur onsite, please respond to the following questions:*

Not Applicable

- *How much aggregate is stored onsite?*
- *How long is aggregate store onsite?*
- *How is the aggregate stored (e.g., on paved ground)?*
- *Where in the facility is the aggregate stored?*
- *Where is the aggregate sent (please include addresses)?*
- *Describe the offsite transportation and if any Department of Transportation (DOT) requirements are followed.*

12. *Describe how your facility chemically treats metal shredder waste. For the purposes of this document only, "metal shredder waste" shall mean the material remaining after metal recovery is complete. Include how metal shredder waste not chemically treated is sent to the treatment process, how screening is conducted, the types of equipment used to perform the chemical treatment, chemical formulas and doses, and the sampling and analysis performed on the chemically treated metal shredder waste to ensure adequate treatment.*

Treatment of aggregate that has been fully processed for recovery of non-ferrous metals occurs in-line at the end of the non-ferrous metals recovery process. Residual materials from all of the various non-ferrous recovery steps as previously described are combined on a single, scaled (weigh belt) conveyor which delivers material to the treatment auger. A proprietary silicate-phosphate liquid is applied first. Silicate-phosphate is drawn from a tote into a foamer/tank

where it is blended with a 9 – 13x volume of water. This solution is pumped from the foamer tank and is combined with the metal shredder waste in the auger chamber. The auger blends and pushes the treated material toward the cement feeds. The proprietary, non-hydraulic cement is formulated to reduce the leachability of metals. The incoming weigh belt scale is used to control the by-weight cement allocation, 9.0 – 10.0%, at the treatment auger. Cement is fed into the auger chamber from adjacent silos and applied to the material in the remaining length of the auger chamber, approximately five (5) meters, before being deposited onto the outgoing conveyor. The auger mixes and blends the material along with the cement and silicate phosphate solution. The residence time in the auger is approximately sixty seconds. Fully treated material is then passed under a magnet for final ferrous metal recovery and then conveyed to a stacking conveyor, all within the enclosed MRP building. The treated aggregate (TASR) is then loaded into end dumps (all within the MRP building) and then transported to the receiving landfill.

Sampling of the treated metal shredder waste occurs approximately six (6) meters from the exit of the treatment auger chamber. Samples are taken manually from the conveyor and added to a composite, shift sample, each half-hour. Samples from a given week are combined - mixed, coned and quartered – before being submitted to the receiving laboratory for analysis of volatile organic compounds (VOCs) via EPA method 8260B, poly-chlorinated biphenyls (PCBs) via EPA method 8082, and soluble cadmium, chromium, copper, lead, mercury, nickel and zinc via the Waste Extraction Test (WET). One such weekly composite sample is analyzed per month.

The Anaheim facility is participating in an ongoing MSR Treatability Study that is evaluating the effectiveness of the treatment process and will serve as a basis for uniform, statewide treatment standards appropriate to TASR.

13. Do landfills, regional water quality control boards, or other regulating authority impose any requirements on treated metal shredder waste sent for disposal or use as Alternative Daily Cover (ADC)? If so, what are the requirements?

TASR is shipped to two landfills: Chiquita Canyon Landfill in Castaic CA, and Simi Valley Landfill in Simi CA. Both landfills operate under the jurisdiction of the Los Angeles Regional Quality Control Board. There are sampling and analysis and reporting requirements specified by the Waste Discharge Requirements (WDRs) of the receiving landfills for treated auto shredder residue (TASR) regardless of whether it is employed as alternative daily cover (ADC) or disposed of as waste. SA's understanding is that essentially all of the TASR received at both of these landfills is used as ADC.

The landfill is required to record the quantity of TASR deposited each month and the number of loads deposited from each generator. The landfill must report the TASR laboratory analysis results provided by the generator, in addition to those from the landfill's own monitoring per the WDR's.

Per the WDR's the analysis of TASR samples include analysis of volatile organic compounds via EPA method 8260B, polychlorinated biphenyls via EPA method 8082, and soluble cadmium, chromium, copper, lead, mercury, nickel and zinc via the Waste Extraction Test (WET).

The WDR's for Simi Valley Landfill also specify the sampling procedure and SA has adopted this procedure, as described above. Composite samples of TASR are collected daily; one (1)-pound sample each half-hour per shift. Samples from a given week are combined – mixed, coned and quartered – before being submitted to the receiving laboratory. One weekly composite sample, prepared as described, is submitted per month for the above-mentioned analysis.

Additionally, Simi Valley Landfill requires that one such sample, per quarter, be analyzed for the solubility of the full suite of “CAM-17” metals using the Synthetic Precipitation Leaching Procedure (EPA method 1312).

14. Is untreated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?

There is no untreated shredder waste stored on-site. At the conclusion of the non-ferrous recovery process, fully processed aggregate is conveyed directly to the treatment process and treated in-line as discussed above.

15. Is treated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?

TASR is staged for shipment in the MRP building under a roof on a concrete floor. There is typically 500-1,000 tons of TASR on site at any one time, which is approximately three or four days' worth of production.

16. How much treated metal shredder waste, if any, was transported offsite in the calendar year January 1, 2014, through January 1, 2015? List all destinations with addresses.

From January 1st, 2014 to January 1st, 2015, the facility shipped 87,093 tons of treated metal shredder waste to two (2) landfills:

- Simi Valley Landfill
2801 Madera Rd
Simi Valley, CA 93065
- Chiquita Canyon Landfill
29201 Henry Mayo Drive
Castaic, CA 91384

21,988 tons of treated metal shredder waste shipped to Chiquita Canyon Landfill.

65,105 tons of treated metal shredder waste shipped to Simi Valley Landfill.

17. Describe the offsite transportation of metal shredder wastes. Are there any DOT requirements followed during transportation?

Treated metal shredder waste is transported on a non-hazardous waste manifest. Material is loaded into end dumps and a tarpaulin placed over the exposed surface. The transportation activity is conducted in compliance with the US Department of Transportation regulations and the Federal Motor Carrier Safety Administration (49 CFR Parts 300-399).

**Ecology Auto Parts, Inc.'s Responses to DTSC's
Questionnaire to Metal Shredding Facilities
Dated May 8, 2015**

Question 1. Describe your facility's scrap metal acceptance policy and describe all materials you bring into your facility for shredding, metals recovery, or both.

Answer 1. Ecology Auto Parts, Inc. ("Ecology") accepts various types of materials for shredding, including vehicles, appliances and tin, and other forms of scrap metal. However, Ecology does *not* accept the following materials at its shredder facility:

- dross, slag, or dust containing lead;
- electrical transformers;
- unattached oil filters or oil-contaminated products;
- asbestos;
- sealed or crushed drums, or pails with lids (unless thoroughly cleaned and opened on one end);
- compressed gas cylinders;
- magnesium borings, turnings, grindings, or fines;
- steel, zirconium, or non-ferrous turnings or borings that contain oil;
- radioactive substances or wastes;
- munitions scrap of any kind;
- mercury or mercury switches;
- wood, concrete, unattached tires, paint, cathode ray tubes in equipment, or other non-metallic waste debris;
- infectious waste;
- storage tanks or batteries;
- railcars with fiberglass insulation.

In most instances, un-screened automobile bodies (i.e., auto bodies that have not been de-polluted) are *not* accepted directly at Ecology's shredder facility; that is, they have been pre-screened (de-polluted) at a scrap vehicle yard before delivery to the shredder facility and had the following items removed beforehand (or otherwise, such items will be removed by Ecology):

- automotive fluids drained, including gasoline, oil, and antifreeze;
- refrigerants collected for recycling;
- all mercury-containing materials, such as light switches, anti-lock braking system (ABS) components, and televisions.

Other sources of scrap metal material are screened in the scale area of the facility in the customers' presence. All rejected materials are retained by the customers.

Question 2. How much material by weight did your facility shred from January 1, 2014, through January 1, 2015? Include the percentage of total materials shredded annually for each of the following: vehicles, appliances, and other forms of scrap metal.

Answer 2. During the fourth quarter of 2014, Ecology averaged approximately 22,000 tons of shredded materials per month. During that same period, the percentage breakdown per month of materials shredded averaged as follows:

- Vehicles - 35%
- Appliances and tin --, 56%
- Other forms of metal --, 9%

These percentages tend to be consistent from quarter to quarter.

Question 3. What type of shredder (e.g., the model, brand, and its horse power) is used by your facility?

Answer 3. Ecology uses the following type of shredder:

- Model: Hammer Mill (dimensions: 96 in. x 104 in.)
- Brand: Metso
- Horse Power: 6000

Question 4. Is your facility's shredder equipped with an Air Pollution Control Device (APCD)? How else does your facility control any particulate emissions throughout the facility?

Answer 4. Yes, Ecology's shredder is equipped with multiple Air Pollution Control Devices, including a HEPA-equipped mechanical filtration system for ultra-fine particulate control, as well as a regenerative thermal oxidizer (RTO) for volatile organic compound (VOC)-control. Ecology also uses spray nozzles inside of the mill-box during the shredding process.

Ecology has implemented multiple dust-control and fugitive emissions-control measures throughout the facility. The entire shredding area, including the receiving and stockpile areas, is completely paved, and all incoming and outgoing trucks are tarped. Ecology employs a full-time mechanical street sweeper for continuous cleaning throughout the day, and the shredder area is swept again at night once operations are completed for that day. Ecology uses a 40-foot high overhead, remote-controlled water cannon and a Dust Boss to spray down the shredder area and stockpile. Ecology also uses a water truck to wash down specific areas when needed.

Question 5. Provide a copy of all permits and other forms of authorization issued to your facility by any governmental entity related to metal shredding activities.

Answer 5. Ecology is attaching copies of the following permits and authorizations as they relate to its metal shredding activities:

- South Coast Air Quality Management District "Permit to Operate" for the shredder system;
- South Coast Air Quality Management District "Permit" for the regenerative thermal oxidizer and auto body shredding (among other listed permitted activities, e.g. storage and dispensing of gasoline);
- *San Bernardino County CUPA "Annual Permit";
- *State Water Resources Control Board "Notice of Intent" listing the waste discharge identification number (WDID) under the General Industrial Storm Water Permit;

- Cal. EPA Department of Toxic Substances Control "Appliance Recycler Certification" listing the Cal. EPA identification number;
- Department of Toxic Substances Control letter dated August 1, 2005 giving confirmation of non-hazardous waste classification;
- Department of Toxic Substances Control Declassification letter dated September 24, 1987 (originally issued to Clean Steel);
- **Colton Fire Department Permit.

* Pacific Rail Industries is a dba of Ecology Auto Parts, Inc.

** Pacific Rail Dismantling Services, Inc. is a wholly owned subsidiary of Ecology Auto Parts, Inc.

Question 6. Describe the ferrous metals separation process, including how shredded material is sent to the ferrous metals separation process, the type of magnet used, if any, and under what circumstances would materials exiting the ferrous metals separation process be reintroduced. Also indicate if your facility recovers ferrous metals from any material that is not shredded at your facility. If so, please describe that process. Please include representative pictures of the ferrous recovery process and a site map of where activities occur when applicable.

Answer 6. After materials are shredded, they are sent by conveyor to a pan feeder that delivers the materials to a Steinert (brand) drum magnet. At that point, the shredder output falls onto a second conveyor, which delivers the steel to a second feeder, which in turn transfers the steel to a second drum magnet for more cleaning. A third conveyor brings the steel underneath a "Z-box" cyclone, which functions as a large vacuum to pull out the light non-metallic material. Thereafter, the steel travels to a picking station where employees, by hand, pull out the rubber and any other remaining debris. A fourth conveyor then brings the steel to a finished stockpile. Photos of the shredder box, the drum magnets, and "Z-box" cyclone are included.

Ecology does not recover any ferrous metals from other shredder facilities. Occasionally, Ecology will receive a heavy piece of steel that cannot be shredded due to its size. In those instances, the steel is processed in a separate area of the facility by using a hydraulic shear.

Question 7. Is the shredded material ever stored onsite before ferrous metal recovery occurs? If so, on average how much and for how long is it stored, how is it stored (e.g., on a paved surface), -and where in the facility is it stored?

Answer 7. No, the shredded material is not stored onsite before performing ferrous metal recovery.

Question 8. If ferrous metals recovery does not occur onsite, please respond to the following questions:

- How much shredded material is stored onsite?
- How long is shredded material stored onsite?
- How is the shredded material stored (e.g., on paved ground)?
- Where in the facility is the shredded material stored?
- Where is the shredded material sent (please include addresses)?

Answer 8. Not applicable, because ferrous metal recovery *does* occur onsite.

Question 9. Describe the nonferrous metals separation process at your facility, if any. Describe how aggregate (i.e., the shredded material remaining after ferrous metals separation) is introduced into that process, the type of system(s) used, where in your facility it occurs, and under what circumstances would materials exiting nonferrous metals separation processes be reintroduced. Also indicate if your facility recovers nonferrous metals from any material that is not shredded at your facility. Please provide a site map of where activities occur.

Answer 9. Not applicable, because nonferrous metals separation does *not* occur at this facility. See Answer 11 below.

Question 10. Is aggregate ever stored onsite prior to or during the nonferrous metals separation process? If so, how much is stored and for how long? Identify where in your facility it is stored.

Answer 10. See Answer 11 below, although nonferrous metals separation does *not* occur at this facility.

Question 11. If nonferrous metals recovery does not occur onsite, please respond to the following questions:

- How much aggregate is stored onsite?
- How long is aggregate stored onsite?
- How is the aggregate stored (e.g., on paved ground)?
- Where in the facility is the aggregate stored?
- Where is the aggregate sent (please include addresses)?
- Describe the offsite transportation and if any Department of Transportation (DOT) requirements are followed.

Answer 11. Ecology does not perform nonferrous metals recovery onsite.

- Ecology temporarily stages anywhere from zero tons up to approximately 800 tons of aggregate onsite.
- The aggregate may be staged onsite for up to approximately two days.
- The aggregate is staged underneath a three-sided steel building (receiving bay). The building has a 12-inch thick concrete floor, with a half-inch, solid steel plate above it. Any water that may drain from the aggregate travels to a floor drain, where it is pumped to a one-million gallon tank for reuse in the shredding process.
- The receiving bay is located approximately 150-feet north of the drum magnets.
- The aggregate is sent to Ecology's Arizona facility for nonferrous recovery, which is located at 59260 Highway 72, Salome, Arizona, 85348.
- The aggregate is trucked by Ecology employees in Ecology-owned trailers. Ecology hauls the aggregate primarily in end-dump trailers, which are tarped and have rubber seals on their back doors. The aggregate is *not* handled or held at any interim location during transit. Ecology complies with all applicable DOT requirements.

Question 12. Describe how your facility chemically treats metal shredder waste. For the purposes of this document only, "metal shredder waste" shall mean the material remaining after metal recovery is complete. Include how metal shredder waste not chemically treated is sent to the treatment process, how screening is conducted, the types of equipment used to perform the

chemical treatment, chemical formulas and doses, and the sampling and analysis performed on the chemically treated metal shredder waste to ensure adequate treatment.

Answer 12. Not applicable. See Answer 11 above.

Question 13. Do landfills, regional water quality control boards, or other regulating authority impose any requirements on treated metal shredder waste sent for disposal or use as Alternative Daily Cover (ADC)? If so, what are the requirements?

Answer 13. Not applicable. See Answer 11 above.

Question 14. Is untreated metal shredder waste stored onsite prior to treatment? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?

Answer 14. Not applicable. See Answer 11 above.

Question 15. Is treated metal shredder waste stored onsite before disposal? If so, how much and for how long is it stored, how is it stored and where on the facility is it stored?

Answer 15. Not applicable. See Answer 11 above.

Question 16. How much treated metal shredder waste, if any, was transported offsite in the calendar year January 1,2014, through January 1,2015? List all destinations with addresses.

Answer 16. Not applicable. See Answer 11 above.

Question 17. Describe the offsite transportation of metal shredder wastes. Are there any DOT requirements followed during transportation?

Answer 17. Not applicable. See Answer 11 above.

APPENDIX B: COMBINED LANDFILL QUESTIONNAIRES



**Altamont Landfill & Resource Recovery Facility
10840 Altamont Pass Road, Livermore, CA 94551**

July 27, 2015

Mr. Rick Brausch
Policy and Program Support Division
Hazardous Waste Management Program
Department of Toxic Substances Control
1001 I Street, 23rd Floor
P.O. Box 8006
Sacramento, California 95812-0806

Re: Information Request for Implementation of Senate Bill (SB) 1249 (Hill, Chapter 756, Statutes of 2014)

Dear Mr. Brausch:

This letter is in response to your letter dated May 20, 2015 regarding the management of metal shredder waste that occurs at Waste Management of Alameda County, Inc.'s (WMAC) Altamont Landfill & Resource Recovery Facility (ALRRF) in Livermore, California.

The following questions are those that you requested be answered in the questionnaire attached to your original letter.

- 1. Please provide the policy that applies to the acceptance of metal shredder waste.*

WMAC Response: Metal shredder waste is allowed through ALRRF's Waste Discharge Requirements (WDR). The language that addresses metal shredder waste in the WDR (Findings 16 and 17) is attached.

- 2. How much metal shredder waste by weight did your facility accept from January 1, 2014, through January 1, 2015? Please include the name and address of each metal shredding facility that sent the metal shredder waste and how much they sent during the calendar year.*

WMAC Response: ALRRF accepts metal shredder waste from two companies:

Sims Metal Management
699 Seaport Ave.

Redwood City, CA, 94063
63,505.78 tons accepted 1/1/14-1/1/15

Schnitzer Steel
1101 Embarcadero West
Oakland, CA, 94607
99,897.19 tons accepted 1/1/14-1/1/15

3. *What percentage of metal shredder waste was used as Alternative Daily Cover (ADC)?*

WMAC Response: 100% of metal shredder waste was used as ADC.

4. a. *How much metal shredder waste is stored onsite prior to its use as ADC?*

WMAC Response: ALRRF tries to minimize the amount of stockpiled metal shredder waste by using it as it is received. The amount that is stored onsite varies based on the amount coming in, placement availability, and the classification of the area currently being filled (i.e., Class II or Class III). At times, the stockpile size may grow to up to 300 tons, but this is not the norm.

- b. *How long is it stored?*

WMAC Response: ALRRF tries to use metal shredder waste as it is received. It is normally used within two weeks of receipt but may be stored longer based on operational needs.

- c. *How is it stored?*

WMAC Response: It is stored in the Class II unit (Fill Area 1, Unit 2).

- d. *Where in the facility is it stored? Please provide a site map of the location.*

WMAC Response: Metal shredder waste is stored in the landfill footprint, in the Class II unit. Stockpiles move based on the location of the active fill area. See attached map. The Class II unit is Fill Area 1, Unit 2.

5. *Please answer the following questions (5.A.—5.D.) pertaining to metal shredder waste accepted at your facility but not used as ADC:*

- a. *How much metal shredder waste is stored onsite prior to its use as ADC?*

- b. *How long is it stored?*

- c. *How is it stored (e.g., on a paved surface)?*

d. Where in the facility is it stored? Please provide a site map of the location

WMAC Response: N/A. All metal shredder waste at ALRRF is used as ADC.

6. *Do the regional water quality control boards or other regulating authorities impose any requirements on your facility concerning metal shredder wastes? If so, what are those requirements?*

WMAC Response: The WDR referenced in question #1 above is attached. Findings 16 and 17 address metal shredder waste.

7. *Provide a copy of all permits and other forms of documented authorization issued to your facility by any governmental entity related to metal shredder waste management activities, and a copy of any data your facility may have regarding the toxicity characteristics of metal shredder waste.*

WMAC Response: The WDR referenced in questions #1 and #6 above is attached. ALRRF's Solid Waste Facility Permit (SWFP) is attached. Section 7, page 15, of ALRRF's Joint Technical Document (JTD) addressing metal shredder waste is attached. Metal shredder waste generators provide PCB data for every 1000 tons of metal shredder waste disposed of.

8. *Are other management requirements followed by your facility for metal shredder waste when accepting, handling, storing and ultimately disposing of or using metal shredder waste as ADC? If so, please describe those requirements.*

WMAC Response: Metal shredder waste is generally placed on semi-flat surfaces and interior slopes. It is applied with a minimum compacted thickness layer of six inches and average compacted thickness of less than 24 inches. A D6 dozer performs application as needed. To maximize efficiency and facilitate its timely use in cover operations, metal shredder waste is initially unloaded near the active disposal area.

Metal shredder waste is also used as an extender for solidification of liquid or semi-solid waste (i.e., waste containing less than 50% solids) and dewatered sewage or water treatment sludge prior. The liquid/semi-solid waste is mixed with the metal shredder waste in a clay-lined pit or solidification basin in the Class II unit until the combined material is greater than 50% solids by volume. The solidified waste is then loaded by the excavator into a dump truck and transported to the active face. At the active face, the ADC material is spread using bulldozers.

If you have any questions regarding the content of this report, please contact me at (925) 455-7305.

Sincerely,



Sarah Fockler
Environmental Protection Specialist

Altamont Landfill and Resource Recovery Facility

Attachments:

Attachment A – ALRRF WDR

Attachment B – Site Map

Attachment C –ALRRF SWFP

Attachment D – ALRRF JTD

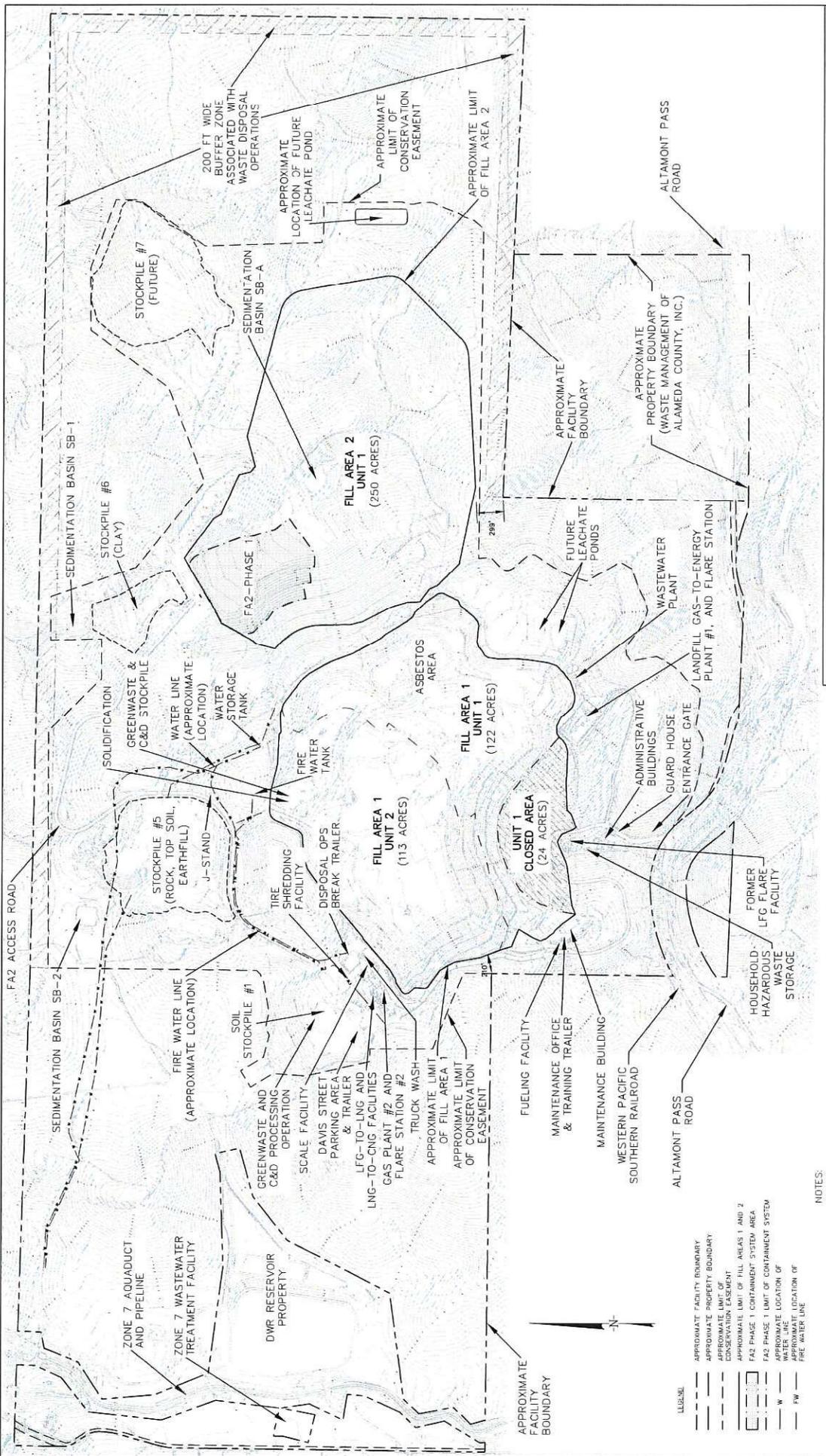
Attachment A

ALRRF WDR

15. The Discharger accepts for disposal and discharges wastes containing greater than one percent (>1%) friable asbestos to the landfill units. These wastes are classified as 'hazardous' under CCR title 22. However, these wastes do not pose a threat to groundwater quality and Section 25143.7 of California's Health and Safety Code permits their disposal in any landfill that has WDRs that specifically permit the discharge, provided that the wastes are handled and disposed of in accordance with applicable statutes and regulations.
16. The State Water Resources Control Board adopted Resolution No. 87-22 on 19 March 1987. This Resolution allows the discharge of shredder wastes to Class III landfills where WDRs allow such disposal.
17. Treated (stabilized) auto shredder waste (TASW) is any non-recyclable waste from the shredding of automobile bodies (from which batteries, mufflers, mercury switches, and exhaust pipes have been removed), household appliances, and sheet metal. The Discharger proposed to continue to discharge TASW in the top lift of Fill Area 1, Unit 1 where it will not be exposed to acidic leachate. The Discharger also proposes to continue to use TASW as alternative daily cover, beneficial reuse material, or to dispose of it in all the applicable Class II landfill areas. In the past, TASW has been discharged at the landfill under a waiver from the Department of Toxic Substances Control (DTSC), and at the Class III unit, pursuant to Resolution No. 87-22. DTSC's waiver is currently under review and may be rescinded due to new data and information indicating it should be managed as a hazardous waste due to increasingly high concentrations of toxic metals, and concerns about the long-term effectiveness of the stabilization treatment process. If DTSC makes the determination that TASW is a special hazardous waste and requires management at a Class I facility, this Order prohibits the discharge of auto shredder waste (treated or untreated) at the Altamont Landfill.
18. The Discharger proposes to discharge treated wood waste at the landfill. CCR title 22 defines "Treated wood" to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following). This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).
19. Findings and specifications in these WDRs apply only to treated wood waste that is a hazardous waste, solely due to the presence of a preservative in the wood, and is not subject to regulation as a hazardous waste under the federal act. Treated wood that is not a hazardous waste can be handled as C&D debris or

Attachment B

Site Map



Attachment C

ALRRF SWFP

SOLID WASTE FACILITY PERMIT

1. Facility/Permit Number:

01-AA-0009

2. Name and Street Address of Facility:

Altamont Landfill and Resource Recovery Facility
10840 Altamont Pass Road, Livermore CA 94551

3. Name and Mailing Address of Operator:

Waste Management of Alameda County
172 98th Avenue
Oakland, CA 94503

4. Name and Mailing Address of Owner:

Waste Management of Alameda County
172 98th Avenue
Oakland, CA 94503

5. Specifications:

a. Permitted Operations:

- | | |
|---|--|
| <input type="checkbox"/> Composting Facility (mixed wastes) | <input type="checkbox"/> Processing Facility |
| <input type="checkbox"/> Composting Facility (yard waste) | <input type="checkbox"/> Transfer Station |
| <input checked="" type="checkbox"/> Landfill Disposal Site | <input type="checkbox"/> Transformation Facility |
| <input type="checkbox"/> Material Recovery Facility | <input type="checkbox"/> Other: |

b. Permitted Hours of Operation:

(Receipt of Refuse/Waste) **24 hours**
(Ancillary Operations/Facility Operation Hours) **24 hours**
(Public Hours) **Monday through Friday 6 a.m. to 6 p.m.**

c. Permitted Tons per Operating Day:

11,150 Tons per Day for Disposal

d. Permitted Traffic Volume:

557 Refuse Vehicles per Day

e. Key Design Parameters (Detailed parameters are shown on site plans bearing LEA and CIWMB validations):

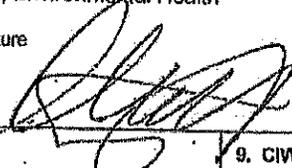
	Total	Disposal	Transfer	MRF	Composting	Transformation
Permitted Area (In acres)	2,170	472	N/A	N/A	N/A	N/A
Design Capacity		87.1 million tons 124.4 million cubic yard	N/A	N/A	N/A	N/A
Max. Elevation (Ft. MSL)		1200 feet				
Max. Depth (Ft. BGS)		540 feet				
Estimated Closure Date		2025				

Upon a significant change in design or operation from that described herein, this permit is subject to revocation or suspension. The stipulated permit findings and conditions are integral parts of this permit & supersede the conditions of any previously issued permit.

6. Approval:

Ariu Levi
Director, Environmental Health

Approving Officer Signature



7. Enforcement Agency Name and Address:

Alameda County Environmental Health
Office of Solid/Medical Waste Management
1131 Harbor Bay Parkway
Alameda, CA 94502

8. Received by CIWMB:

07/18/2005

9. CIWMB Concurrence Date:

08/16/2005

10. Permit Issued Date:

08/22/2005

11A. Next Permit Review Due Date:

08/22/2015

11B. Permit Transfer Date:

11C. Permit Review Date:

08/20/2010

SOLID WASTE FACILITY PERMIT

Facility Number:

01-AA-0009**12. Legal Description of Facility:**

The legal description of this facility is contained in page 2-4 of the Joint Technical Document dated September 15, 2004, Revised on 1 April 7, 2005.

13. Findings:

- a. This permit is consistent with the Alameda County Integrated Waste Management Plan, which was approved by the CIWMB on December 12, 2000. The location of the facility is identified in the Countywide Siting Element, pursuant to Public Resources Code (PRC), Section 50001(a).
- b. This permit is consistent with the standards adopted by the CIWMB, pursuant to PRC 44010.
- c. The design and operation of the facility is consistent with the State Minimum Standards for Solid Waste Handling and Disposal as determined by the enforcement agency, pursuant to PRC 44009.
- d. The Alameda County Fire Department has determined that the facility is in conformance with applicable fire standards, pursuant to PRC, 44151.
- e. An EIR was filed with the State Clearinghouse (SCH #1992083047) and certified by the Board of Supervisors on March 9, 2000. The EIR describes and supports the design and operation, which will be authorized by the issuance of this permit. A Notice of Determination was filed with the State Clearinghouse on March 9, 2000.
- f. The EIR consists of the EIR dated September 29, 1995, the Response to Comments Addendum dated March 29, 1996 and the Revised Final EIR dated January 2000.
- g. The Alameda County Planning Department has determined that the facility expansion is compatible with surrounding land use through the approval of Conditional Use Permit C-5512.

14. Prohibitions:

The permittee is prohibited from accepting the following wastes:

Hazardous, radioactive, medical (as defined in Chapter 6.1, Division 20 of the Health and Safety Code), liquid, designated, or other wastes requiring special treatment or handling, except as identified in the Report of Facility Information and approved amendments thereto and as approved by the enforcement agency and other federal, state, and local agencies.

15. The following documents describe and/or restrict the operation of this facility:

	Date		Date
Report of Disposal Site Information Revised	Sept. 15, 2004 April 7 2005	Preliminary Closure and Postclosure Maintenance Plan	pending
Waste Discharge Requirements Order No. R5-2002-0119	June 7, 2002	Closure Financial Assurance Documentation	pending
BAAQMD Permit to Operate #A2066	Feb. 1, 2005	Operating Liability Certification	pending
<u>EIR (SCH #1992083047)</u>	<u>March 9, 2000</u>	Land Use and/or Conditional Use Permit	March 9, 2000
EPA Major Facility Review Permit Administered by BAAQMD pursuant to Federal Title V	Dec. 1, 2003	NPDES No. 0083763	June 7, 2002
Alameda County Waste Management Authority Resolution No. 2000-10	May 24, 2000		

SOLID WASTE FACILITY PERMIT

Facility Number:

01-AA-0009**16. Self Monitoring**

The owner/operator shall submit all self monitoring programs to the Enforcement Agency within 30 days of the end of the reporting period

Program	Reporting Frequency
a. The types and quantities (in tons) of waste, including separated or commingled recyclables, entering the facility per day.	Monthly*
b. The number of refuse vehicles using the facility per day.	Monthly*
c. Results of the hazardous waste load checking program, including the quantities and types of hazardous wastes, medical wastes or otherwise prohibited wastes found in the waste stream and the disposition of these materials.	Available on site
d. Copies of all written complaints regarding this facility and the operator's actions taken to resolve these complaints.	Quarterly*
e. Results of the perimeter landfill gas migration monitoring program.	Quarterly*
f. Remaining site capacity with aerial surveys.	Annual by June 30
g. Annual mitigation monitoring program report.	Annually
h. Type, source and quantity of alternative daily cover materials received.	Available on site ,
<p>*All reports with monthly or quarterly frequency shall be due on the last day of the month following the reporting period.</p>	

SOLID WASTE FACILITY PERMIT

Facility Number:

01-AA-0009**17. Enforcement Agency (EA) Conditions:**

- a. The operator shall comply with all State Minimum Standards for solid waste handling and disposal as specified in Title 27, California Code of Regulations.
- b. The operator shall maintain a log of special/unusual occurrences. This log shall include, but is not limited to, fires, explosions, the discharge and disposition of hazardous or unpermitted wastes, and significant injuries, accidents or property damage. Each log entry shall be accompanied by a summary of any actions taken by the operator to mitigate the occurrence. The log shall be available to site personnel and the EA at all times.
- c. Additional information concerning the design and operation of the facility shall be furnished upon request and within the time frame specified by the EA.
- d. The maximum permitted daily tonnage for this facility is 11,150 disposal tons per day, and the facility shall not receive more than this amount without a revision of this permit.
- e. This permit is subject to review by the EA and may be suspended, revoked, or revised at any time for sufficient cause.
- f. The EA reserves the right to suspend or modify waste receiving and handling operations when deemed necessary due to an emergency, a potential health hazard, or the creation of a public nuisance.
- g. Any change that would cause the design or operation of the facility not to conform to the terms and conditions of this permit is prohibited. Such a change may be considered a significant change, requiring a permit revision. In no case shall the operator implement any change without first submitting a written notice of the proposed change, in the form of an RFI amendment, to the EA at least 150 days in advance of the change.
- h. A copy of this permit shall be maintained at the facility.
- i. Daily cover will be applied in an ongoing process during the "working day" which is up to 6.5 days long. No area of waste is to be exposed that will not be receiving waste or cover within 24 hours. At the end of the working day, the entire site is to be covered with at least 6 inches of soil or approved ADC.
- j. Covering of friable asbestos containing waste must begin within one hour of receipt of the final load of the day pursuant to the Asbestos Management Plan for the facility in the JTD.
- k. Operator shall implement all components of the litter control program as described in the JTD. The EA may require revisions to the program and implementation of additional control mechanisms if the facility is continuously in violation of State Minimum Standards for litter control.

Attachment D

ALRF JTD

the working face, processed green material shall comply with a grain size specification by volume of 95% less than 6 inches. Alternative processing and grain size specification requirements may be approved by the EA if the EA determines that the alternative meets the performance requirements of ¶(a)(2) and (a)(3) of this section and the CIWMB concurs."

Section 20690(b)(3)(C) restricts the use of processed green material "... to a minimum compacted thickness of 6 inches and average compacted thickness of less than or equal to 12 inches..." Section 20690(b)(3)(D) requires that "... processed green material placed as cover shall not be exposed for more than 21 days."

In accordance with Alameda County Ordinance 2008-01, the ALRRF no longer uses processed green waste materials as ADC.

Green waste material may be used as erosion protection in accordance with Alameda County Ordinance 2008-01.

Processed C&D Wastes

Section 20690(b)(9) of Title 27 allows for use of processed C&D waste, as well as the fines derived from processing of such materials, as ADC. The ALRRF accepts for use as ADC material screened from the C&D processing line at the Davis Street Transfer Station Material Recovery Facility. This screened material is less than 6 in. in diameter with average grain size around 1 in. It consists mainly of ground plant material that is commingled with the C&D wastes from construction work as well as soil, sand, and small amounts of wood products.

This material is typically used as ADC as an extender in solidification. This material is thought to work well in this process and compacts well to form a good cover material free of voids. The ALRRF may use this material by itself as ADC at some point but would be cognizant of potentially dusty conditions and would implement control mechanisms to ensure safety and compliance.

Treated Auto Shredder Waste (TASW)

Section 20690(b)(6)(B) of Title 27 states that "... treated auto shredder waste used for alternative daily cover shall be restricted to a minimum compacted thickness of 6 inches and average compacted thickness of less than 24 inches."

TASW at the ALRRF is utilized in accordance with these requirements. The material is unloaded near the active disposal area to facilitate its use in cover operations in Class II areas.



CHIQUITA CANYON

A Waste Connections Company

July 17, 2015

Mr. Rick Brauson, Chief
Policy and Program Support Division
Hazardous Waste Program

Dear Mr. Brauson:

In response to your letter titled; RE: INFORMATION FOR IMPLEMENTATION OF SENATE BILL (SB) 1249 (Hill, Chapter 756, Statutes of 2014), I would like to offer these responses to question 1-8 below for Chiquita Canyon Landfill.

1. Please provide the policy that applies to the acceptance of shredder waste. If no such policy exists, describe any practices and procedures used by your facility to accept such waste.
See attachment #1
2. How much metal shredder waste by weight did your facility accept from January 1, 2014 through January 1, 2015? Please include the name and address of each metal shredding facility that sent the metal shredder waste and how much they sent during the calendar year.
60,350.68 tons total.
 - SA Recycling LLC. 901 New Dock, San Pedro, CA 93731. 38,225.74 tons
 - SA Recycling LLC. 3200 E. Frontera St. Anaheim, CA. 92806. 22,124.94 tons
3. What percentage of metal shredder waste was used as Alternative Daily Cover (ADC)?
100%
4. Please answer the following questions (4.A. – 4.D.) pertaining to metal shredder waste accepted at your facility and used as ADC:
 - a. How much metal shredder waste is stored onsite prior to its use as ADC?
We generally do not store this material because the daily amount we get is usually less than or equal to our daily cover need. If we do store some it is typically only 1 or 2 days worth.
 - b. How long is it stored?
About one or two days.
 - c. How is it stored (e.g., on a paved surface)?
Near the working face of the landfill to facilitate its use the next day. The



material is placed on an already filled portion of the landfill which is underlain by a composite liner and leachate collection and removal system.

- d. Where in the facility is it stored? Please provide a site map of the location.
The working face moves around the landfill as the fill sequence progresses so the material is not ever really stored in the same location, therefore no map is provided.
5. Please answer the following questions (5.A. – 5.D.) pertaining to metal shredder waste accepted at your facility but not used as ADC: **N/A see answer on number 3.**
- a. How much metal shredder waste is stored onsite prior to its use as ADC?
- b. How long is it stored?
- c. How is it stored (e.g., on a paved surface)?
- d. Where in the facility is it stored? Please provide a site map of the location.
6. Do the regional water quality control board or other regulating authorization impose any requirement on your facility concerning metal shredder waste? If so, what are those requirements? You may exclude any permits or other forms of documented authorizations answered in question 7, below.
Cal Recycle has requirements governing the thickness of ADC in Title 27. The Los Angeles Regional Water Quality Control Board specified the testing requirements for acceptance of metal shredder waste in the landfills Waste Discharge Requirements.
7. Provide a copy of all permits and other forms of documented authorization issued to your facility by any governmental entity related to metal shredder waste management activities, and a copy of any data your facility may have regarding the toxicity characteristics of metal shredder waste. **See attachment 2**
8. Are other management requirements followed by your facility for metal shredder waste when accepting, handling, storing and ultimately disposing of or using metal shredder waste as ADC? If so, please describe those requirements. **N/A**

Please call me with any question at 661-371-9214 or email at steveca@wasteconnections.com

Sincerely



Steve Cassulo
District Manager
Chiquita Canyon Landfill

Cc:

Mr. Christopher Cho
Staff Attorney
Office of Legal Affairs
DTSC
1001 I Street, 23rd Floor
PO Box 806
Sacramento, CA. 95812-0806

Ms. Valetti Lang, Chief
Research and Policy Development Branch
Policy and Program Support Division
Hazardous Waste Program
DTSC
1001 I Street, 11rd Floor
PO Box 806
Sacramento, CA. 95812-0806

Mr. Kevin Sanchez
Senior Environmental Scientist (Specialist)
Research and Policy Development Branch
Policy and Program Support Division
Hazardous Waste Program
DTSC
1001 I Street, 11rd Floor
PO Box 806
Sacramento, CA. 95812-0806

Attachment 1

10.0 COVER AND BENEFICIAL USE

10.1 Cover Materials

27 CCR 21600(b)(6)(A)

Soil cover, consisting of excavated on-site soil and soil delivered to the landfill, is placed and compacted as required by 27 CCR 21600(b)(6), 20680, and 20700. Standards for cover are followed as described in 27 CCR 20705. This requires 6 inches of compacted daily soil cover and 1 foot of compacted intermediate soil cover to be placed on the working face, and the top and sideslopes, respectively, of each advancing lift. Cover materials are graded and compacted to: (1) prevent ponding of surface water over wastes, (2) direct runoff from the active waste area, and (3) minimize potential erosion.

On-site cover soil will be excavated from one of the excavation cells or borrow areas (Drawing B-2, Appendix B).

The Saugus Formation accounts for 80 percent of bedrock exposure and is as much as 1,800 feet thick above the Pico Formation within the site boundaries. It is composed mainly of fine- to medium-grain sandstone with 10 to 50 percent fines. Lenticular discontinuous beds of conglomerate lie within the sandstone. Highly plastic mudstone lenses have also been identified.

The Pico Formation, exposed at the extreme northern portion of the site, consists of cemented sandstone with interbedded conglomerate and siltstone. This formation, which is generally more resistant to weathering than the Saugus Formation, accounts for the steep cliffs to the north. The upper 200 to 300 feet of this formation may also contain soft siltstone and mudstone.

Excavation will take place as described in Section 6.3. Table 5 provides the estimated soil required for daily and intermediate cover.

10.2 Alternative Daily Cover

27 CCR 21600(b)(6)(B), 21600(b)(6)(C)

Waste is delivered to CCL in transfer trucks, collection trucks, and various other vehicles by commercial haulers, contract haulers, and the general public. The landfill is constructed using the area fill method. In general, waste is placed in 10- to 30-foot-thick lifts, and compacted in 2-foot-thick layers with typical working face slopes of 4:1 and maximum working face slopes of about 3:1. The size and shape of the working face varies daily depending on the specific geometry of where on the site the active filling is taking place. During the day, the size of the working face also varies. To control odors and blowing litter, the working face is kept as small as practical by placing ADC during the operating day. For example, in order to safely accommodate the truck traffic during the busiest time of day, the working face is at its largest. During slower periods of the day, daily cover may be placed on the working face to minimize the

size of the active face and to efficiently use the landfill's equipment and operator resources. Over the course of a typical day the total area requiring daily cover is about 60,000 sf (200 feet by 300 feet).

Daily cover is placed at the end of the operating day. However, as described above, daily cover may be placed over portions of the active area at various times during the operating day. At a time when the facility operates 24-hours per day, Monday through Saturday, daily cover is placed and compacted at least once during the 24-hour period and on Saturday at the end of the operating day.

ADC may be utilized consistent with 27 CCR 20690. ADC includes any material pre-approved in 27 CCR 20690: geosynthetic materials, foam, processed green material, ash and cement kiln dust materials, treated auto shredder waste, contaminated sediment, dredge spoils, foundry sands, energy resource exploration and production waste, compost materials, construction and demolition wastes, shredded tires, and spray applied cementitious products. Other materials may be approved as ADC by the EA based on a successful demonstration project consistent with 27 CCR 20690 .

ADC is used consistent with the requirements contained in 27 CCR 20690. Currently, CCL uses treated auto shredder waste as the primary material for ADC. Depending on the daily flow of materials, CCL also uses ground green waste, processed construction and demolition wastes, and energy resource exploration and production wastes as ADC. Should a change in the type of ADC be needed, CCL will notify the EA. If the quantity of ADC materials received exceeds the daily requirements, the excess ADC materials are stockpiled for future use.

10.3 Intermediate Cover

27 CCR 21600(b)(6)(D)

Consistent with 27 CCR 21600(b)(6)(C), 20680, and 20700, a minimum 1 foot of compacted intermediate soil cover is placed on the top and sideslopes of each advancing lift. At all times, intermediate cover is placed and compacted as landfilling progresses to minimize areas exposed to precipitation and to reduce blowing litter. Intermediate soil cover is usually placed and compacted on areas where additional waste disposal cells are not to be constructed for extended periods of time, and therefore must resist erosion for a longer period of time than daily cover. Waste disposal areas not receiving wastes for more than 180 days will also be covered with 1 foot of soil. Soil for intermediate cover is obtained from on-site excavations or soil stockpiles. Clean import soil received at CCL may also be used for intermediate cover. Soil is transported to the area to receive intermediate cover by scrapers. The scrapers will unload the soil while traversing across the area to receive intermediate cover. Compactors or dozers will then spread and compact the soil to a minimum thickness of 1 foot.

In addition, landfill operations include compacting and covering the waste with these soils, thereby significantly reducing the potential escape of odors, emergence of flies, and progress of fires. Combined

LACFCD-owned Sediment Placement Sites (SPSs), but some is also taken to landfills for disposal or beneficial on-site use.

The LACFCD completed a report analyzing soil samples at seven of the most active SPSs, located across the County of Los Angeles. The soil in these SPSs is representative of the sediment removed from the County's dams and debris basins. The analysis indicates that constituents in the soil samples are well below threshold levels for all contaminants specified in Order No. R4-2011-0052. Therefore, this material or similar material from other sediment and debris basins will not be profiled at CCL.

Acceptable wastes are defined in WDR Order No. 98-086 (A. Acceptable Materials) as follows:

2... certain nonhazardous solid wastes and inert solid wastes, as described in Section 20220(a) and Section 20230 of Title 27.

3... all putrescible and nonputrescible solid, semi-solid and liquid wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid wastes, and other discarded waste (whether of solid and semi-solid consistency); provided that such wastes do not contain wastes which must be managed as hazardous wastes, or wastes which contain soluble pollutants in concentrations which exceed applicable water quality objectives, or could cause degradation to waters of the State (i.e., designated waste).

1.4.2 Wastes That Require Profiling

CCL is authorized to accept various types of Special Wastes. Special Wastes are defined in Title 22, CCR as a hazardous waste which meets all of the following criteria and requirements:

It is a solid, a water-based sludge or a water-based slurry of which the solid constituents are substantially insoluble in water;

It is a hazardous waste only because it contains a persistent or bioaccumulative substance at a solubilized and extractable concentration exceeding its Soluble Threshold Limit Concentration (STLC), or at a total concentration exceeding its Total Threshold Limit Concentration (TTLC), except that:

- It shall contain no persistent or bioaccumulative listed substances at a solubilized and extractable concentration in milligrams per kilogram of waste exceeding the TTLC value for the substance; and
- It shall contain no persistent or bioaccumulative inorganic substance at a concentration equal to or exceeding the TTLC value of the substance.

For purposes of this WAP, Special Wastes are wastes that require analysis and testing (profiling) prior to acceptance due to their component make-up. Special Waste acceptance procedures, documentation, and reporting are discussed in sections 2.0 and 3.0.

Acceptable wastes that require profiling or that can only be accepted through special Orders from

the RWQCB are defined in WDR Order No. 98-086 (A. Acceptable Materials) as follows:

- 4. Treated auto shredder waste may be disposed provided that it is nonhazardous pursuant to Title 22, California Code of Regulations.*
- 5. The landfill will accept waste for disposal as deemed acceptable at this class of facility by the Regional Board through Orders or regulations.*

Examples of materials that fall under the special Order category are Treated Wood Waste (Order No. R4-2006-0007) and Contaminated Soil (Order No. R4-2011-0052).

1.5 Prohibited Wastes

CCL is a Class III waste disposal facility that operates under the requirements of WDRs (Order No. 98-086) and Conditional Use Permit No. 89-081(5). In accordance with the provisions of these two permits, CCL does not accept:

- 1) Hazardous wastes which are wastes that fall into the hazardous category based on criteria contained in the Title 22, CCR;
- 2) Designated wastes as defined in Section 13173 of the California Water Code as either:
 - a) Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to §25143 of the Health and Safety Code; or
 - b) Non-hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

There are no quantitative values or concentrations associated with the definition of Designated Waste. To address this issue, CCL conducted site-specific modeling to determine the acceptable threshold concentrations for specific chemicals below which the water quality objectives for the site would be met. The methodology is provided in Appendix B and further discussed in Section 2.2.2.

The WDRs Order No. 98-086 (B. Unacceptable Materials) states the following regarding unacceptable materials:

- 1. No hazardous wastes, designated wastes, or special wastes, such as liquids, oils, waxes, tars, soaps, solvents, or readily water-soluble solids, such as salts, borax, lye, caustic, or acids shall be disposed of at this waste management facility.*
- 2. No semi-solid wastes shall be disposed of at this waste management facility, except as noted above. Semi-solid waste means waste containing less than 50 percent solids, as described in Section 20200 of Title 27.*
- 3. No materials which are of a toxic nature, such as insecticides, poisons, or radioactive materials, shall be disposed of at this waste management facility.*

4. *No infectious materials or hospital or laboratory wastes, except those authorized for disposal to land by official agencies charged with control of plant, animal, and human disease, shall be disposed of at this waste management facility.*
5. *No pesticide containers shall be disposed of at this waste management facility, unless they are rendered nonhazardous by triple rinsing. Otherwise, they must be hauled off site to a legal point of disposal.*
6. *No septic tank or chemical toilet wastes shall be disposed of at this waste management facility.*

The Conditional Use Permit No. 89-081(5) (Conditions of Approval Item 9.a) states the following:

Liquid or hazardous waste or radioactive waste/material shall not be accepted. Should such prohibited waste be nevertheless received at the landfill, it shall be handled and disposed of as provided in Condition 26. The term "liquid waste" as used herein includes non-hazardous sludges meeting the requirements contained in Title 23, Chapter 15 of the California Code of Regulations for disposal in a Class III landfill. The landfill shall not accept sludge or sludge components at any time.

1.6 Load-Checking Program

A load-checking program was developed to screen incoming loads for the presence of prohibited wastes. The load-checking program includes signs to notify landfill customers of acceptable and unacceptable materials, visual inspections at the scale house, inspection at the landfill working face, and physical inspections of random loads.

During inspections, observations are made for prohibited wastes. Designated, trained personnel identify the nature of materials received in a load, and whether they are regulated wastes. Visual inspections are performed daily by trained personnel stationed at the scale house and at the working face of the landfill during waste disposal hours to observe for the disposal of prohibited wastes. The load-checking program (Appendix C of the Joint Technical Document [JTD]) also includes requirements for record keeping, personnel training and monitoring, and for notifying the appropriate regulatory agencies if a regulated or hazardous waste is discovered in a waste load.

The load-checking program also includes a prequalification check for Special Wastes that is conducted at the waste source, before transport to the disposal facility. In general, the prequalification program is directed at industrial waste streams.

2.0 SPECIAL WASTE ACCEPTANCE PROCEDURES

The following describes the procedures for acceptance of wastes that require prequalification and profiling.

Attachment 2

V. MONITORING OF ONSITE USE OF WATER

- A. If water purged from the wells and leachate removed from the site's leachate collection and removal systems were used onsite in accordance with Provision F of this Regional Board's Order No. 98-086, the discharger shall analyze constituents listed in Provision F.6 and Provision F.7 of Order No. 98-086 and submit the data in the semi-annual monitoring report.

VI. MONITORING OF TREATED AUTO SHREDDER WASTE

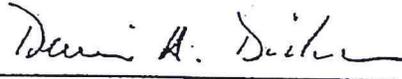
- A. Treated auto shredder waste (TASW) samples from Hugo Neu-Proler Company or future TASW generators shall be sampled and analyzed according to the Waste Extraction Test procedure described in Title 22, California Code of Regulations, Section 66261.126, Appendix II (Metals) and Appendix II-Table 4 (PCBs), for the following constituents:

Constituent	Unit	Analysis
STLC		
Cadmium and/or cadmium compounds	mg/L	Monthly
Chromium and/or chromium compounds	mg/L	Monthly
Copper and/or copper compounds	mg/L	Monthly
Lead and/or lead compounds	mg/L	Monthly
Mercury and/or mercury compounds	mg/L	Monthly
Nickel and/or nickel compounds	mg/L	Monthly
Zinc and/or zinc compounds	mg/L	Monthly
TTLC		
Polychlorinated biphenyls (PCBs)	mg/Kg	Monthly

- B. Shredder waste samples from each source shall also be analyzed once per month for volatile organic compounds using EPA Method 8240. A grab sample shall be randomly obtained from the sampler for this analysis and immediately sealed in an appropriate container.
- C. Composite samples of the waste stream from each shredder source shall be collected daily according to the following procedure: The waste stream will be cut every half-hour and approximately a one pound sample obtained. At the end of eight hours the sample will be coned, quartered and two samples obtained. The combined samples for one week will be mixed, coned and quartered prior to submission to the laboratory. One weekly composite shall be subjected to the monthly testing. The shredder waste producers may present an alternate procedure for compositing samples for Executive Officer approval.

- D. The discharger shall submit copies of all analytical results of TASW deposited with the semi-annual monitoring report.

Ordered By:



DENNIS A. DICKERSON
Executive Officer

Date: November 2, 1998

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-8907

Date: May 1, 2015

Mr. Todd F. Peterson
SA Recycling Of Anaheim
3200 E. Frontera Street
Anaheim, CA 92806
Tel (714) 688-4940 Email:TPeterson@sarecycling.com

Project: Anaheim HP Weekly 04.13-18.15
Lab I.D.: 150427-28

Dear Mr. Peterson:

The **analytical results** for the solid sample, received by our lab on April 27, 2015, are attached. The sample was received intact, accompanying chain of custody.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,



Curtis Desilets
Vice President/Program Manager



Andy Wang
Laboratory Manager

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street, Anaheim, CA 92806
 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 04.13-18.15 DATE RECEIVED: 04/27/15
 MATRIX: SOLID DATE EXTRACTED: 04/27/15
 DATE COLLECTED: 04/13-18/15 DATE ANALYZED: 04/27/15
 REPORT TO: MR. TODD F. PETERSON DATE REPORTED: 05/01/15

SAMPLE I.D.: Anaheim HP Weekly 04.13-18.15 LAB I.D.: 150427-28

PCBs ANALYSIS, EPA 8082
 UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
PCB-1016	ND	2.00	1
PCB-1221	ND	2.00	1
PCB-1232	ND	2.00	1
PCB-1242	ND	2.00	1
PCB-1248	ND	2.00	1
PCB-1254	ND	2.00	1
PCB-1260	ND	2.00	1
TOTAL PCBs IN THE SAMPLE*	ND	2.00	1

COMMENTS

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Non-Detected or Below the Actual Detection Limit

* = Sum of the PCB 1016, 1221, 1232, 1242, 1248, 1254 and 1260

*** = The concentration exceeds the TTLC Limit of 50, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

DATA REVIEWED AND APPROVED BY: 
 CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street, Anaheim, CA 92806
 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 04.13-18.15

MATRIX: SOLIDDATE RECEIVED: 04/27/15DATE COLLECTED: 04/13-18/15DATE ANALYZED: 04/28-30/15REPORT TO: MR. TODD F. PETERSONDATE REPORTED: 05/01/15

SAMPLE I.D.: Anaheim HP Weekly 04.13-18.15 LAB I.D.: 150427-28

SOLUBLE THRESHOLD LIMIT CONCENTRATION (STLC) ANALYSIS
 UNIT: mg/L IN THE STLC LEACHATE

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD USED
Cadmium (Cd)	ND	0.05	10	100	1.0	6010B
Chromium Total (Cr)	0.777	0.05	10	2,500	560/5.0@	6010B
Copper (Cu)	13.7	0.1	10	2,500	25	6010B
Lead (Pb)	4.27	0.05	10	1,000	50.0*	6010B
Mercury (Hg)	ND	0.02	1	20	0.2	7470A
Nickel (Ni)	ND	0.25	10	2,000	20	6010B
Zinc (Zn)	28.3	0.05	10	5,000	250	6010B

COMMENTS:

mg/L = Milligram per Liter = PPM

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Below Actual Detection Limit or non-detected

TTLC = Total Threshold Limit Concentration

STLC = Soluble Threshold Limit Concentration

@ = Must meet the TCLP limit/chromium (5.0 mg/L in TCLP leachate)

* = The STLC-Lead Limit for SA Recycling is 50 mg/L instead of 5 mg/L

** = TCLP Chromium required (if marked)

*** = The concentration exceeds the STLC Limit, and the sample is defined as hazardous waste as per CAL-TITLE 22 (if marked)

Data Reviewed and Approved by: 

CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
3200 E. Frontera Street, Anaheim, CA 92806
Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 04.13-18.15

MATRIX: SOLID

DATE RECEIVED: 04/27/15

DATE COLLECTED: 04/13-18/15

DATE ANALYZED: 04/27/15

REPORT TO: MR. TODD F. PETERSON

DATE REPORTED: 05/01/15

SAMPLE I.D.: Anaheim HP Weekly 04.13-18.15

LAB I.D.: 150427-28

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X500
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: 

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91768 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street, Anaheim, CA 92806
 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 04.13-18.15

MATRIX: SOLID

DATE RECEIVED: 04/27/15

DATE COLLECTED: 04/13-18/15

DATE ANALYZED: 04/27/15

REPORT TO: MR. TODD F. PETERSON

DATE REPORTED: 05/01/15

SAMPLE I.D.: Anaheim HP Weekly 04.13-18.15

LAB I.D.: 150427-28

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
 UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X500
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	9.28	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT

ND = NON-DETECTED OR BELOW THE PQL

DATA REVIEWED AND APPROVED BY:

CAL-DHS CERTIFICATE # 1555



Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: May 28, 2015

Mr. Todd F. Peterson
SA Recycling Of Anaheim
3200 E. Frontera Street
Anaheim, CA 92806
Tel (714) 688-4940
E-mail: TPeterson@sarecycling.com

Project: **Anaheim HP Weekly 05.04-09.15**
Lab I.D.: 150522-16

Dear Mr. Peterson:

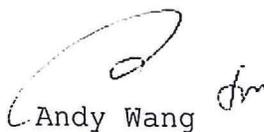
The **Analysis results** for the solid sample, received by our lab on May 22, 2015, are attached. The sample was received intact, accompanying chain of custody.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,



Curtis Desilets
Vice President/Program Manager



Andy Wang
Laboratory Manager

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street,
 Anaheim, CA 92806
 Tel (714) 688-4940 E-mail: TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 05.04-09.15

MATRIX: SOLIDDATE COLLECTED: 05/04-09/15REPORT TO: MR. TODD F. PETERSONDATE RECEIVED: 05/22/15DATE EXTRACTED: 05/26/15DATE ANALYZED: 05/26/15DATE REPORTED: 05/28/15

SAMPLE I.D.: Anaheim HP Weekly 05.04-09.15
 LAB I.D.: 150522-16

PCBs ANALYSIS, EPA 8082

UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
PCB-1016	ND	2.00	1
PCB-1221	ND	2.00	1
PCB-1232	ND	2.00	1
PCB-1242	8.16	2.00	1
PCB-1248	ND	2.00	1
PCB-1254	ND	2.00	1
PCB-1260	ND	2.00	1
TOTAL PCBs IN THE SAMPLE*	8.16	2.00	1

COMMENTS

DF = Dilution Factor

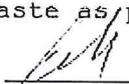
PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Non-Detected or Below the Actual Detection Limit

* = Sum of the PCB 1016, 1221, 1232, 1242, 1248, 1254 and 1260

*** = The concentration exceeds the TTLC Limit of 50, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

DATA REVIEWED AND APPROVED BY: 
 CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street
 Anaheim, CA 92806
 Tel (714) 688-4940 E-mail: TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 05.04-09.15
 MATRIX: SOLID DATE RECEIVED: 05/22/15
 DATE COLLECTED: 05/04-09/15 DATE ANALYZED: 05/22/15
 REPORT TO: MR. TODD F. PETERSON DATE REPORTED: 05/28/15

SAMPLE I.D.: Anaheim HP Weekly 05.04-09.15
 LAB I.D.: 150522-16

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
 UNIT: MG/KG = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X250
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: 

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street
 Anaheim, CA 92806
 Tel (714) 688-4940 E-mail: TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 05.04-09.15
 MATRIX: SOLID
 DATE COLLECTED: 05/04-09/15
 REPORT TO: MR. TODD F. PETERSON

DATE RECEIVED: 05/22/15
 DATE ANALYZED: 05/22/15
 DATE REPORTED: 05/28/15

SAMPLE I.D.: Anaheim HP Weekly 05.04-09.15
 LAB I.D.: 150522-16

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
 UNIT: MG/KG = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X250
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	24.1	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT

ND = NON-DETECTED OR BELOW THE PQL

DATA REVIEWED AND APPROVED BY:

CAL-DHS CERTIFICATE # 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Anaheim
 3200 E. Frontera Street
 Anaheim, CA 92806
 Tel (714) 688-4940 E-mail: TPeterson@sarecycling.com

PROJECT: Anaheim HP Weekly 05.04-09.15

MATRIX: SOLID

DATE RECEIVED: 05/22/15

DATE COLLECTED: 05/04-09/15

DATE ANALYZED: 05/24-26/15

REPORT TO: MR. TODD F. PETERSON

DATE REPORTED: 05/28/15

SAMPLE I.D.: Anaheim HP Weekly 05.04-09.15

LAB I.D.: 150522-16

SOLUBLE THRESHOLD LIMIT CONCENTRATION (STLC) ANALYSIS
 UNIT: mg/L IN THE STLC LEACHATE

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLIC LIMIT	STLC LIMIT	EPA METHOD USED
Cadmium (Cd)	ND	0.05	10	100	1.0	6010B
Chromium Total (Cr)	0.697	0.05	10	2,500	560/5.0@	6010B
Copper (Cu)	11.7	0.1	10	2,500	25	6010B
Lead (Pb)	5.39	0.05	10	1,000	50.0*	6010B
Mercury (Hg)	ND	0.02	1	20	0.2	7470A
Nickel (Ni)	ND	0.25	10	2,000	20	6010B
Zinc (Zn)	47.2	0.05	10	5,000	250	6010B

COMMENTS:

MG/L = Milligram per Liter = PPM

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Below Actual Detection Limit or non-detected

TTLIC = Total Threshold Limit Concentration

STLC = Soluble Threshold Limit Concentration

@ = Must meet the TCLP limit/chromium (5.0 mg/L in TCLP leachate)

* = The STLC-Lead Limit for SA Recycling is 50 mg/L instead of 5 mg/L

** = TCLP Chromium required (if marked)

*** = The concentration exceeds the STLC Limit, and the sample is defined as hazardous waste as per CAL-TITLE 22 (if marked)

Data Reviewed and Approved by: 
 CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: April 23, 2015

Mr. Todd F. Peterson
SA Recycling Of Los Angeles
901 New Dock Street
San Pedro, CA 90731
Tel(714)688-4940 Email:TPeterson@sarecycling.com

Project: TI HP Weekly 04.05-11.15
Lab I.D.: 150421-20

Dear Mr. Peterson:

The **analytical results** for the solid sample, received by our lab on April 21, 2015, are attached. The sample was received intact, accompanying chain of custody.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,



Curtis Desilets
Vice President/Program Manager



Andy Wang
Laboratory Manager

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: TI HP Weekly 04.05-11.15 DATE RECEIVED: 04/21/15
 MATRIX: SOLID DATE EXTRACTED: 04/21/15
 DATE COLLECTED: 04/05-11/15 DATE ANALYZED: 04/21/15
 REPORT TO: MR. TODD F. PETERSON DATE REPORTED: 04/23/15

 SAMPLE I.D.: TI HP Weekly 04.05-11.15 LAB I.D.: 150421-20

PCBs ANALYSIS, EPA 8082

UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
PCB-1016	ND	2.00	1
PCB-1221	ND	2.00	1
PCB-1232	ND	2.00	1
PCB-1242	4.92	2.00	1
PCB-1248	ND	2.00	1
PCB-1254	ND	2.00	1
PCB-1260	ND	2.00	1
TOTAL PCBs IN THE SAMPLE*	4.92	2.00	1

COMMENTS

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Non-Detected or Below the PQL

* = Sum of the PCB 1016, 1221, 1232, 1242, 1248, 1254 and 1260

*** = The concentration exceeds the TTLC Limit of 50, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

DATA REVIEWED AND APPROVED BY: 
 CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: TI HP Weekly 04.05-11.15

MATRIX: SOLIDDATE RECEIVED: 04/21/15DATE COLLECTED: 04/05-11/15DATE ANALYZED: 04/21-23/15REPORT TO: MR. TODD F. PETERSONDATE REPORTED: 04/23/15

SAMPLE I.D.: TI HP Weekly 04.05-11.15

LAB I.D.: 150421-20

SOLUBLE THRESHOLD LIMIT CONCENTRATION (STLC) ANALYSIS

UNIT: mg/L IN THE STLC LEACHATE

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLT LIMIT	STLC LIMIT	EPA METHOD USED
Cadmium (Cd)	ND	0.05	10	100	1.0	6010B
Chromium Total (Cr)	1.52	0.05	10	2,500	560/5.0@	6010B
Copper (Cu)	12.8	0.1	10	2,500	25	6010B
Lead (Pb)	2.09	0.05	10	1,000	50.0*	6010B
Mercury (Hg)	ND	0.01	1	20	0.2	7470A
Nickel (Ni)	ND	0.25	10	2,000	20	6010B
Zinc (Zn)	19.3	0.05	10	5,000	250	6010B

COMMENTS:

mg/L = Milligram per Liter = PPM

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Below Actual Detection Limit or non-detected

TTLT = Total Threshold Limit Concentration

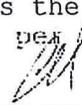
STLC = Soluble Threshold Limit Concentration

@ = Must meet the TCLP limit/chromium (5.0 Mg/L in TCLP leachate)

* = The STLC-Lead Limit for SA Recycling is 50 Mg/L instead of 5 Mg/L

** = TCLP Chromium required (if marked)

*** = The concentration exceeds the STLC Limit, and the sample is defined as hazardous waste as per CAL-TITLE 22 (if marked)

Data Reviewed and Approved by: 

CAL-DHS ELAP CERTIFICATE No.: 1555

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 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: TI HP Weekly 04.05-11.15

MATRIX: SOLID

DATE COLLECTED: 04/05-11/15

REPORT TO: MR. TODD F. PETERSON

DATE RECEIVED: 04/21/15

DATE ANALYZED: 04/21/15

DATE REPORTED: 04/23/15

SAMPLE I.D.: TI HP Weekly 04.05-11.15

LAB I.D.: 150421-20

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
 UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1000
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: 

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940 Email:TPeterson@sarecycling.com

PROJECT: TI HP Weekly 04.05-11.15

MATRIX: SOLID

DATE COLLECTED: 04/05-11/15

REPORT TO: MR. TODD F. PETERSON

DATE RECEIVED: 04/21/15

DATE ANALYZED: 04/21/15

DATE REPORTED: 04/23/15

SAMPLE I.D.: TI HP Weekly 04.05-11.15

LAB I.D.: 150421-20

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
 UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

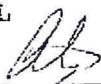
PARAMETER	SAMPLE RESULT	PQL X1000
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	180	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT

ND = NON-DETECTED OR BELOW THE PQL

DATA REVIEWED AND APPROVED BY:

CAL-DHS CERTIFICATE # 1555



Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: June 5, 2015

Mr. Todd F. Peterson
SA Recycling Of Los Angeles
901 New Dock Street
San Pedro, CA 90731
Tel (714) 688-4940
E-mail: TPeterson@sarecycling.com

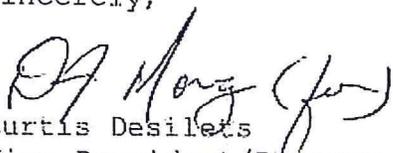
Project: TI HP Weekly 05.17-23.15
Lab I.D.: 150602-22

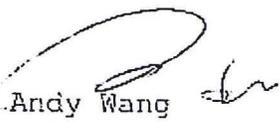
Dear Mr. Peterson:

The **Analysis results** for the solid sample, received by our lab on June 2, 2015 are attached. The sample was received intact, accompanying chain of custody.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,


Curtis Desilets
Vice President/Program Manager


Andy Wang
Laboratory Manager

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940

E-mail: TPeterson@sarecycling.com

PROJECT: TI HP Weekly 05.17-23.15

MATRIX: SOLID

DATE COLLECTED: 05/17-23/15

REPORT TO: MR. TODD F. PETERSON

DATE RECEIVED: 06/02/15

DATE EXTRACTED: 06/03/15

DATE ANALYZED: 06/03/15

DATE REPORTED: 06/05/15

SAMPLE I.D.: TI HP Weekly 05.17-23.15

LAB I.D.: 150602-22

PCBs ANALYSIS, EPA 8082

UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
PCB-1016	ND	2.00	1
PCB-1221	ND	2.00	1
PCB-1232	ND	2.00	1
PCB-1242	11.6	2.00	1
PCB-1248	ND	2.00	1
PCB-1254	ND	2.00	1
PCB-1260	ND	2.00	1
TOTAL PCBs IN THE SAMPLE*	11.6	2.00	1

COMMENTS

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Non-Detected or Below the PQL

* = Sum of the PCB 1016, 1221, 1232, 1242, 1248, 1254 and 1260

*** = The concentration exceeds the TTLC Limit of 50, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

DATA REVIEWED AND APPROVED BY: 
 CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

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Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940
 E-mail: TPeterson@sarecycling.com

PROJECT: TI HP Weekly 05.17-23.15

MATRIX: SOLIDDATE RECEIVED: 06/02/15DATE COLLECTED: 05/17-23/15DATE ANALYZED: 06/02-04/15REPORT TO: MR. TODD F. PETERSONDATE REPORTED: 06/05/15

SAMPLE I.D.: TI HP Weekly 05.17-23.15

LAB I.D.: 150602-22

SOLUBLE THRESHOLD LIMIT CONCENTRATION (STLC) ANALYSIS

UNIT: MG/L IN THE STLC LEACHATE

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD USED
Cadmium (Cd)	ND	0.05	1	100	1.0	6010B
Chromium Total (Cr)	0.992	0.05	1	2,500	560/5.0@	6010B
Copper (Cu)	14.0	0.1	1	2,500	25	6010B
Lead (Pb)	2.62	0.05	1	1,000	50.0*	6010B
Mercury (Hg)	ND	0.02	1	20	0.2	7470A
Nickel (Ni)	ND	0.25	1	2,000	20	6010B
Zinc (Zn)	23.0	0.05	1	5,000	250	6010B

COMMENTS:

MG/L = Milligram per Liter = PPM

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = PQL X DF

ND = Below Actual Detection Limit or non-detected

TTLC = Total Threshold Limit Concentration

STLC = Soluble Threshold Limit Concentration

@ = Must meet the TCLP limit/chromium (5.0 Mg/L in TCLP leachate)

* = The STLC-Lead Limit for SA Recycling is 50 Mg/L instead of 5 Mg/L

** = TCLP Chromium required (if marked)

*** = The concentration exceeds the STLC Limit, and the sample is defined as hazardous waste as per CAL-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
 CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940

E-mail: TPeterson@sarecycling.com

PROJECT: TI HP Weekly 05.17-23.15

MATRIX: SOLID

DATE COLLECTED: 05/17-23/15

REPORT TO: MR. TODD F. PETERSON

DATE RECEIVED: 06/02/15

DATE ANALYZED: 06/02/15

DATE REPORTED: 06/05/15

SAMPLE I.D.: TI HP Weekly 05.17-23.15

LAB I.D.: 150602-22

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
 UNIT: MG/KG = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X250
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: _____



Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Laboratory Report

CUSTOMER: SA Recycling Of Los Angeles
 901 New Dock Street, San Pedro, CA 90731
 Tel (714) 688-4940
 E-mail: TPeterson@sarecycling.com

PROJECT: TI HP Weekly 05.17-23.15

MATRIX: SOLID

DATE RECEIVED: 06/02/15

DATE COLLECTED: 05/17-23/15

DATE ANALYZED: 06/02/15

REPORT TO: MR. TODD F. PETERSON

DATE REPORTED: 06/05/15

SAMPLE I.D.: TI HP Weekly 05.17-23.15

LAB I.D.: 150602-22

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
 UNIT: MG/KG = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X250
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	2.50	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	24.0	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT

ND = NON-DETECTED OR BELOW THE PQL.

DATA REVIEWED AND APPROVED BY:

CAL-DHS CERTIFICATE # 1555



Dear Mr. Sanchez,

In accordance with the Department of Toxic Substances Control's letter and questionnaire dated 20 May 2015, responses to the questions are as follows:

1. Please provide the policy that applies to the acceptance of metal shredder waste. If no such policy exists, describe any practices and procedures used by your facility to accept such waste.
Forward is permitted to accept treated auto shredder waste in accordance with requirements set forth in the Solid Waste Facility Permit 39-AA-0015, Waste Discharge Requirements Order No. R5-2014-0006, and Joint Technical Document (April 2014 – Amended June 2014).
2. How much metal shredder waste by weight did your facility accept from January 1, 2014, through January 1, 2015? Please include the name and address of each metal shredding facility that sent the metal shredder waste and how much they sent during the calendar year.
There was no treated auto shredder waste accepted between 1 January 2014 and 1 January 2015.
3. What percentage of metal shredder waste was used as Alternative Daily Cover (ADC)?
N/A
4. Please answer the following questions (4.A. – 4.D.) pertaining to metal shredder waste accepted at your facility and used as ADC:
 - A. How much metal shredder waste is stored onsite prior to its use as ADC?
 - B. How long is it stored?
 - C. How is it stored (e.g., on a paved surface)?
 - D. Where in the facility is it stored? Please provide a site map of the location.
N/A
5. Please answer the following questions (5.A. – 5.D.) pertaining to metal shredder waste accepted at your facility but not used as ADC:
 - A. How much metal shredder waste is stored onsite prior to its use as ADC?
 - B. How long is it stored?
 - C. How is it stored (e.g., on a paved surface)?
 - D. Where in the facility is it stored? Please provide a site map of the location.
N/A
6. Do the regional water quality control boards or other regulating authorities impose any requirements on your facility concerning metal shredder waste? If so, what are those requirements? You may exclude any permits or other forms of documented authorizations answered in question 7, below.
The Regional Water Quality Control Board does not have any requirements other than auto shredder waste must be placed in a Subtitle D cell.
7. Provide a copy of all permits and other forms of documented authorization issued to your facility by any governmental entity related to metal shredder waste management activities, and a copy of any data your facility may have regarding the toxicity characteristics of metal shredder waste.
See attached Solid Waste Facility Permit 39-AA-0015, Waste Discharge Requirements Order No. R5-2014-0006, and excerpt from Joint Technical Document (April 2014 – Amended June 2014) describing use of treated auto shredder waste as ADC.
8. Are other management requirements followed by your facility for metal shredder waste when accepting, handling, storing and ultimately disposing of or using metal shredder waste as ADC? If so, please describe those requirements.
N/A

Thank you very much for your time, and please do not hesitate to contact me with any questions.

Kindest regards,

Erin



We'll handle it from here.™

Erin Fanning Environmental Manager

9999 South Austin Road, Manteca, CA 95336

e efanning@republicservices.com

o 209-982-4298

f 209-982-1009

w republicservices.com

QUESTIONNAIRE
SOLID WASTE DISPOSAL FACILITIES MANAGING METAL SHREDDER WASTE
May 20, 2015

1. Please provide the policy that applies to the acceptance of metal shredder waste. If no such policy exists, describe any practices and procedures used by your facility to accept such waste.

(A) Holloway receives treated auto shredder waste (predominately non-metallic solid material including plastic, broken glass, rubber, foam, soil, and fabric). All trucks delivering approved waste streams are weighed loaded and unloaded, at the mine headquarters compound. Each truck load is accompanied with a weigh ticket and material manifest from the generator. All records or copies are available for inspection at the Holloway office, at 2019 Westwind Drive Suite B, Bakersfield, California 93310 with copies being kept at the Landfill headquarters office, adjacent to the Landfill. Tonnage by material type and generator are and will be tabulated each month, at the Landfill headquarters office.

The waste material is spread in rows in designated areas of the disposal pit floor for processing. The waste is then either blended with stockpiled soil overburden in a minimum 1:1 ratio by volume of soil to waste, and spread and compacted into 1-2 foot thick lifts, or is spread in a monolayer lift of 6 inches to 1 foot thick, and then covered with an equivalent thickness of stockpiled soil overburden and compacted, or is spread in monolayer lifts of 1-2 foot thick and covered with an equivalent thickness of stockpiled soil overburden and compacted. All waste stream blending, spreading and initial compaction is accomplished by Michigan 210 self-loaders. Michigan 380B bulldozers are also used for compaction.

Note that prior to the acceptance of Treated Automobile Shredder Waste (TAS) to any approved Pit, representative samples of waste from sources are analyzed by the generator and then by Holloway for Inorganic Persistent, Bioaccumulative Toxic Substances, Polychlorinated Biphenyls (PCBs) and Volatile Organic Compounds (VOCs). Generators that have received a letter from the Department of Toxic Substances Control in accordance with Section 66260.200(f) of Title 22 CCR, can manage TAS as a nonhazardous waste. This characterization of nonhazardous waste is further classified as “designated” waste in accordance with Section 2522(a)(2) of Title 23, CCR.

2. How much metal shredder waste by weight did your facility accept from January 1, 2014, through January 1, 2015? Please include the name and address of each metal shredding facility that sent the metal shredder waste and how much they sent during the calendar year.

(A) 24,396.48 tons delivered from SA Recycling, 2411 North Glassell St. Orange, CA. 92865

3. What percentage of metal shredder waste was used as Alternative Daily Cover (ADC)?

(A) All auto shredder waste delivered was buried in Holloway landfill, zero tonnage delivered was used for daily cover.

The only cover material used that has been and will be used in the Holloway Landfill operation is

on-site native soils that have been stockpiled during the mining operations. At present, Holloway does not intend to use any Alternate Daily Cover (ADC) material.

4. Please answer the following questions (4.A.–4.D.) pertaining to metal shredder waste accepted at your facility and used as ADC:
 - A. How much metal shredder waste is stored onsite prior to its use as ADC?
(A) None
 - B. How long is it stored?
(A) N/A
 - C. How is it stored (e.g., on a paved surface)?
(A) N/A
 - D. Where in the facility is it stored? Please provide a site map of the location.
(A) N/A
5. Please answer the following questions (5.A.–5.D.) pertaining to metal shredder waste accepted at your facility but not used as ADC:
 - A. How much metal shredder waste is stored onsite prior to its use as ADC?
(A) N/A, see process description question No. 1
 - B. How long is it stored?
(A) N/A see process description question No. 1
 - C. How is it stored (e.g., on a paved surface)?
(A) N/A see process description question No. 1
 - D. Where in the facility is it stored? Please provide a site map of the location.
(A) N/A see process description question No. 1
6. Do the regional water quality control boards or other regulating authorities impose any requirements on your facility concerning metal shredder waste? If so, what are those requirements? You may exclude any permits or other forms of documented authorizations answered in question 7, below.
(A) Please see permits provided for question No. 7
7. Provide a copy of all permits and other forms of documented authorization issued to your facility by any governmental entity related to metal shredder waste management activities, and a copy of any data your facility may have regarding the toxicity characteristics of metal shredder waste.
(A) Please see attached permits for the Holloway landfill facility.
8. Are other management requirements followed by your facility for metal shredder waste when accepting, handling, storing and ultimately disposing of or using metal shredder waste as ADC? If so, please describe those requirements. (A) None that I am aware.

From: [Diana Ratto](#)
To: ["Kevin" Kevin.Ratto@vasco.com](#)
CC: ["Diana Ratto" Diana.Ratto@vasco.com](#); ["John" John.Lee@vasco.com](#)
Subject: Questions re SWP Managing Metal Shredder Waste (Treated Auto LF)
Date: Monday, June 01, 2015 3:28:23 PM
Attachments: [Screenshot 1](#)
[Screenshot 2](#)
[Screenshot 3](#)
[Screenshot 4](#)
[Screenshot 5](#)
[Screenshot 6](#)
[Screenshot 7](#)
[Screenshot 8](#)
[Screenshot 9](#)
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[Screenshot 99](#)
[Screenshot 100](#)

Hi Kevin

Per our conversation on Friday May 29 2015 regarding the Metal Shredder Waste which we call (Treated Auto Shredder Waste) TASW.

Vasco Road Landfill Practice and Procedures:

- 1) Treated auto shredder waste is mixed with Bio-Solid sludge and used for alternative daily cover. Vasco LF has to cover the active face daily per SWFP.
- 2) /1/14-1/1/2015 total received from only one Customer – Schnitzer Steel 94 969.92 tons
- 3) 00% is used for daily cover. It is our primary material source of covering out our daily active working face area.
- 4) A.) We stockpile the TASW near the active face
 B.) Normally within a week the stockpile is depleted
 C.) On soil/concrete deck
 D.) TASW is only stockpiled near the active working face; which moves daily.
- 5) A.) TASW not stored on site. (Only used for ADC).
 B.) NA
 C.) NA
 D.) NA
- 6) Regional Water Quality Control Board does not have special requirements other than (Auto-shredder waste must be in a Sub-Title D cell)
- 7) SWFP/ITD Attached
- 8) None (see attached permit)

Should you have any further questions please feel free to contact me.

Thank you





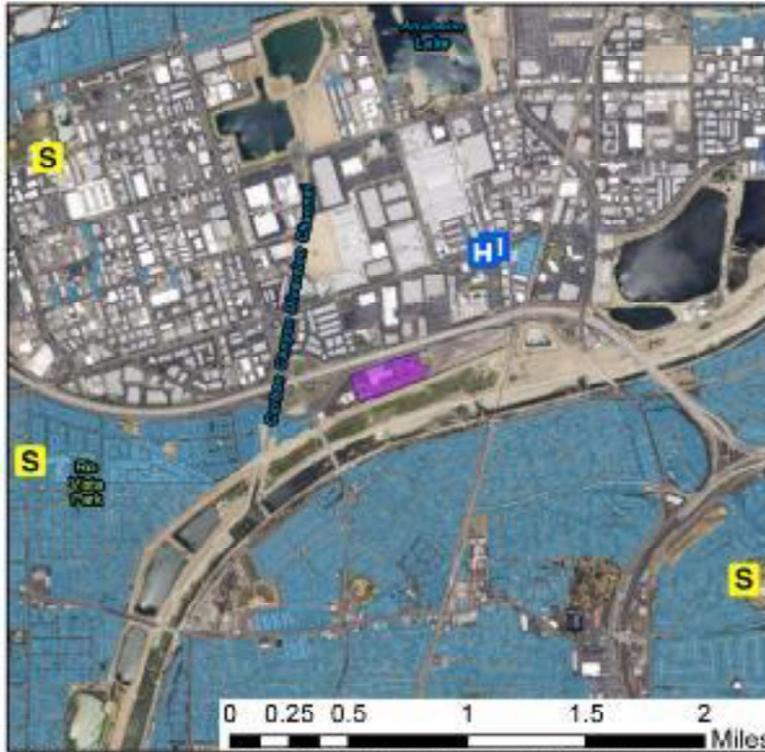
Diana Ratto Operations Manager
 001 North Vasco Road Livermore CA 9 551
 • dratto@vasco.com
 • 925- 53-2620
 • 925-263-2999
 • www.vasco.com

APPENDIX C: GIS IMAGES OF METAL SHREDDING FACILITIES AND LANDFILLS

SA Anaheim

Legend

- Facility Boundary
- Residential Parcels
- Schools
- Childcare
- Healthcare

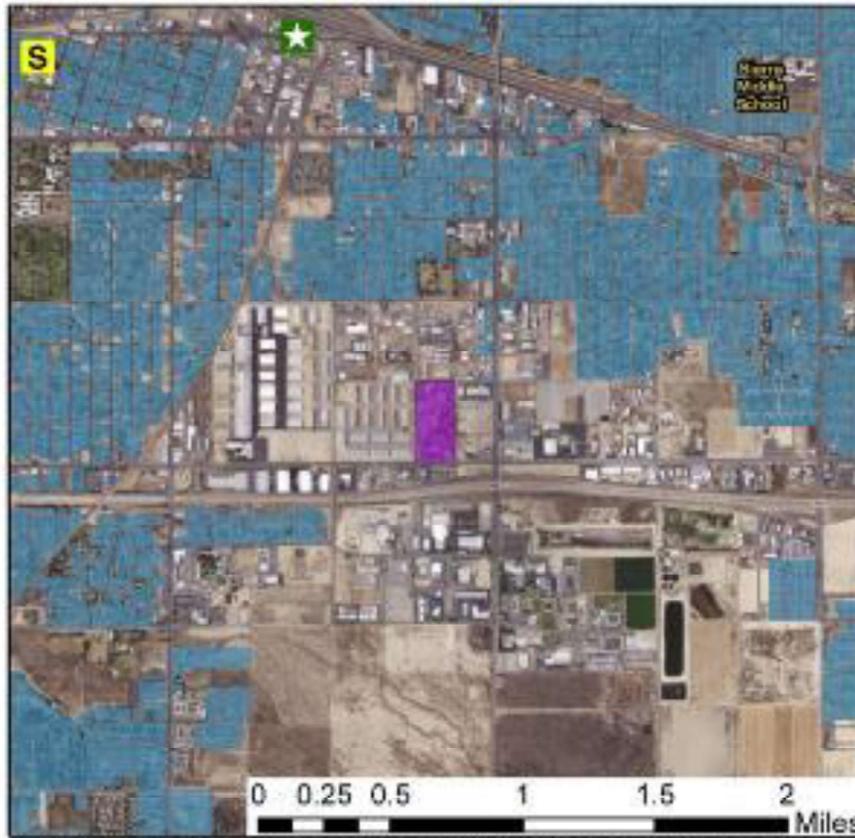


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SA Bakersfield

Legend

- Facility Boundary
- Residential Parcels
- Schools
- Childcare
- Healthcare



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SA Terminal Island

Legend

- Facility Boundary
- Schools
- Residential Parcels
- Childcare
- Healthcare



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Schnitzer



Sims

Legend

- Facility Boundary
- Schools
- Residential Parcels
- Childcare
- Healthcare



For: NERC, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community. Source: For: DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Ecology



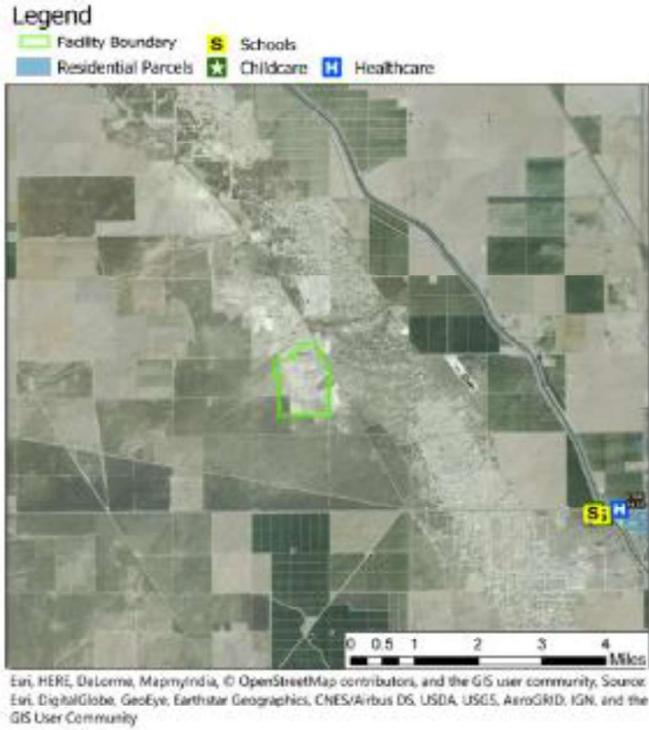
Altamont Landfill



Chiquita Canyon Landfill



HM Holloway Surface Mine and Landfill



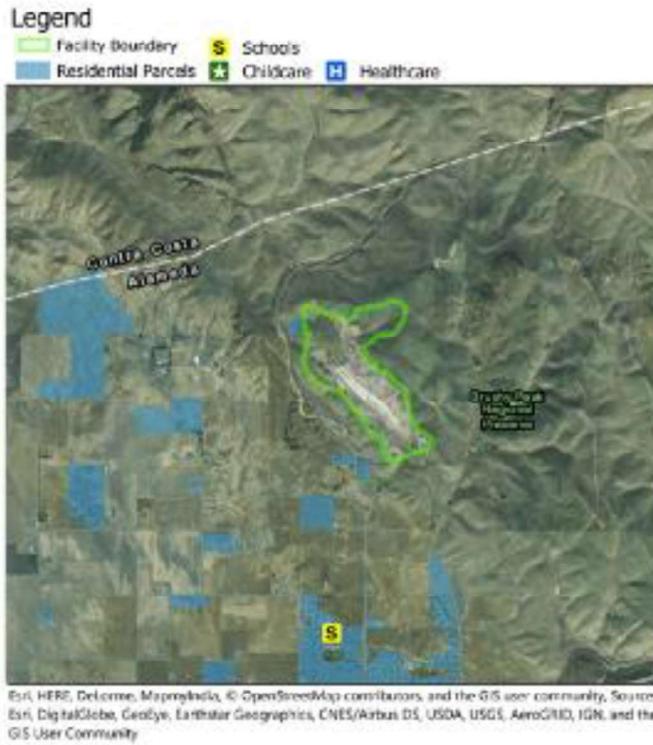
Potrero Hills Landfill



Simi Valley Landfill



Vasco Road Landfill



INSPECTI ON ID	MODIFIED DATE	INSPECTI ON NAME	STREET NUMBER	STREET NUMBER TO	DIRECTIO N	STREET NAME	STREET TYPE	INSPECTI ON CATE GORY	INSPECTI ON SUB CATEGO RY	INSPECTI ON OR	INSPECTI ON DATE	NARRATIVE	DATA SOURCE	LATITUDE	LONGITUDE	LOCATION
148047	3/13/2020	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		3/13/2020	<p>FACILITY RECEIVES MAINLY ENGINES FROM AUTO SCRAPPERS AND SHRED FROM VEHICLES SHREDDERS. ENGINES BLOCKS ARE "CRACKED" AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND. THE SHRED IS PROCESSED BY DENSITY SEPARATION AND EDDY CURRENT.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. WORKERS WERE SEPARATING MATERIALS FROM THE CRACKED ENGINES THAT HAVE COME ALONG THE SORTING LINE AFTER THE STATIONARY BLOCK BREAKER. MATERIALS HAVE BEEN CLEANED UP OUTSIDE THE BUILDING THAT HOUSES THESE OPERATIONS.</p> <p>PHOTO A) SORTING LINE</p> <p>PHOTO B) CLEANED AREA OUTSIDE</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)
1448456	11/20/2019	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		11/20/2019	<p>REINSPECTION IN 1 MONTH.</p> <p>FACILITY RECEIVES MAINLY ENGINES FROM AUTO SCRAPPERS AND SHRED FROM VEHICLES SHREDDERS. ENGINES BLOCKS ARE "CRACKED" AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND. THE SHRED IS PROCESSED BY DENSITY SEPARATION AND EDDY CURRENT.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. DUE TO THE MARKET, THERE IS MUCH LESS AUTO SHRED PILED OUTSIDE FOR PROCESSING THROUGH THE MIXED MEDIA (STAINLESS STEEL, COPPER, ETC) PLANT THAN USUAL AND MUCH LESS PROCESSED MATERIALS PILED OUTSIDE IN PREPARATION FOR SHIPMENT BY RAIL.</p> <p>PHOTO A) AUTO SHRED AREA</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)
1428578	9/10/2019	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		9/10/2019	<p>REINSPECTION IN 1 MONTH.</p> <p>FACILITY RECEIVES MAINLY ENGINES FROM AUTO SCRAPPERS AND SHRED FROM VEHICLES SHREDDERS. ENGINES BLOCKS ARE "CRACKED" AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND. THE SHRED IS PROCESSED BY DENSITY SEPARATION AND EDDY CURRENT.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. UNPROCESSED MATERIALS WERE PILED OUTSIDE THE BUILDING IN PREPARATION FOR PROCESSING THROUGH THE SORT LINE AND MUCH LESS PROCESSED MATERIALS WERE PILED INSIDE IN PREPARATION FOR SHIPMENT BY RAIL.</p> <p>AUTO SHRED WAS PILED OUTSIDE FOR PROCESSING THROUGH THE MIXED MEDIA (STAINLESS STEEL, COPPER, ETC) PLANT.</p> <p>PHOTO A) MATERIALS TO BE PROCESSED</p> <p>PHOTO B) MATERIALS TO BE PROCESSED</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)
1410668	7/26/2019	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		7/26/2019	<p>REINSPECTION IN 1 MONTH.</p> <p>FACILITY RECEIVES MAINLY ENGINES FROM AUTO SCRAPPERS AND SHRED FROM VEHICLES SHREDDERS. ENGINES BLOCKS ARE "CRACKED" AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND. THE SHRED IS PROCESSED BY DENSITY SEPARATION AND EDDY CURRENT.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. SHREDDED MATERIALS WERE PILED OUTSIDE THE BUILDING IN PREPARATION FOR BEING PROCESSED THROUGH THE EDDY CURRENT LINE. WORKERS WERE ACTIVELY PROCESSING AT THE SORT LINE. UNPROCESSED MATERIALS WERE PILED OUTSIDE IN PREPARATION FOR BEING PROCESSED. PROCESSED MATERIALS WERE PILED OUTSIDE IN PREPARATION FOR BEING SHIPPED BY RAIL.</p> <p>PHOTO A) SHREDDOD MATERIALS</p> <p>PHOTO B) UNPROCESSED MATERIALS</p> <p>PHOTO C) PROCESSED MATERIALS</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)
1356405	4/15/2019	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		4/15/2019	<p>REINSPECTION IN 1 MONTH.</p> <p>FACILITY RECEIVES MAINLY ENGINES FROM AUTO SCRAPPERS AND SHRED FROM VEHICLES SHREDDERS. ENGINES BLOCKS ARE "CRACKED" AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND. THE SHRED IS PROCESSED BY DENSITY SEPARATION AND EDDY CURRENT.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. MATERIALS WERE PILED OUTSIDE THE BUILDING AND INSIDE IN PREPARATION FOR BEING PROCESSED THROUGH THE SORT LINE. WORKERS WERE ACTIVELY PROCESSING AT THE SORT LINE. PROCESSED MATERIALS WERE PILED OUTSIDE THE BUILDING IN PREPARATION FOR BEING SHIPPED BY RAIL.</p> <p>PHOTO A) PROCESSED MATERIALS</p> <p>PHOTO B) UNPROCESSED MATERIALS</p> <p>PHOTO C) UNPROCESSED MATERIALS</p> <p>PHOTO D) SORT LINE</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)
1323455	2/11/2019	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		2/11/2019	<p>REINSPECTION IN 1 MONTH.</p> <p>FACILITY RECEIVES MAINLY ENGINES FROM AUTO SCRAPPERS AND SHRED FROM VEHICLES SHREDDERS. ENGINES BLOCKS ARE "CRACKED" AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ON "PICK LINE". THE SHRED IS PROCESSED BY DENSITY SEPARATION AND EDDY CURRENT.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. CLEAN MATERIALS AWAITED LOADING INTO RAILCARS FOR SHIPMENT TO STEEL MILLS. SHRED WAS PILED OUTSIDE THE PROCESS BUILDING AWAITING LOADING ONTO THE CONVEYOR FOR PROCESSING.</p> <p>PHOTO A) CLEAN MATERIALS</p> <p>PHOTO B) MATERIALS TO BE LOADED ONTO THE CONVEYOR</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)
1299608	11/6/2018	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	S	AVENUE O		SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON		11/6/2018	<p>REINSPECTION IN 1 MONTH.</p>	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (-87.54027295195661 41.68421627817438)

TODAY'S FINDINGS: THE ABUNDANCE OF MATERIALS HAVE BEEN REMOVED AND PROCESSED, EXCEPT FOR SOME DIRTPILES THAT MUST BE PROCESSED. THEN THE AREA WILL BE MAGNETED AND SCREENED TO REMOVE METALS, AND GRADED.

PHOTO A) REMAINING DIRTPILES

OTHERWISE, THE FACILITY NEEDED WEEDS CUT BUT WAS IN SATISFACTORY CONDITION.

REINSPECTION IN 1 MONTH.

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING COMPANY NEXT DOOR, USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE 'CRACKED?' AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING 'FLUFF?' IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

861730	6/28/2016	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	5	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	6/28/2016	THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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MET R. TRIVISONNO (OR RT, MANAGER) AND TOURED THE SITE. FINDINGS:

PREVIOUS FINDINGS: BURIED PIPE FROM NOW-DEFUNCT RAILROAD MECHANISMS HAS BEEN REMOVED AND THE EXCAVATION FILLED.

TODAY'S FINDINGS:

THERE IS AN ABUNDANCE OF MATERIALS (ENGINE) STORED IN BETWEEN THE BUILDINGS THAT RT STATES WILL BE PROCESSED OVER THE NEXT FEW WEEKS. THE ENTIRE SIDE OF THIS BUILDING WILL BE CLEARED OF MATERIALS.

PHOTO A) FILED MATERIALS

OTHERWISE, THE FACILITY WAS IN SATISFACTORY CONDITION.

REINSPECTION IN 1 MONTH.

847413	5/11/2016	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	5	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	5/11/2016	FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING COMPANY NEXT DOOR, USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE 'CRACKED?' AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING 'FLUFF?' IS SHIPPED OUT FOR LANDFILL. ANOTHER PERIODIC INSPECTION FOR PERMIT COMPLIANCE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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MET R. TRIVISONNO (OR RT, MANAGER) AND TOURED THE SITE. FINDINGS:

PREVIOUS FINDINGS: METAL PIPE CONTAINING SOME SORT OF OIL PROTRUDING FROM THE GROUND IS CONNECTED TO SOMETHING UNDERGROUND (POSSIBLY A UST), BUT RT WAS UNAWARE OF WHAT BUT WOULD INVESTIGATE.

TODAY'S FINDINGS: THE PIPE HAS BEEN EXPOSED AND FOUND TO BE A PART OF NOW-DEFUNCT RAILROAD MECHANISMS THAT HAVE BEEN COVERED OVER WITH ASPHALT. THE OIL WAS A LUBRICANT WHICH WAS PUMPED OUT (LESS THAN 10 GALLONS) AND THE PIPE CLEARED WITH COMPRESSED AIR. RT WILL HAVE THE ENTIRE PIPE REMOVED AND FILL THE EXCAVATION.

PHOTO A) PIPE OUTLET

PHOTO B) EXPOSED PIPE

OTHERWISE, THE FACILITY WAS IN SATISFACTORY CONDITION. REINSPECTION IN 1 MONTH.

834140	4/11/2016	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	5	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	4/8/2016	OTHERWISE, THE FACILITY WAS IN SATISFACTORY CONDITION. REINSPECTION IN 1 MONTH.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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MET R. TRIVISONNO (OR RT, MANAGER) AND TOURED THE SITE. FINDINGS:

COLLISION PROTECTION HAS BEEN ADDED FOR THE DIESEL AST. RIGHT OUTSIDE THE WEST BUILDING A METAL PIPE CONTAINING SOME SORT OF OIL WAS PROTRUDING FROM THE GROUND.

THE PIPE IS CONNECTED TO SOMETHING UNDERGROUND (POSSIBLY A UST), BUT RT IS UNAWARE OF WHAT. HE WILL INVESTIGATE AND UPDATE ME IN ORDER THAT IT IS APPROPRIATELY ADDRESSED. ON THE EASTERN BOUNDARY, MATERIALS (ENGINES) ARE NORMAL STORED ON CEMENT BUT TODAY SOME ARE ON THE GROUND, WHICH IS DIRT - NOT ACCEPTABLE PAVEMENT. RT WILL HAVE THIS ADDRESSED BY IMMEDIATELY.

PHOTO A) METAL PIPE

PHOTO B) MATERIALS ON THE GROUND

OTHERWISE, THERE IS OVERALL IMPROVEMENT THAT CAN BE MADE IN REGARD TO MATERIALS STORAGE IN DEDICATED AND CLEARLY DEFINED AREAS. RT WILL COMMIT TO MARKING OFF THE THESE AREAS AND ADHERING TO THEM.

REINSPECTION IN 1 MONTH.

819645	3/16/2016	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	5	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	3/11/2016	PERIODIC INSPECTION FOR PERMIT COMPLIANCE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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MET R. TRIVISONNO (OR RT, MANAGER) AND TOURED THE SITE. FINDINGS:

PHOTO A) DIESEL AST LACKING COLLISION PROTECTION THIS WILL BE ADDRESSED IMMEDIATELY

PHOTO B) BUILDING CONDITION UNSATISFACTORY DUE TO CRUMBLING BRICKS ALONG THE SOUTH EXTERIOR WALL RT STATED THAT UPPER MANAGEMENT PLANS TO DEMOLISH THE BUILDING THIS YEAR

REINSPECTION IN 1 MONTH.

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING COMPANY NEXT DOOR, USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE 'CRACKED?' AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING 'FLUFF?' IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

815299	1/29/2016	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	5	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	1/28/2016	*DISREGARD 01-28 NAPUCK PHOTO IN FAVOR OF JAN 28 PHOTO - UNABLE TO REMOVE FROM HANSEN PERIODIC INSPECTION FOR PERMIT COMPLIANCE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS:

PHOTO A) BUILDING CONDITION UNSATISFACTORY DUE TO CRUMBLING BRICKS FROM THE SOUTH EXTERIOR WALL TRIVISONNO STATED THAT THE BUILDING ACTUALLY NEEDED TO BE REPLACED BUT COULD NOT PROVIDE A PLAN OR TIMELINE FOR SUCH

REINSPECTION IN 1 MONTH.

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING COMPANY NEXT DOOR, USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE 'CRACKED?' AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING 'FLUFF?' IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

714039	1/19/2016	NAPUCK SALVAGE OF WAUPEC A, LLC	11610 S AVENUE O	11610	5	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	11/19/2015	THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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PERIODIC INSPECTION FOR PERMIT COMPLIANCE.

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS:

PHOTO A) OUTDOOR STORAGE HAS ONLY PARTIAL CONTAINMENT, MATERIALS SPREADING TO GRASS/DIRT AREA ?BLOCKS WILL BE PLACED TO ADDRESS THIS BY REINSPECTION.

REINSPECTION IN 1 MONTH.

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

714018 10/16/2015 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 10/15/2015

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS:

PHOTO A) AREA CLEARED OF MUCH MATERIAL ON THE GROUND, BUILDING WALLS GREATLY DETERIORATED- THE AREA IS STILL PLANNED TO BE USED FOR PROCESSING (BREAKING, RIPPING APART) OF MATERIALS. WILL REVIEW THE SITE PLAN/SKETCH AND GET ENGINEER INPUT FOR ADDRESSING THIS

PHOTO B) MATERIALS ON THE GROUND FAR FROM THE MAIN PILE ?THIS WILL BE ADDRESSED IMMEDIATELY

REINSPECTION IN 1 MONTH.

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS:

PHOTO A) MATERIALS STORED ON GROUND WHICH IS DIRT NOT CEMENT, ASPHALT, GRAVEL ETC.

PHOTO B) MATERIALS STORED ON GROUND, BUILDING CONDITIONS (WALLS) DETERIORATING

PHOTO C) MATERIALS PILE NOT CONTAINED/CONTROLLED

THESE TO BE ADDRESSED OR PLANNED BY REINSPECTION PRIOR TO PERMIT RENEWAL IN AUGUST.

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

707317 10/16/2015 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 8/21/2015

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS: SHREDDED AUTOMOBILE PILES ARE STAGED TO GO THROUGH THEIR NEW PROCESS ?COPPER, BRASS, ALUMINUM, STAINLESS STEEL ARE SEPARATED BY TYPE, ALSO FROM WASTE LIKE PLASTIC AND FOAM RUBBER.

PHOTO A) MATERIALS PILE SHOWING VENDOR'S FINISHED PRODUCT THAT CAN BE FURTHER PROCESSED HERE.

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

700793 7/28/2015 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 7/23/2015

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS: WASTES (DEBRIS, MACHINE PARTS) HAVE BEEN ALLOWED TO COLLECT IN A FEW PILES OVER THE WINTER.

PHOTO A) WOOD, WASTE TIRES.

THIS WILL BE INCLUDED IN THE SPRING CLEANUP THAT WILL BEGIN IN APRIL.

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

697346 5/6/2015 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 5/6/2015

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS: FACILITY OPERATIONS CONTINUE. NO PERMIT VIOLATIONS NOTED. THE ROOF HAS OPENINGS THAT ALLOW SNOW TO ENTER AND COLLECT ON THE MATERIALS PALLETS ?TRIVISONNO STATED THAT 1 SECTION OF ROOF HAD BEEN REPAIRED AND THE REPAIRS WERE SCHEDULED TO CONTINUE THROUGHOUT THE YEAR.

PHOTO A) MATERIALS WITH SNOW ON TOP DUE TO THE HOLES IN THE ROOF.

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

691994 3/27/2015 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 3/27/2015

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS: FACILITY RELATIVELY CLEAN, CONSIDERING THE NATURE OF WORK.

PHOTO A) ?CONTAMINATED? IRON (STILL CONTAINING NON-IRON METALS).

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

686284 2/6/2015 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 2/6/2015

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE ?CRACKED? AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND ?THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING ?LUFF? IS SHIPPED OUT FOR LANDFILL. ANOTHER PROCESS IS THE SEPARATION OF INTERMINGLED METALS BY DENSITY, ALSO USING MAGNETIC PROCESSES.

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

MET R. TRIVISONNO (MANAGER) AND TOURED THE SITE. FINDINGS:

PHOTO A) EXCESSIVE WEEDS AT THE METAL TURNINGS STORAGE AREA.

DEPT. OF PUBLIC HEALTH 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

682193 12/4/2014 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 12/4/2014

THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).

REINSPECTION IN 1 TO 17 MONTHS.

532697 10/14/2014 A, LLC 11610 5 AVENUE O

SOLID WASTE INSPECTI ONS CLASS II INSPECTI ON

13776 10/14/2014

531789	4/29/2014	NAPLICK SALVAGE OF WAUPEC AVENUE O	11610	S	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	13776	4/3/2014	END OF INSPECTION.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
<p>FACILITY RECEIVES VARIOUS METALS BUT MAINLY END-OF-LIFE VEHICLES AND PROCESSES THEM IN ENTIRETY. VEHICLES ARE FIRST DRAINED OF FLUIDS AT SOUTH SHORE RECYCLING (COMPANY NEXT DOOR), USING THEIR RECOVERY SYSTEM. NEXT, ENGINES ARE REMOVED FROM VEHICLES AND MOVED TO THE AREA WHERE THE BLOCKS ARE CRACKED AND SMALLER RECYCLABLE FRAGMENTS ARE PICKED OUT BY HAND. THE REMAINING ENGINE BODY AND THE VEHICLE BODY ARE THEN PROCESSED BY SHREDDING THEN MAGNETIC SEPARATOR TO REMOVE THE MAJORITY OF METAL RECYCLABLES. THE RESULTING FLUFF IS SHIPPED OUT FOR LANDFILL.</p> <p>THE INDOOR PROCESSING AREA IS CONNECTED FOR DRAINAGE TO AN OIL/WATER SEPARATOR THAT IS SERVICED BY A LICENSED CONTRACTOR (CRYSTAL CLEAN).</p> <p>MEY R. TRIVISONNO (MANAGER) AND TOURED THE SITE. THERE WERE WORKERS AT TABLES BREAKING PICKING OUT THE PRECIOUS METALS FROM CRACKED ENGINES AND AT THE CONVEYOR PICKING THEM OUT OF THE FRAGMENTS OF SHREDDED VEHICLES.</p> <p>OUTSIDE THE BUILDING, THERE WAS A PILE OF WASTE (DIRT, BRICKS, WOOD) THAT HAD BEEN SCRAPED UP DURING CLEAN-UP AND PLACED HERE TEMPORARILY. THIS WILL BE DISPOSED OF IMMEDIATELY.</p>														
492602	5/11/2013	NAPLICK SALVAGE OF WAUPEC AVENUE O	11610	S	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	227404	5/13/2013	INVESTIGATOR ANTONOPOULOS RE-INSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING WITH MOST STORAGE OUTSIDE. INSIDE THE FACILITY FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SLUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE (MOTOR BLOCKS). SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
<p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS. TRUCKS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL, CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM AND STORED IN BINS.</p> <p>THE FACILITY DOES NOT ACCEPT SCRAP FROM THE PUBLIC, ONLY INDUSTRIAL ACCOUNTS AND DETAIL RECORDS ARE KEPT FOR ALL TRANSACTIONS.</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS. DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS TRUCKS TO BE PROCESSED AT STEEL MILLS.</p>														
489249	3/11/2013	NAPLICK SALVAGE OF WAUPEC AVENUE O	11610	S	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	227404	3/13/2013	INVESTIGATOR ANTONOPOULOS RE-INSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING WITH MOST STORAGE OUTSIDE. INSIDE THE FACILITY FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SLUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE (MOTOR BLOCKS). SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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481709	2/6/2013	NAPLICK SALVAGE OF WAUPEC AVENUE O	11610	S	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	227404	2/6/2013	INVESTIGATOR ANTONOPOULOS RE-INSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING WITH MOST STORAGE OUTSIDE. INSIDE THE FACILITY FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SLUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE (MOTOR BLOCKS). SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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459729	11/21/2012	NAPLICK SALVAGE OF WAUPEC AVENUE O	11610	S	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	227404	11/21/2012	INVESTIGATOR ANTONOPOULOS RE-INSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING WITH MOST STORAGE OUTSIDE. INSIDE THE FACILITY FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SLUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE (MOTOR BLOCKS). SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
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456610	9/24/2012	NAPLICK SALVAGE OF WAUPEC AVENUE O	11610	S	AVENUE O	SOLID WASTE INSPECTI ONS	CLASS II INSPECTI ON	227404	9/24/2012	3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES A STEAM TUMBLE DRUM CLEANER.	DEPT. OF PUBLIC HEALTH	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)

APPLICANT	DATE	ADDRESS	CITY	STATE	ZIP	PERMIT/INSPECTION	CLASS II	DATE	DESCRIPTION	DEPT. OF PUBLIC HEALTH	POINT	
448672	8/30/2012	NAPUCK SALVAGE OF WAUPEC AVENUE 11610 S O	MAINE	USA	04401	SOLID WASTE INSPECT	CLASS II INSPECT	227404	8/30/2012	INVESTIGATOR ANTONOPOULOS RE-INSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING WITH MOST STORAGE OUTSIDE. INSIDE THE FACILITY FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE (MOTOR BLOCKS). SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
438128	6/14/2012	NAPUCK SALVAGE OF WAUPEC AVENUE 11610 S O	MAINE	USA	04401	SOLID WASTE INSPECT	CLASS II INSPECT	227404	6/14/2012	INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
433135	3/26/2012	NAPUCK SALVAGE OF WAUPEC AVENUE 11610 S O	MAINE	USA	04401	SOLID WASTE INSPECT	CLASS II INSPECT	227404	3/26/2012	INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
427852	2/16/2012	NAPUCK SALVAGE OF WAUPEC AVENUE 11610 S O	MAINE	USA	04401	SOLID WASTE INSPECT	CLASS II INSPECT	227404	2/16/2012	INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
419184	12/29/2011	NAPUCK SALVAGE OF WAUPEC AVENUE 11610 S O	MAINE	USA	04401	SOLID WASTE INSPECT	CLASS II INSPECT	227404	11/8/2011	INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
416736	9/22/2011	NAPUCK SALVAGE OF WAUPEC AVENUE 11610 S O	MAINE	USA	04401	SOLID WASTE INSPECT	CLASS II INSPECT	227404	8/23/2011	*NO PHOTOS AT THIS TIME INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
DOENS1 2004	1/1/2012	NAPUCK 11610 S AVENUE O AVE	MAINE	USA	04401	SOLID WASTE INSPECT	PERMIT/RECYCLE	122	7/19/2011	INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403
DOENS1 2003	1/1/2012	NAPUCK 11610 S AVENUE O AVE	MAINE	USA	04401	SOLID WASTE INSPECT	PERMIT/RECYCLE	122	6/23/2011	INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.	41.68422	-87.5403

DOENSI	Year	Address	City	State	Zip	Permit/Inspection	Date	Description	Historic Dept.	Coordinates
DOENSI 1995	1/1/2012	11610 S AVENUE O AVE	NAPLACK	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 9/10/2010	<p>INVESTIGATOR ANTONOPOLLOS REINSPECTED NAPLACK RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. #R COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. #REDEDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. #ITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A STEAM TUMBLE DRUM CLEANER.</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)
DOENSI 1994	1/1/2012	11610 S AVENUE O AVE	NAPLACK	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 8/10/2010	<p>INVESTIGATOR ANTONOPOLLOS REINSPECTED NAPLACK RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. #R COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. #REDEDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. #ITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A STEAM TUMBLE DRUM CLEANER.</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)
DOENSI 1993	1/1/2012	11610 S AVENUE O AVE	NAPLACK	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 7/8/2010	<p>THIS INSPECTION WAS DONE FOR PERMIT PURPOSES. SOUTH SHORE RECYCLES ALUMINUM CANS/SCRAP, FERROUS AND NON-FERROUS SCRAP, CAR PARTS, BATTERIES, AND COPPER WHICH INCLUDES WIRE. MATERIAL IS SOURCED BY THE PUBLIC AND SMALL BUSINESS. ALL INCOMING MATERIAL IS SUBJECT TO INSPECTION AND THEN WEIGHT. MATERIAL IS THEN SORTED AND THEN STORED UNTIL THE MATERIAL IS SENT TO OTHER RECYCLERS.</p> <p>SITE CONDITIONS WERE SATISFACTORY DURING THE TIME OF INSPECTION. ALL SCRAP MATERIAL IS STORED IN BINS INSIDE AND OUTSIDE. THE SHIPPING AREA OF THE FACILITY SHOWED GOOD ORGANIZATION. MATERIAL WAS STORED IN CONTAINERS AND SEGREGATED WELL WAITING FOR PICK UP.</p> <p>DETAILED RECORDS ARE KEPT ON ALL CUSTOMERS.</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)
DOENSI 1992	1/1/2012	11610 S AVENUE O AVE	SOUTH SHORE	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 6/7/2010	<p>INVESTIGATOR ANTONOPOLLOS REINSPECTED NAPLACK RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. #R COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. #REDEDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. #ITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A STEAM TUMBLE DRUM CLEANER.</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)
DOENSI 1991	1/1/2012	11610 S AVENUE O AVE	NAPLACK	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 5/7/2010	<p>INVESTIGATOR ANTONOPOLLOS REINSPECTED NAPLACK RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. #R COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. #REDEDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. #ITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A STEAM TUMBLE DRUM CLEANER.</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)
DOENSI 1990	1/1/2012	11610 S AVENUE O AVE	NAPLACK	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 4/15/2010	<p>INVESTIGATOR ANTONOPOLLOS REINSPECTED NAPLACK RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. #R COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. #REDEDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. #ITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A STEAM TUMBLE DRUM CLEANER.</p> <p>4. SHREDDERS PERMITTED. AST NOT PERMITTED. MR. TOLIN IS IN THE PROCESS OF PERMITTING THEM WITH DOE.</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)
DOENSI 1989	1/1/2012	11610 S AVENUE O AVE	NAPLACK	MO	64110	SOLID WASTE FACILITY (RECYCLE) INSPECT (ONS R)	122 3/8/2010	<p>II</p>	HISTORIC DEPT. OF ENVIRON MENT	41.68422 -87.5403 POINT (-87.54027295195661 41.68421627817438)

DOENSI	Year	Address	City	State	Zip	Permit/Inspection	Date	Description	Historic Dept.	Notes
DOENSI 1973	1/1/2012	11610 S AVE	NAPLICK	OH	45610	SOLID WASTE INSPECT (ONS)	9/23/2008	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <ol style="list-style-type: none"> 1. RAILCARS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB. 2. REDEEMED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS. 3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER. 4. NAPLICK WILL DEMO ANOTHER BUILDING. 	HISTORIC DEPT. OF ENVIRON	41.68422 -87.5403 POINT (87.540272951956661 41.68421627817438)
DOENSI 1972	1/1/2012	11610 S AVE	NAPLICK	OH	45610	SOLID WASTE INSPECT (ONS)	8/28/2008	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <ol style="list-style-type: none"> 1. RAILCARS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB. 2. REDEEMED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS. 3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER. 4. NAPLICK WILL DEMO ANOTHER BUILDING. 	HISTORIC DEPT. OF ENVIRON	41.68422 -87.5403 POINT (87.540272951956661 41.68421627817438)
DOENSI 1971	1/1/2012	11610 S AVE	NAPLICK	OH	45610	SOLID WASTE INSPECT (ONS)	8/4/2008	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <ol style="list-style-type: none"> 1. RAILCARS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB. 2. REDEEMED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS. 3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER. 4. NAPLICK WILL DEMO ANOTHER BUILDING. 	HISTORIC DEPT. OF ENVIRON	41.68422 -87.5403 POINT (87.540272951956661 41.68421627817438)
DOENSI 1970	1/1/2012	11610 S AVE	NAPLICK	OH	45610	SOLID WASTE INSPECT (ONS)	7/10/2008	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <ol style="list-style-type: none"> 1. RAILCARS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB. 2. REDEEMED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS. 3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER. 4. NAPLICK WILL DEMO ANOTHER BUILDING. 	HISTORIC DEPT. OF ENVIRON	41.68422 -87.5403 POINT (87.540272951956661 41.68421627817438)
DOENSI 1969	1/1/2012	11610 S AVE	NAPLICK	OH	45610	SOLID WASTE INSPECT (ONS)	6/5/2008	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <ol style="list-style-type: none"> 1. RAILCARS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB. 2. REDEEMED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS. 3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER. 4. NAPLICK WILL DEMO ANOTHER BUILDING. 	HISTORIC DEPT. OF ENVIRON	41.68422 -87.5403 POINT (87.540272951956661 41.68421627817438)
DOENSI 1968	1/1/2012	11610 S AVE	NAPLICK	OH	45610	SOLID WASTE INSPECT (ONS)	5/15/2008	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPLICK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH RON TRIVISSONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <ol style="list-style-type: none"> 1. RAILCARS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB. 2. REDEEMED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS. 3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER. 4. NAPLICK WILL DEMO ANOTHER BUILDING. 	HISTORIC DEPT. OF ENVIRON	41.68422 -87.5403 POINT (87.540272951956661 41.68421627817438)

DOENSI	PERMIT/ICENSR	WASTE FACILITY (RECYCLE)	INSPECT (RECYCLE)	ONS	122	DATE	DESCRIPTION	HISTORIC DEPT. OF ENVIRON	MENT	
DOENSI 1960	11630 S	NAPUK AVENUE	11630 S	AVENUE O	AVE	10/23/2007	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH HAL TOLIN & RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER.</p>	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
DOENSI 1959	11630 S	NAPUK AVENUE	11630 S	AVENUE O	AVE	9/28/2007	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH HAL TOLIN & RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER.</p>	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
DOENSI 1958	11630 S	NAPUK AVENUE	11630 S	AVENUE O	AVE	8/21/2007	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH HAL TOLIN & RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER.</p>	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
DOENSI 1957	11630 S	NAPUK AVENUE	11630 S	AVENUE O	AVE	7/31/2007	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH HAL TOLIN & RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>IT ALSO SHOULD BE NOTED THAT NAPUCK HAS AMENDED THEIR PERMIT APPLICATION NOW ALLOWING THEM TO STORE MATERIAL OUTSIDE. DOE'S ERIC SORIANO HAS APPROVED AND RE-ISSUED THE PERMIT. ALSO AS OF 2/07 THE OPERATIONS PERMIT HAS EXPIRED. DOE'S ERIC SORIANO INFORMED ME THAT THE PERMIT RENEWAL WAS SENT TO THE LAW DEPARTMENT ON 4/14/07.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER.</p>	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
DOENSI 1956	11630 S	NAPUK AVENUE	11630 S	AVENUE O	AVE	6/11/2007	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH HAL TOLIN & RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>IT ALSO SHOULD BE NOTED THAT NAPUCK HAS AMENDED THEIR PERMIT APPLICATION NOW ALLOWING THEM TO STORE MATERIAL OUTSIDE. DOE'S ERIC SORIANO HAS APPROVED AND RE-ISSUED THE PERMIT. ALSO AS OF 2/07 THE OPERATIONS PERMIT HAS EXPIRED. DOE'S ERIC SORIANO INFORMED ME THAT THE PERMIT RENEWAL WAS SENT TO THE LAW DEPARTMENT ON 4/14/07.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER.</p>	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)
DOENSI 1955	11630 S	NAPUK AVENUE	11630 S	AVENUE O	AVE	5/21/2007	<p>INVESTIGATOR ANTONOPOULOS REINSPECTED NAPUCK'S RECYCLING FACILITY FOR PERMIT PURPOSES. UPON ARRIVAL, I SPOKE AND TOURED THE SITE WITH HAL TOLIN & RON TRIVISONNO. OPERATIONS ARE DONE INSIDE A BUILDING. THE FLOOR IS PAVED WITH CONCRETE. THE CONCRETE IS SLOPED TO A SUMP, WHICH COLLECTS ANY LIQUID WASTE FROM THE SITE. SAFETY KLEEN IS CONTRACTED TO REMOVE THE LIQUID WASTE.</p> <p>THIS SITE RECEIVES JUNK MOTORS BY RAILCARS & TRUCKS. SITE SCRAPS OLD MOTORS. MOTORS ARE PROCESSED THROUGH A CRUSHER, WHICH ALSO SEPARATES THE METALS (ALUMINUM, STEEL & CAST IRON). PARTS ARE THEN WASHED WITH A CAUSTIC SOAP INSIDE A TUMBLE DRUM.</p> <p>IT ALSO SHOULD BE NOTED THAT NAPUCK HAS AMENDED THEIR PERMIT APPLICATION NOW ALLOWING THEM TO STORE MATERIAL OUTSIDE. DOE'S ERIC SORIANO HAS APPROVED AND RE-ISSUED THE PERMIT. ALSO AS OF 2/07 THE OPERATIONS PERMIT HAS EXPIRED. DOE'S ERIC SORIANO INFORMED ME THAT THE PERMIT RENEWAL WAS SENT TO THE LAW DEPARTMENT ON 4/14/07.</p> <p>II</p> <p>SITE CONDITIONS:</p> <p>1. AIR COMPRESSORS, OLD GASOLINE MOTORS & DIESEL MOTORS ARE STORED IN THEIR RESPECTFUL STORAGE BINS. THESE AREAS ARE NOT LABELED. THE SITE HAS REMOVED THE MINOR ACCUMULATION OF OIL DRY BUILDUP ON THE CONCRETE SLAB.</p> <p>2. SHREDDED SCRAP IS STORED IN THEIR RESPECTFUL AREAS ACCORDING TO THE TYPE OF METAL. SCRAP IS THEN LOADED INTO RAILCARS & TRUCKS TO BE PROCESSED AT STEEL MILLS.</p> <p>3. SITE PROCESSES INCOMING SCRAP WITH A SHREDDER, SHAKER TABLES & A CAUSTIC TUMBLE DRUM CLEANER.</p>	41.68422	-87.5403	POINT (87.54027295195661 41.68421627817438)

ID	Date	Address	City	State	Activity	Count	Date	Description	Notes
DOEINS1 1922	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE TANK INSPECTI ONS	30	8/30/2001	UST AUDIT	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1921	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE TANK INSPECTI ONS	30	8/23/2001	AST REMOVA L	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1920	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE TANK INSPECTI ONS	30	8/15/2001	AST REMOVA L	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1919	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE TANK INSPECTI ONS	30	8/9/2001	AST REMOVA L	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1918	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE TANK INSPECTI ONS	21	5/30/2001	AST REMOVA L UST INSPECTION	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1917	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE TANK INSPECTI ONS	42	9/23/1998	AIR QUALITY INSPECTI ON	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 73490	1/1/2011	REPUBLIC ENGINEE RID STEELS INC	11610 S AVENUE O AVE	S	AVENUE O AVE TANK COMME NTS		7/28/1998	FACILITY ID:2038808 REMOVAL PERMIT # 104057: REMOVED ONE 1,000-GALLON GASOLINE TANK. THERE APPEARED TO BE NO RELEASE OF PRODUCT INTO THE SOIL. NO EVIDENCE (OLFACTORY OR VISUAL) WAS FOUND.	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1916	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE DEMOLIT ION/ASB ESTOS	42	4/22/1998	DEMO IN PROGRESS.	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1915	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE DEMOLIT ION/ASB ESTOS	42	4/10/1998	DEMO NO ACTIVITY.	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1914	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE DEMOLIT ION/ASB ESTOS	42	4/3/1998	DEMO NO ACTIVITY.	HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)
DOEINS1 1913	1/1/2012	11610 S AVENUE O AVE	11610	S	AVENUE O AVE DEMOLIT ION/ASB ESTOS	42	11/5/1997		HISTORIC DEPT. OF ENVIRONMENT 41.68422 -87.5403 POINT (87.54027295195661 41.68421627817438)

Lifetime Operating Permit Application

Supplemental Document

South Chicago Property Management, Ltd

11600 South Burley Ave.,

Chicago, IL 60617

November 26, 2019

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Purpose and Scope:

This document has been developed as supporting documentation for submittal of an application for a Lifetime Operating Permit for South Chicago Property Management, Ltd (SCPM), located at 11600 South Burley Avenue, Chicago, IL. This document includes a description of the emission units associated with this facility, estimations of the uncontrolled Potential to Emit (PTE) from this source, a description of any associated control equipment for which this application is being submitted, and relevant and applicable federal/state regulations. The 11600 S Burley Avenue campus houses operations including Reserve Marine Terminals (RMT), Napuck Salvage of Waupaca (NSW), South Shore Recycling (SSR), and Regency Technologies (RSR), all of which share this campus address. SCPM is applying for this Lifetime Operating Permit as a single source with multiple sources (RMT, NSW, SSR, RSR).

Emissions and emission sources from RMT include Particulate Matter (PM/PM₁₀) from material handling, torch cutting, screening/processing, and paved/unpaved roadways, as well as low level criteria pollutants from fossil fuel-fired generator and propane torch cutting. NSW's emissions and emission units include PM/PM₁₀ from material processing, screening/handling, and paved roadways. SSR's emissions and emission units include PM/PM₁₀ from unpaved roadways and low level criteria pollutants from torch cutting. RSR's emission and emission units include PM/PM₁₀ from paved roadways. All of SCPM's campus-wide emissions fall well below applicable major source thresholds for all criteria pollutants and Hazardous Air Pollutants (HAPs). SCPM's actual emissions exceed the criterial pollutant eligibility thresholds for the Registration of Smaller Source (ROSS) Program, but pre-control (potential to emit) emissions of criteria pollutants meet the requirements for a Lifetime Operating Permit.

Company/Operation Descriptions

South Chicago Property Management, Ltd. (SCPM), located at 11600 S Burley Avenue, is a scrap metal industrial campus is a single source consisting of four associated entities. The following entities reside at 11600 S Burley Avenue, and contribute to the single source potential to emit. SCPM is applying for a Lifetime Operating Permit based on the single source potential to emit. NSW is currently registered under the ROSS Program and no other entities hold air permits. The emission calculations associated with these entities are presented in Appendix A and demonstrate emission levels below that of the major source threshold.

The following identifies the entities at this site that compromise a single source at SCPM.

Source Name	Source Description
Reserve Marine Terminals	<p>RMT operates an indoor foundry sand/scrap recovery operation that includes conveyors, magnetic/size separation, screening, and crushing, and processes approximately 60,000 tons/year of material.</p> <p>Approximately 130,000 tons/year of material is processed through outdoor activities including torch cutting and breakage. These activities are equipped with water misters as necessary to minimize particulate emissions. RMT generates fugitive particulate emissions from use of paved and unpaved roads, and PM/criteria pollutants from the operation of one non-emergency 16 HP gasoline-fired generator and two non-emergency 83 HP diesel-fired generators. Two of the three generators operate only when processes are operating.</p>

	Currently, RMT does not hold an air permit and is not registered under the ROSS program.
Napuck Salvage of Waupaca (Site ID No.:031600GYI)	<p>NSW can recycle up to 285,000 tons/year of aluminum and cast steel. Operations include crushing, screening and conveying with processing equipment located indoors.</p> <p>NSW also processes approximately 55,000 tons/year of cast iron/engine blocks using breakage and sorting processes. All processing equipment is located indoors.</p> <p>NSW also generates fugitive particulate emissions from use of paved roads. NSW is registered under the Registration of Smaller Sources (ROSS) program (Application 12020006) – since February 6, 2012 continues to meet program eligibility requirements.</p>
South Shore Recycling	<p>SSR purchases retail ferrous/non-ferrous scrap metal and sorts/sizes/sells it to NSW or other offsite entities.</p> <p>SSR generates fugitive particulate emissions from use of unpaved roads and torch cutting (propane).</p> <p>SSR has no air emission permits and is not registered under the ROSS program.</p>
Regency Technologies	<p>RSR is an electronics recycling operation that operates indoors and has no process emissions.</p> <p>RSR generates fugitive particulate emissions from use of paved roads.</p> <p>RSR has no process air emissions and therefore, is not required to obtain an air permit or register under the ROSS program.</p>

Description of Emission Units and Activities:

- Emission Units:
 - Crushers and Shredders: RMT and NSW both utilize crushers and shredders for size reduction of material.
 - Screeners/Trammels: RMT and NSW both utilize screeners/trammels to separate material by size.
 - Separators/Eddy Current Separators: RMT and NSW both utilize separators and eddy current separators to separate material by composition/chemistry.
 - Drier: NSW utilizes a direct rotary dryer to remove residual moisture from wet/washed aluminum. This is an indoor process that emits negligible PM10 emissions as this commodity has already gone through screening/processing and is simply being dried. The drier is powered using a propane burner rated at 6 MMBtu/hour. Although PM emissions are negligible from the drier itself, the associated propane burner does emit low levels of CO and NOx.

- Conveyors and Transfer Points: RMT and NSW both utilize conveyors to transfer material from one location in a process to another.
- Activities:
 - Paved and Unpaved Roadways: Vehicle and truck traffic occurs frequently throughout the day at SCPM. These emissions are considered true fugitive emissions that do not come from processing and have no feasible way of being vented to control equipment or a stack. The majority of traffic in the RMT yard and on roadways leading up to facilities are from 40 ton trucks delivering or picking up loads. This activity is most effectively controlled by enforcing low speed limits (below 10mph) and by frequently wetting unpaved roads and sweeping paved roads to prevent tracking out dust and debris. Water controls are implemented on a daily basis as needed, campus wide.
 - Torch cutting: Propane torch cutting is carried out at RMT and at SSR. Torch cutting is an exempt activity pursuant to 35.IAC.201.146(aa).
 - Fuel combustion in stationary reciprocating engines: RMT utilizes two 83 HP diesel-fired generator sets. One of these generators is used to provide power to an employee break trailer. The other is used to provide power to a heater block for mobile equipment in the cold weather months. RMT also utilizes one 16 HP gasoline-fired generator set to provide power to a rail scale. Fuel combustion in stationary reciprocating engines is exempt from permitting requirements pursuant to 35.IAC.201.146(i).
- Negligible Emissions: A detailed description and breakdown of calculations on negligible emission sources is located after Appendix C.
 - Shearing and Breakage: RMT and Napuck both conduct mechanical size reduction activities via shearing and breakage of various ferrous/non-ferrous commodities. These activities are limited to mechanical shearing and breaking very large items into smaller pieces – typically 6” in size or larger, and not prone to airborne emissions. Historical observations of this process demonstrate that little to no visible emissions are generated from these activities, and emissions calculations from other similar processes indicates that PM emissions are below the 0.44 Tons/Year (T/Y) threshold.
 - Bailing: RMT and RSR conduct some limited bailing of lighter gage materials including plastic and cardboard. There are no emissions associated with this process as material is typically in large sheet form and is not subjected to any actions that would generate emissions during the bailing process. Emissions from this process are well below the 0.44 T/Y threshold. RSR’s baler is indoors.
 - Torch cutting: As stated above, torch cutting is an exempt activity pursuant to 35.IAC.201.146(aa). The emissions from these sources are provided in the PTE for this facility, and are considered negligible for SSR.
 - Material Storage Piles: RMT and NSW house outdoor storage piles of large size material that is not prone to wind erosion. The range of the size of the material stores it typically 6” – 3’ or larger, and consists of various types of scrap including aluminum, iron, and steel. The facility does not store piles of any material that is prone to become windborne. Based on emissions calculations from other similar operations, historical and continued observations of processes, and knowledge of materials, the emissions from this activity are negligible and below the 0.44 T/Y threshold.

- Material Dumping and Transfer: Part of RMT and NSW receiving process is to dump inbound material from dump trucks onto the ground. Material is later handled/processed and then loaded into truck/rail/barge for outbound shipment to consumers/customers. RMT material is typically large (1" – 3' or larger) and not prone to airborne emissions. NSW materials can be smaller but do not generally produce emissions during this activity. Water spray is utilized to assist with control of particulate emissions when observed. The emissions from truck loading, unloading, and material dropping/handling/transfer for each source have been quantified and are below the 0.44 tons/year threshold.

- Fuel Storage: The SCPM campus houses one 500 gallon above-ground gasoline storage tank and one 1,000 gallon above-ground off-road diesel tank. The VOC emissions from these tanks is negligible and well below the 0.44 T/Y. These tanks are exempt from the requirement to obtain State construction or operating permits pursuant to 35 IAC 146(l) and 35 IAC 146(n).

Description of Pollution Control Equipment and Good Housekeeping at 11600 S Burley Ave:

- Fabric Filter Dust Collector: This air pollution control equipment consists of cartridge style dust collector systems ducted to operations in Napuck Salvage of Waupaca and to the screening operation in Reserve Marine Terminals. The collectors remove particulates released from the shredding, conveying, and crushing processes at these operations. PM generated by the connected emission units is transported via ducts into the dust collector. The captured air stream is then drawn through the fabric filter, where dust accumulates on the media surface. When the pressure drop across the filters increases to a set point, a mechanism shakes the filter to release PM from the dirty side of the filters, which is deposited into sealed industrial bags, stored, and then shipped downstream to be reprocessed elsewhere. This collector efficiently filters dust generated by the crushers and shredders housed inside the facility. The location of the collectors are detailed in Figure 1.
- Water Truck and Sweeper Trucks: Another method of dust control utilized during operations is dust suppression using two water trucks for paved and unpaved roadways. Throughout operations, the water trucks are filled and then water is applied to the surfaces of the roadways via controlled spray bars. A third truck with a wet sweeper is used daily as needed to service paved roadways. This occurs campus-wide and is an effective means to minimize dust entrainment from vehicular traffic.
- Dust Boss Industrial Water Mister: Another means of dust suppression that is utilized during operating hours is the use of DustBoss water sprayers. These industrial water sprayers are mounted in a position and are either sprayed directly to one point in the process line that is generating dust, or if overall dust suppression is desired, the sprayer can be set to oscillate and dampen the whole process line. SCPM currently operates 3 Dust Boss sprayers on our campus that are moved as needed to effectively control dust campus-wide. These units are used for PM emission controls at the indoor NSW operations as well as at the RMT indoor screening operations and at the outdoor scrap yard to help in controlling emissions at various processes/operations.
- Water curtain: Another means of dust control that is utilized by the RMT Screening Operation during operating hours is the use of a water curtain. This device is a fine water mist system that sprays water, in the form of a curtain or a wall, from the ceiling. This water curtain provides a dust control barrier between RMT Screening Operation and other areas in the building, deterring and preventing dust from migrating past the screening operation.

- **Good Housekeeping:** The final method of dust control is general housekeeping: operations are frequently cleaned of dust, paved roadways are frequently swept and watered, baghouse maintenance is up-kept, and speed limit signs are obeyed to keep road dust to a minimum, etc.

Description of Applicable Exempt Activities:

Pursuant to 35. IAC. 201.146 - Exemptions from State Permit Requirements

- **35.IAC.201.146(i) – Stationary non-road compression/internal combustion engine exempt from permitting**
 - ~~Any stationary internal combustion engine with a rated power output of less than 1118 kW (1500 bhp) or stationary turbine, except that a permit shall be required for the following:~~
 - Any internal combustion engine with a rating at equal to or greater than 500 bhp output that is subject to the control requirements of 35 Ill. Adm. Code 217.388(a) or (b); or
 - Any stationary gas turbine engine with a rated heat input at peak load of 10.7 gigajoules/hr (10 MMBtu/hr) or more that is constructed, reconstructed or modified after October 3, 1977 and that is subject to requirements of 40 CFR 60, subpart GG;
 - RMT's two identical 83 HP diesel compression ignition engine and one 16 HP gas internal combustion engine are well below 1500 bhp limit and thus exempt from permitting requirements, although PTE calculations must include the engines as contributors.
- **35.IAC.201.146(l) and 35.IAC.201.146(n) – Storage tanks exempt from permitting**
 - 35.IAC.201.146(l): Storage tanks and fuel dispensing equipment that are both used for dispensing of fuel to mobile sources, including on-road and off-road diesel vehicles, for use in such sources.
 - 35.IAC.201.146(n): Storage tanks of organic liquids with a capacity less than 10,000 gallons, provided the storage tank is not used to store any amount of material or mixture listed as a HAP pursuant to section 112(b) of the Clean Air Act.
 - SCPM houses one 1000 gallon diesel fuel tank and one 500 gallon gasoline fuel tank. These storage tanks hold organic liquids at capacities less than 10,000 gallons and are also used to dispense fuel to mobile sources and are thus exempt from permitting. The VOC/VOM emissions from storage tanks are still quantified and are located in Appendix C.
- **35.IAC.201.146(aa) – Propane Torch Cutting of Scrap Metal exempt from permitting**
 - Equipment for carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, sand blast cleaning, shot blasting, shot peening, or polishing ceramic artwork, leather, metals, plastics, concrete rubber, paper stock, wood, where such equipment is either used for maintenance activity, manually operated, exhausted inside a building, or vented externally with emissions controlled by a cyclone, filter, or a scrubber.
 - RMT and SSR's propane torch cutting is used for cutting through metal to reduce the size of the material. The torch cutting is manually operated, and thus exempt from permitting requirements, although PTE calculations must include the torches as contributors.
- **35.IAC.201.146(uu) – Liquefied Petroleum Gas storage exempt from permitting**
 - Piping and storage systems for natural gas, propane, and liquefied petroleum gas are exempt from state permitting requirements.

- NSW stores liquefied propane for the propane burner that powers the dryer. This storage activity is exempt from state permitting.
- **35.IAC.201.146 (fff) – Direct-fired gas dryer used for washing, cleaning, coating or printing line exempt from permitting**
 - The exemption applies to dryers with a rated heat input capacity below 10 MMBtu/hour and for which emissions other than those attributable to combustion of fuel in the dryer, including emissions attributable to use or application of cleaning agents, washing materials, coatings or inks or other process materials that contain volatile organic material are not addressed as part of the permitting of such line, if a permit is otherwise required for the line.
 - NSW's propane-fired gas dryer is a direct rotary dryer rated at 6 MMBtu/hour and does not emit any other VOC or criteria pollutant emissions other than the emissions from the propane combustion. Based on these specifications, this unit is exempt from permitting. The emissions from propane combustion are still included in SCPM's potential to emit.

Relevant Regulatory Applicability: Below is a description of the federal, state, and city regulations that are relevant to RMT.

- Site attainment status
 - The facility is located in Cook County, Illinois. The following identifies the NSR attainment status for this site.

Criteria Pollutant	Status	Major Source Threshold (tons/year)
Sulfur Dioxides	Attainment	100
Carbon Monoxide	Attainment	100
Particulate Matter (PM ₁₀ and PM _{2.5})	Attainment	100
VOM (Ozone)	Serious Non-attainment	50
Oxides of Nitrogen	Serious Non-attainment	50
Lead	Attainment	100

- Fugitive Emissions:
 - Fugitive emission sources at the facility include vehicular traffic on unpaved roadways, conveyor transfer points, processing emissions from crushing and shredding, stockpile operations, small fuel-powered generator sets, and torch cutting of scrap.
- New Source Review for Ozone Nonattainment Area (NA-NSR)
 - The facility is located in an area that is designated as serious nonattainment for ozone (VOM/VOCs and NOx). Potential and actual VOM and NOx emission limits are significantly less than the corresponding major source threshold of 50 tons/year for both VOM and NOx.
- Prevention of Significant Deterioration:
 - The facility is located in an area that is designated in attainment or unclassifiable for criteria pollutants, other than ozone. The requested emission limits in this application for each pollutant are well below major source thresholds with respect to PSD.
- 40 CFR Part 60 Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:
 - The facility is not subject to the requirements of 40 CFR Part 60 Subpart IIII due to the fact that the generator sets at the facility are of model years 2006 for the diesel engines and

2012 for the gasoline (spark ignition) engine. New Source Performance Standards went into effect in 2007 and only apply to new or modified power generators with compression ignition engines.

- 40 CFR Part 63 Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines):
 - The facility is not subject to the requirements of 40 CFR Part 63 Subpart ZZZZ. The diesel engines on site are non-emergency, compression ignition engines that have brake horsepower well below the threshold of 500. The facility is also not a major source of hazardous air pollutant emissions.
- 35 IAC 212 Subpart B – Visual Emissions:

 - 35 IAC 212.123 – Visible Emissions Limitations for All Other Emission Units
 - Section 212.123(a) prohibits the emission of smoke or other particulate matter from any process source to exceed 30% opacity. For SCPM, 35 IAC 212.123 is superseded by 35 IAC 212.316, which is described below (35 IAC 212 Subpart K – Fugitive Particulate Matter).
- 35 IAC 212 Subpart K- Fugitive Particulate Matter:
 - 35 IAC 212.301 – Process Fugitive Particulate Matter
 - Section 212.301 prohibits the emission of fugitive particulate matter from any process that is visible by an observer looking generally toward the zenith overhead, at a point beyond the property line of the source, unless the wind speed is greater than 25 mph.
 - 35 IAC 212.302 – Geographical Areas of Application:
 - SCPM is located in Cook County, but has an SIC code of 5093 which is not specifically identified as a covered SIC Code in this rule. **Therefore, sections 212.304 through 212.310 and 212.312 of Subpart K are not applicable to SCPM.**
 - 35 IAC 212.309 – Fugitive Particulate Matter Operating Program
 - SCPM is not subject to Section 212.309 because its SIC Code (5093) is not included in the subject SIC Codes identified in Section 212.302. Despite the fact that 35 IAC 212.309 is not applicable to SCPM, SCPM will voluntarily implement and maintain a fugitive particulate matter operating program that meets the requirements of sections 212.309, 212.310, 212.312, and incorporates requirements of 212.324.
 - 35 IAC 212.314 - Exception for Excess Wind Speed
 - 35 IAC 212.314 is applicable to SCPM and states that control measures such as spraying are not required when the wind speed is greater than 25 mph.
 - 35 IAC 212.315 – Covering for Vehicles
 - 35 IAC 212.315 is applicable to SCPM and states that it is prohibited from operating open semitrailers without covering sufficient to prevent release of PM into the atmosphere. This section only applies when the material being transported is capable of emitting PM into the air during use.
 - 35 IAC 212.316 – Emission Limitations for Emission Units in Certain Areas
 - 35 IAC 212.316 is applicable to SCPM, specifically 212.316(c), 212.316(d), 212.316(e)(2), 212.316(f), and 212.316(g)(1-5).
 - 212.316(c) Emission Limitations for Roadways or Parking Areas: No person shall cause or allow fugitive particulate matter emissions from any roadway or parking area to exceed an opacity of 10 percent.

- 212.316(d) Emission Limitations for Storage Piles: No person shall cause or allow fugitive particulate matter emissions from any storage pile to exceed an opacity of 10 percent.
- 212.316(e)(2) Emission Limitations for Marine Terminals: No person shall cause or allow fugitive particulate matter emissions from any loading spouts for truck or railcar to exceed an opacity of 10 percent; and no person shall cause or allow fugitive particulate matter emissions generated at barge unloading, dump pits, or conveyor transfer points to exceed an opacity of 5 percent.

- 212.316(f) Emission Limitation for All other Emission Units: Unless an emission unit has been assigned a particulate matter, PM₁₀, or fugitive particulate matter emissions limitation elsewhere in 212.316 or in Subparts R or S, no person shall cause or allow fugitive particulate matter emissions from any emission unit to exceed an opacity of 20 percent.
- 212.316(g) Recordkeeping and reporting:
 - 212.316(g)(1): Owner or operator of any fugitive particulate matter emission unit subject to this section shall keep written records of the application of control measures as may be needed for compliance with the opacity limitations of this section and shall submit to the Agency an annual report containing a summary of such information.
 - 212.316(g)(2): Requirements for records.
 - 212.316(g)(3): Copies of all records required by this section shall be submitted to the Agency within 10 working days after a written request by the Agency.
 - 212(g)(4): Records required under this section shall be kept and maintained for at least 3 years and shall be available for inspection and copying by Agency representatives during working hours.
 - 212.316(g)(5): A quarterly report must be submitted to the Agency stating dates when necessary control activities were not implemented with reasons why and the corrective actions taken.
- 35 IAC 212 Subpart L – Particulate Matter Emissions from Process Emission Units
 - 35 IAC 212.321 – Process Weight Rate
 - Section 212.321 prohibits the emissions of particulate matter into the atmosphere in any one hour period from any new or modified emission unit to exceed the allowable emission rates specified in 212.321(c). The requested particulate emission limit for emissions units identified in the application does not exceed the allowable particulate emission limit, as specified by the PTE calculations.
 - 35 IAC 212.324 – Process Emission Units in Certain Areas
 - 212.324(a) Applicability: SCPM is located in the area described by 212.324(a)(1)(B).
 - 212.324(b) General Emission Limitation: No person shall cause or allow the emission into the atmosphere of PM₁₀ from any process emission unit to exceed 0.03 gr/scf during any one hour period.
 - 212.324(d) Exceptions: Limitation in 212.324(b) does not apply to units with no visible emissions other than fugitive particulate matter.

- 212.324(f) Maintenance and Repair: SCPM must maintain and repair all air pollution control equipment in a manner that assures that the emission limits and standards in this 212.324 shall be met at all times.
 - 212.324(g) Recordkeeping of Maintenance and Repair: Records of maintenance and repair of air pollution control equipment shall be kept and submitted according to 212.324(g).
- 35 IAC 212 Subpart U – Additional Control Measures
 - The requirements of section 212 subpart U apply to facilities located within an area defined in 212.324(a)(1) and that have an actual annual source-wide PM₁₀ emissions of at least 15 tpy. Actual annual source-wide emissions are defined as the total fugitive emissions from process emission units and fuel combustion units, as reported on a facility's annual emission report. SCPM's facility is located in the area described by 212.324(a)(1)(B) and this permit application estimated actual annual source-wide PM₁₀ emissions from fugitives and process emission units do not exceed 15 tpy. Therefore, the requirements of 212 subpart U are not applicable to SCPM as described in Appendix C: Actual Annual Source-Wide Emission Calculations.
- 35 IAC 214 – Sulfur Limitations
 - Section 214.301 prohibits the emission of sulfur dioxide from any process emissions source exceeding 2,000 ppm. Combustion emissions sources at the facility are limited to small diesel fired generator sets. Negligible amounts of SO_x will be emitted due to the sulfur in the diesel fuel. Natural gas torch cutting will also emit a small amount of SO_x, but based on calculations detailed in this application, SO_x emissions will be negligible.
- 35 IAC 216 – Carbon Monoxide Emissions
 - Part 216 regulated carbon monoxide emissions from various types of sources. Potentially regulated sources at the facility are the combustion engines in the generator sets and the natural gas torch cutting. Emissions from both sources are negligible as demonstrated by calculations in this document. Section 216.121 prohibits the emission of carbon monoxide into the atmosphere from any fuel combustion source with actual heat input greater than 10 MMBtu/hour to exceed 200 ppm. None of the fuel combustion units at the facility will have a design firing rate exceeding 10 MMBtu/hour and therefore, this facility is exempt from this limitation.
- 35 IAC 217 – Nitrogen Oxide Emissions
 - Part 217 Regulates emissions of oxides of nitrogen (NO_x) from various types of sources. Pursuant to section 217.150, the provisions of subparts E, F, G, H, I, and M of this rule apply only to units that emit or have the potential to emit NO_x in an amount equal to or greater than 100 tpy. This document contains potential to emit calculations that demonstrate that NO_x emissions from the generators and torch cutting are well below the newly established ozone non-attainment level of 50 tpy, so the facility is not subject to any requirements in 25 IAC 217.
- 35 IAC 254 – Annual Emissions Report
 - Part 254 establishes uniform procedures for the reporting of air pollution emissions data from sources of regulated air pollutants. The facility will be required to submit annual emissions reports to the IEPA and maintain associated facility records pursuant to 35 IAC 254.

Rationale for Determining PTE-Emission Calculations:

The main emissions generated from material processing/handling is particulate matter (PM and PM₁₀). The PM comes from separation/screening/size reduction of material. There are no VOC, NO_x, SO₂, CO or other emissions coming from the material processing. In reviewing AP-42, there are no emission activities or processes that provide emission factors directly related to the process of shredding and processing metals, electronics, plastics, etc. Therefore, in order to attempt to estimate the potential to emit from these units, we have borrowed emission factors from other activities that incorporate similar actions – conveying, screening, transferring and crushing for crushed stone processing. These processes incorporate much finer, drier, smaller sized material than we produce and it is assumed that these emission factors over-estimate actual emission levels. However, the conservatively estimated potential emissions provide an added buffer and safety factor to the emission calculations – further reducing the actual emission rates from this operation over calculated estimates. As with typical PTE calculations, these formulas incorporate maximum operating hours of 8,760 hours/year. This is well beyond our actual hours, which further reduces our actual emission levels. These calculations also call for maximum process load, so the tonnage used in the PTE calculations is much higher than what is normally run through the processing equipment. The uncontrolled emission calculations were done using the Crushed Stone Processing Emission Factors from AP-42 Chapter 11.19.2 table 11.19.2-2 and Aggregate Handling and Storage Piles Chapter 13.2.4 Equation 1. RMT and NSW utilize these emission factors in the calculations in Appendix A.

Paved and unpaved roadway emissions from vehicular traffic are the only fugitive emissions at SCPM. SCPM's PTE excludes fugitive emissions from roadways. Scrap metal recycling is not a source category that is required to include fugitive emissions in the PTE. SCPM is not subject to any NSPS or NESHAP and does not emit fugitive HAPs. These fugitive roadway emissions are still quantified and displayed in detail in Appendix A and Appendix B. Control efficiencies are applied to roadway emissions at a rate of 50% for unpaved roads and 75% for paved roads. These control methods include sweeping and watering of paved roads and watering of unpaved roads. RMT Screening Operation, NSW, and RSR have paved roadways leading to their operations; the information and values used for these calculations are found in AP-42 Chapter 13.2.1 Paved Roads. RMT and SSR have unpaved roads leading to their operations as well; the information and values used for these calculations are found in AP-42 Chapter 13.2.2 Unpaved Roads. SCPM also has negligible fugitive emissions generated from material transfer, truck unloading, and rail/barge/truck loading, quantified behind Appendix C.

RMT employs two off-road diesel powered generators and one small gasoline powered generator, which have the potential to emit NO_x, SO_x, CO, VOCs, and PM. The rated horsepower of each generator varies and more detail on the specifications and uses for the generators is detailed in Appendix A, Potential to Emit Calculations for Fuel Powered Generators. The emissions from these units will be limited. In reviewing AP-42, Stationary Internal Combustion Sources, Chapter 3.3, was the applicable emission standard for these generators. Specifically, the emission factors are from Table 3.3-1 from AP-42 Chapter 3.3: Gasoline and Diesel Industrial Engines. As with typical PTE calculations, these formulas incorporate maximum operating hours of 8,760 hours/year. This is well beyond our actual hours that these diesel generators are run, which further reduces actual emission levels. RMT and SSR also cut scrap metal using propane torches. This type of torch cutting also contributes to our potential to emit for PM₁₀, CO, NO_x, VOCs, and SO_x. These calculations were completed by an outside consultant. The consultant used various

chapters of AP-42 to complete his calculations: Chapter 1 External Combustion Sources and Chapter 12.5 Iron and Steel Production. These calculations are detailed in Appendix A.

Tables 1-6 detail the total potential to emit for SCPM, the total fugitive emissions for SCPM, the total emissions for SCPM including fugitive, the total emissions organized by specific company, and the requested annual throughput, respectively. Emissions from all entities residing on this property are contributors to the overall potential to emit, regardless of any individual permits. Emissions were calculated using maximum processing hours of 8,760 hours per year. All emission factors were gathered from the following chapters of AP-42: 1, 3.3, 11.19.2, 12.5, and 13.2.4. All of SCPM's emissions fall well below the 100 ton/year threshold per criteria pollutant and 10 ton/year threshold of any HAP that would initiate a permit under CAAPP or FESOP. RMT's PTE levels for the pollutants above trigger the need for a Lifetime State Operating Permit, as they exceed ROSS permit criteria and are well below CAAPP or FESOP levels.

Pollutant	Potential to Emit (tons/year)
Total Particulate Matter (PM-all sizes)	4.26
Particulate Matter (10 microns and below)	2.16
Carbon Monoxide (CO)	8.58
Nitrous Oxides (NOx)**	13.22
Volatile Organic Compounds (VOCs)	3.52
Sulfur Oxides (SOx)	1.56

*Excludes fugitive emissions from roadways. Scrap metal recycling is not a source category that must include fugitive emissions in the PTE. SCPM is not subject to any NSPS or NESHAP and does not emit fugitive HAPs.

**NOx for the Chicago area was reclassified as a serious nonattainment area, so the level is 50 tons/year, not 100 tons/year as the other criteria pollutants.

Pollutant	Uncontrolled** Emission Rate (tons/year)	Controlled** Emission Rate (tons/year)
Total Particulate Matter (PM-all sizes)	32.72	11.72
Particulate Matter (10 microns and below)	7.49	2.82

*Fugitive emission sources include paved and unpaved roadways. These emissions are not required to be included in the PTE because scrap metal is not a source category that must include these fugitive emissions. SCPM is not subject to any NSPS or NESHAP standard and does not emit fugitive HAPs.

**Uncontrolled emission levels do not factor in sweeping and watering control efficiencies while controlled emission levels do factor in sweeping and watering control efficiencies.

Pollutant	Emission Rate with Uncontrolled Fugitives (tons/year)	Requested Emission Rate with Controlled Fugitives (tons/year)
Total Particulate Matter (PM-all sizes)	36.98	15.98
Particulate Matter (10 microns and below)	9.65	4.98
Carbon Monoxide (CO)	8.58	8.58
Nitrous Oxides (NOx)	13.22	13.22
Volatile Organic Compounds (VOCs)	3.52	3.52
Sulfur Oxides (SOx)	1.56	1.56

*These emissions include emissions from all activities including processes, emission units, fuel combustion, and fugitive emissions from roadways.

Source	PM	PM₁₀	CO	NOx	VOCs	SOx
RMT	21.36	6.122	6.43	9.49	3.23	1.54
RSR	4.93	0.99	N/A	N/A	N/A	N/A
SSR	4.01	1.075	0.00014	0.0001	0.0002	N/A
NSW	6.68	1.46	2.15	3.73	0.29	0.016
Total uncontrolled emissions with fugitives for SCPM:	36.98	9.65	8.58	13.22	3.52	1.56

*These emissions include uncontrolled PTE from all activities including processes, emission units, fuel combustion, and fugitive emissions from roadways.

Source	PM	PM₁₀	CO	NOx	VOCs	SOx
RMT	10.69	3.65	6.43	9.49	3.23	1.54
RSR	1.23	0.25	N/A	N/A	N/A	N/A
SSR	2.01	0.535	0.00014	0.0001	0.0002	N/A
NSW	2.05	0.54	2.15	3.73	0.29	0.016
Total requested emissions with controlled fugitives for SCPM:	15.98	4.98	8.58	13.22	3.52	1.56

*These emissions include uncontrolled PTE from processing and other activities and **controlled** emissions from fugitive sources (roadways).

Table 6: Requested Maximum Production Levels* for SCPM		
Source	Process	Production Value (tons/year)
RMT	Shredding/Crushing	60,000
	Screening	
	Conveying	130,000
	Torching/Breakage	
RMT-001 Total:		190,000
SCPM	Raw Fuel Usage (gasoline and diesel) – production dependent	3,000 Gal/year Gasoline 24,000 Gal/year Diesel
NSW	Shredding/Crushing	285,720
	Screening	
	Conveying	55,000
	Breakage	
NSW-001 Total:		340,720
SSR	Torching	60
RSR	N/A- No process causes emissions	N/A
	Total tons/year directly processed by SCPM:	530,780

* These production levels correlate with processes and these processes are detailed in the appendixes later in this application document. These production levels are max capacity and larger than that of SCPM average production.

Figure 1: General Location Map



The remainder of this document contains the specific calculations that were used to gather the potential to emit. These sections also contain process description summaries and some other general company specific information relevant to this application. The calculations are based off of the presumption that SCPM is a single source operating with multiple entities. The calculations are organized in appendixes and are separated first by process or emission type and then by facility. All emission factors and formulas were gathered from various chapters of AP-42.

**Appendix A: Potential to
Emit Calculations for South
Chicago Property
Management, Ltd.**

Section A1: Reserve Marine Terminals, Ltd.

Screening Operation

Potential to Emit Calculations

For Crushing and Screening Operation

Overview:

This document has been developed as supporting data for facility permitting purposes. This includes a description of the emission units/processes associated with this source, estimations of the Potential to Emit (PTE) from the source, and a description of any associated control equipment for which this Application is being submitted. The calculations are based on uncontrolled emissions.

Reserve Marine Terminals' screening operation is a foundry sand/scrap recovery operation that began operating in late 2018. It incorporates a set of conveyors, magnets, 2-deck screener, vertical crusher, and jaw crusher to process material. This equipment and all associated processing is housed inside buildings, and uses water mist technology to minimize fugitive emissions given off during the process. All materials processed are a byproduct of the steel manufacturing industry. The material is run through the process line, and depending on composition, size, and magnetism, follows different paths. The main actions are screening, size reduction, and separation to produce both ferrous and non-ferrous commodities. The finished products of RMT's screening process includes iron scrap 5 inches plus, iron scrap 1"-5", iron scrap 3/16"-1", iron fines 3/16" minus, and nonmetallic re-use sand. The re-use sand was characterized by a lab and was granted permission to be sold as re-use material for various public and private means.

Rationale for Determining Potential to Emit Calculations:

The only emissions generated in this process is particulate matter (PM and PM₁₀). The units are electrically powered and there are no VOC, NO_x, SO₂, CO or other emissions. In reviewing AP-42, there are no emission activities or processes that provide emission factors directly related to the process of shredding and processing electronics, metals, or plastics. Therefore, in order to estimate the PTE from these units, we have borrowed emission factors from other activities that incorporate similar actions – conveying, screening, transferring and crushing for crushed stone processing. These processes incorporate much finer, drier, smaller sized material than we produce and it is assumed that these emission factors over estimate actual emissions. However, the conservatively estimated potential emission provides an added buffer and safety factor to our calculations – further reducing the actual emission rates from this operation over calculated estimates. With this added cushion, RMT is confident that these calculations demonstrate a very low level of PM. As with typical PTE calculations, these formulas incorporate maximum operating hours of 8,760 hours/year. This is well beyond our actual hours, which further reduces actual emission levels. These calculations also call for maximum process load, so the tonnage used in the PTE calculations is much higher than what is normally run through the processing equipment. The uncontrolled emission calculations were done using the Crushed Stone Processing Emission Factors from AP-42 Chapter 11.19.2 table 11.19.2-2 and Aggregate Handling and Storage Piles Chapter 13.2.4 Equation 1.

Maximum and Average Processing Hours

- Average Processing Hours: 2,008 per year
- Maximum Processing Hours: 8,760 per year

General Production Values

- Average Production= 3000 tons/month
- Maximum Production= 5000 tons/month

Potential to Emit for Crushing, Screening, and Material Handling for RMT Screening Operation		
Emission Rate (total tons/year)	1.53 tons/year of PM	0.552 tons/year of PM₁₀

The uncontrolled emission calculations follow and reference Figure 1 and 2 in this document, which are labeled process flow diagrams. The uncontrolled emission calculations were performed using the Crushed Stone Processing Emission Factors from AP-42 Chapter 11.19.2 table 11.19.2-2 and Aggregate Handling and Storage Piles Chapter 13.2.4 Equation 1.

Relevant Emission Factors from AP-42 Table 11.19.2-2		
Type	Total PM Emission Factor (lbs/ton)	Total PM ₁₀ Emission Factor (lbs/ton)
Screening Emission Factor	0.025	0.0087
Conveyor Transfer Point Emission Factor	0.003	0.0011
Tertiary Crushing/Shredding Emission Factor	0.0054	0.0024

**Emissions from Load in to Feed Hopper and Drop to Storage Piles
(Aggregate Handling and Storage Piles)**

Equation: $E = k(0.0032) \left[\frac{(U/5)^{1.3}}{(M/2)^{1.4}} \right]$

E=particulate emission factor for drop and transfer operations (lb/ton per drop or transfer)

K=particle size diameter (no dimensions): 0.74 for PM, 0.35 for PM₁₀

U=mean wind speed (mph): 2mph (assumed wind speed for indoor processing areas)

M=moisture content (%): 3%

$$E(PM) = 0.74(0.0032) \times \left(\frac{(2/5)^{1.3}}{(3/2)^{1.4}} \right) = 0.000409 \frac{lb}{ton} / drop$$

$$E(PM_{10}) = 0.35(0.0032) \times \left(\frac{(2/5)^{1.3}}{(3/2)^{1.4}} \right) = 0.000194 \frac{lb}{ton} / drop$$

The following table calculates PM and PM₁₀ emission rates for RMT screening operation. Methodology: multiply the throughput (tons/hour) by the PM emission factor (lb/ton) to get the fugitive emission rate (lb/hour).

Table A1(a). Uncontrolled PM and PM₁₀ Emissions At Maximum Production Levels (8760 hours/year)

Process Point	Throughput (tons/hr)	Number of Process Points	PM Emission Factor (lb/ton)	PM ₁₀ Emission Factor (lb/ton)	PM Emission Rate (lb/hr)	PM ₁₀ Emission Rate (lb/hr)
Load-in Path: Consists of the first steps before path Divergence						
Load- In to Feed Hopper	7.44	1	0.000409	0.000194	0.003	0.001
Stockpile Loading Points	0.744	1	0.000409	0.000194	0.0003	0.0001
Conveyor Transfer Point	6.696	2	0.003	0.0011	0.0402	0.0148
Screener	6.696	1	0.025	0.0087	0.167	0.0583
Path A: Starting with 3.72 tons/hour of material.						
Conveyor Transfer Point	3.72	2	0.003	0.0011	0.022	0.00818
Conveyor Transfer Point	1.86	2	0.003	0.0011	0.0112	0.0041
Stockpile Loading Point	1.86	2	0.000409	0.000194	0.0015	0.0007
Path B: Starting with 1.488 tons/hour of material.						
Conveyor Transfer Point	1.488	2	0.003	0.0011	0.0089	0.0033
Stockpile loading Point	0.744	1	0.000409	0.000194	0.0003	0.0001
Conveyor Transfer Point	0.744	9	0.003	0.0011	0.0201	0.0074
Crusher	0.744	1	0.0054	0.0024	0.00401	0.0018
Screener	0.744	1	0.025	0.0087	0.0186	0.0065
Conveyor Transfer Point	0.372	2	0.003	0.0011	0.0022	0.00082
Stockpile Loading Point	0.372	2	0.000409	0.000194	0.0003	0.0001
Path C: Starting with 1.488 tons/hour of material.						
Conveyor Transfer Point	1.488	2	0.003	0.0011	0.0089	0.0033
Stockpile Loading Point	0.744	1	0.000409	0.000194	0.0003	0.0001
Conveyor Transfer Point	0.744	7	0.003	0.0011	0.0156	0.00573
Crusher	0.744	1	0.0054	0.0024	0.00401	0.0018
Screener	0.744	1	0.025	0.0087	0.0186	0.0065
Conveyor Transfer Point	0.372	2	0.003	0.0011	0.0022	0.00082

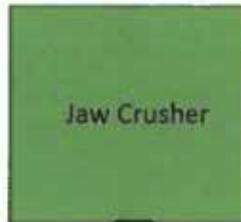
Stockpile Loading Point	0.372	2	0.000409	0.000194	0.0003	0.0001
Emission Rate (Total lbs/hour)					0.350 lbs/hour of PM	0.126 lbs/hr of PM₁₀
Emission Rate (total lbs/day)					8.40 lbs/day of PM	3.024 lbs/day of PM₁₀
Emission Rate (total tons/year)					1.53 tons/year of PM	0.552 tons/year of PM₁₀

Based on these calculations as well as processing and local site factors, the total uncontrolled Potential to Emit from this process/source is well below any regulatory limit on PM or PM₁₀ emissions.

Additional Emission Controls:

Based on the PTE calculations, total estimated annual emissions from this process are 1.53 tons/year of total PM and 0.578 tons/year of specifically PM₁₀. This PTE is based on uncontrolled emission rates, and does not take credit for material settling out in the building prior to being emitted outdoors. These uncontrolled levels don't warrant the need or requirement to utilize additional emission control devices. However, depending on the type and nature of material being processed, a water spray is utilized to pre-dampen material to further minimize dust generation. This has proven to minimize airborne dust throughout the processing train, thereby improving indoor air quality and virtually eliminating visible emissions from the process. A water curtain is also utilized by the RMT Screening Operation, which is a fine water mist system that sprays water, in the form of a curtain, from the ceiling. This water curtain provides a dust control barrier between RMT Screening Operation and other areas in the building, deterring dust from migrating past the screening operation. In addition to water spray and a water curtain, a dust collection system has been installed to further capture and control particulate emissions from this source. PTE emissions do not take credit for reductions in PM emissions associated with this control device.

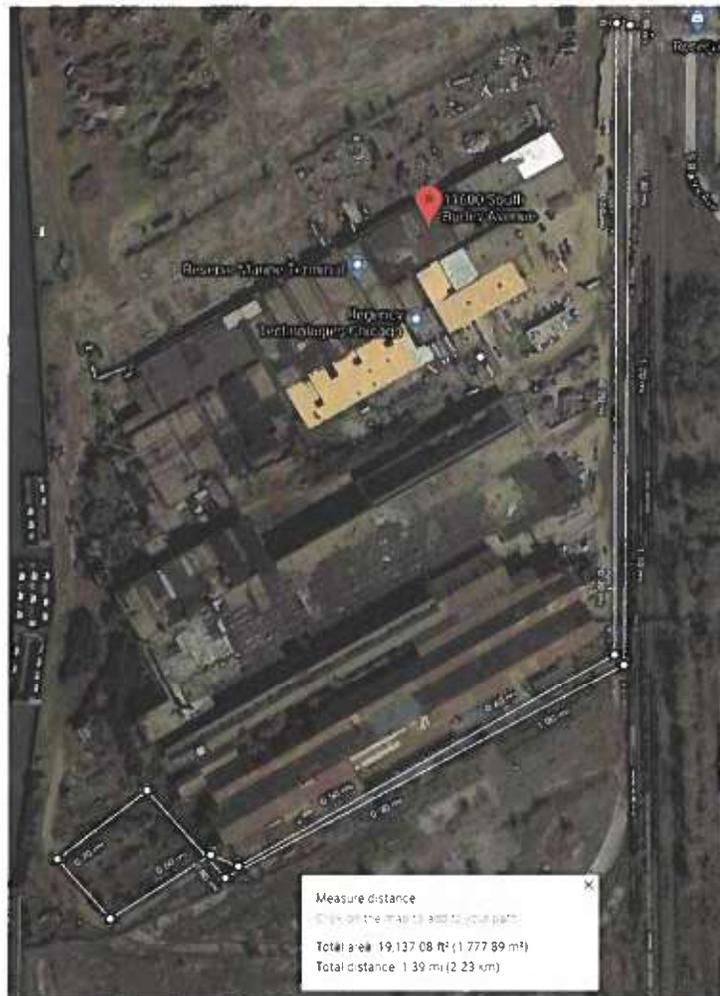
**RMT Screening Operation
Process Flow**



Section A2: Reserve Marine Terminal Indoor Screening Operation: Calculations for Paved Roadways

Reserve Marine Terminals has paved roadways leading to its indoor screening operation. The information and values used for these calculations are found in AP-42 Chapter 13.2.1 Paved Roads. Detailed below is a spreadsheet of the paved roadway emission calculations.

- Reserve Marine Terminal's screening operation daily traffic totals to 12 trucks total, inbound and outbound. The truck route is 1.39 miles long, and all of the trucks are semis with full loads (40 ton semis). Miles traveled per day is equal to 16.68.
- The uncontrolled potential to emit (calculated in spreadsheet) is 7.45 tons/year for PM and 1.49 tons/year for PM₁₀. The monthly emissions are considered 10% of annual emissions. This calculation does not include the control efficiency of 75% for sweeping or watering paved roads. The controlled roadway emissions are found behind Appendix B and sweeping and watering will be utilized daily during operating hours.
- *Figure 2 Reserve Marine Terminal Screening Operation Route*



RMT Screening Operation Paved Roadway Calculations

Paved Road Fugitive Emission Calculation Procedure

$$E_{ext} = (k * (sL)^{0.91} * (W)^{1.02}) * (1 - (P/(4N)))$$

Equation 2, AP-42 13.2.1 Paved Roads (Jan 2011)

equation does not include brake and tire wear.

where:

E_{ext} =		Size specific annual average particulate emission factor (lb/VMT)
K =	See Below	Particle size multiplier lb/VMT (AP-42 Table 13.2.1-1)
sL =	9.7	mean controlled silt content, % (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79; mean 9.7-g/m2)
W =		Mean vehicle weight, tons (use weighted average where available)
P =	120	Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365	Averaging Period, annual
Control Eff % =	75.00%	Emission Control Efficiency for sweeping or watering
Daily Operating Hours	8	Hours per Year
Weekly Operating Days	5	Days /Week
Annual Operating Weeks =	52	Weeks/Yr
Annual Operating hours =	2,008	Hours per Year

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM Emissions tpy
			3.4372-lb/VMT		0.8593-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (foundry sand)	40.00	16.68	57.332	0.745	14.333	0.186	1.86
Weighted Average Weight:	40.00	Subtotals:	57.332	0.745	14.333	0.186	1.86

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM10 Emissions tpy
			0.6874-lb/VMT		0.1719-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (foundry sand)	40.00	16.68	11.466	0.149	2.867	0.037	0.37
Weighted Average Weight:	40.00	Subtotals:	11.466	0.149	2.867	0.037	0.37

Section A3: Reserve Marine Terminal Scrap Yard: PTE Calculations for Unpaved Roads

Detailed below is a spreadsheet detailing unpaved roadway emission calculations for Reserve Marine Terminal scrap yard. These calculations are based off Chapter 13.2.2 Unpaved Roads of AP-42 and utilize many values and information from this document.

- Reserve Marine Terminal's scrap yard daily traffic totals to 63 trucks total, inbound and outbound. The truck route is 0.19121 miles long, and all of the trucks are full-load 40 ton semis. Miles traveled per day is equal to 12.05.
- The uncontrolled potential to emit (calculated in spreadsheet) is 10.17 tons/year for PM and 2.71 tons/year for PM₁₀. The monthly emissions are considered 10% of annual emissions. This calculation does not include the control efficiency of 50% for sweeping or watering unpaved roads. The controlled roadway emissions are found behind Appendix B and watering will be utilized daily during operating hours.

Figure 3: Round-trip Distance on Unpaved Road at Reserve Marine Terminals: 4815.88 feet



RMT Scrap Yard Unpaved Roadway Emissions Unpaved Industrial Road Fugitive Emission Calculation Procedure

$$E_{ext} = [(k * (s/12)^a * (W/3)^b) * ((N-P)/N)]$$

Equation 1a & 2, AP-42 13.2.2-2 (Nov 2006)

where:

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k =	See Below Particle size multiplier lb/VMT (AP-42 Table 13.2.2-2)
s =	6 mean material silt content (%) (AP42 Table 13.2.2-1 Nov 2006 - Iron & Steel Production; mean = 6.0%)
W =	Mean vehicle weight, tons (use weighted average where available)
P =	120 Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365 Averaging Period, annual
Control Eff % =	50.00% Emission Control Efficiency for watering
Daily Operating Hours	8 Hours per Year
Weekly Operating Days	5 Days /Week
Annual Operating Weeks =	52 Weeks/Yr
Annual Operating hours =	2,008 Hours per Year

(AP42 Table 13.2.2-2 Nov 2006 - Industrial Roads (Eq. 1a))			
EQ 1a Constants	PM	PM10	PM2.5
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM Emissions tpy
			6.4949-lb/VMT		3.2475-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	12.05	78.264	1.017	39.132	0.509	5.09
0							
0							
0							
0							
0							
0							
Weighted Average Weight:	40.00	Subtotals:	78.264	1.017	39.132	0.509	5.09

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM10 Emissions tpy
			1.7309-lb/VMT		0.8655-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	12.05	20.857	0.271	10.429	0.136	1.36
Weighted Average Weight:	40.00	Subtotals:	20.857	0.271	10.429	0.136	1.36

Section A4: Reserve Marine Terminals Potential to Emit for Gasoline and Diesel Industrial Engines

RMT utilizes two 83 HP Ingersoll-Rand and John Deere diesel fired generator sets to power supervisor trailers (generator set 1) and to power mobile equipment (generator set 2). These two units are sister units and are identical, both at 61 kW and 83 HP. The model year for both of these units is 2006, and the emission tags state that the engine conforms to 2006 EPA and California regulations for large non-road compression ignition engines. The diesel generators were manufactured before 2007, so they do not adhere to NSPS. RMT also has one 16 HP, 5.5 kW Generac gasoline fired generator set to power its rail scale. The model year for this generator is 2012; it is not subject to NSPS because it is a gasoline spark ignition engine and not a diesel compression ignition engine. These generators are ran during hours of operation only and utilize ultra-low sulfur diesel (15 ppm max sulfur content) and unleaded gasoline. The actual hours these generators operate is about 2,008 hours per year. The PTE emission calculations are based on an 8,760 hour year and utilize emission factors and formulas from AP-42 Chapter 3.3: Gasoline and Diesel Industrial Engines and EPA Non-road Compression-Ignition Engines: Exhaust Emission Standards. Generator sets have the potential to emit several criteria pollutants such as NO_x, PM, CO, SO_x, and VOCs. For more context, all reciprocating internal combustion engines operate by the same process, but diesel-fueled engines are compression ignited while gasoline fueled engines are spark ignited. The diesel fired generators and gasoline fired generators utilize different emission factors because of their differences in fuel composition and internal combustion process, and the emission factors are detailed in table 3.3-1 in AP-42. Both 83 HP diesel generators also adhere to 2006 EPA Emission Tier 2 standards non-road compression-ignition engines for three criteria pollutants: NO_x (NMHC+NO_x), PM, and CO. The remaining emission calculations for the engines use the emission factors from the proper chapter of AP-42. The tables below detail the relevant emission factors used (highlighted in yellow), the PTE for each generator, and a total of the PTE from all generators.

Emission Factors Used to Calculate Generator PTE					
Pollutant Emission Factor: lb/hp-hr	NO_x	CO	PM₁₀	SO_x	VOC
EPA Tier 2 Standards Non-road Compression-Ignition Diesel Engines	0.012	0.00816	0.00066	N/A	N/A
AP-42 Ch. 3.3 Table 3.3-1 Diesel Emission Factors	0.031	0.00668	0.0022	0.00205	0.00247
AP-42 Ch. 3.3 Table 3.3-1 Gasoline Emission Factors	0.011	0.00696	0.000721	0.000591	0.015

Potential to Emit: RMT Ingersoll Rand/John Deere Diesel Fired Generator Set 1	
NO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.012 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 4.36 \frac{\text{tons NO}_x}{\text{yr}}$
CO Emissions per Year	$83 \text{ horsepower} \times \frac{0.00816 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 2.97 \frac{\text{tons CO}}{\text{yr}}$
PM ₁₀ Emissions per Year	$83 \text{ horsepower} \times \frac{0.00066 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.24 \frac{\text{tons PM}}{\text{yr}}$
SO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.00205 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.75 \frac{\text{tons SO}_x}{\text{yr}}$
VOC Emissions per Year	$83 \text{ horsepower} \times \frac{0.00247 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.898 \frac{\text{tons VOC}}{\text{yr}}$

Potential to Emit: RMT Ingersoll Rand/John Deere Diesel Fired Generator Set 2	
NO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.012 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 4.36 \frac{\text{tons NO}_x}{\text{yr}}$
CO Emissions per Year	$83 \text{ horsepower} \times \frac{0.00816 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 2.97 \frac{\text{tons CO}}{\text{yr}}$
PM ₁₀ Emissions per Year	$83 \text{ horsepower} \times \frac{0.00066 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.24 \frac{\text{tons PM}}{\text{yr}}$
SO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.00205 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.75 \frac{\text{tons SO}_x}{\text{yr}}$
VOC Emissions per Year	$83 \text{ horsepower} \times \frac{0.00247 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.898 \frac{\text{tons VOC}}{\text{yr}}$

Potential to Emit: RMT Generac Gasoline Fired Generator	
NO _x Emissions per Year	$16 \text{ horsepower} \times \frac{0.011 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.77 \frac{\text{tons NO}_x}{\text{yr}}$
CO Emissions per Year	$16 \text{ horsepower} \times \frac{0.00696 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.49 \frac{\text{tons CO}}{\text{yr}}$
PM ₁₀ Emissions per Year	$16 \text{ horsepower} \times \frac{0.000721 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.05 \frac{\text{tons PM}}{\text{yr}}$
SO _x Emissions per Year	$16 \text{ horsepower} \times \frac{0.000591 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.04 \frac{\text{tons SO}_x}{\text{yr}}$
VOC Emissions per Year	$16 \text{ horsepower} \times \frac{0.0205 \text{ lb}}{\text{hp/hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 1.44 \frac{\text{tons VOC}}{\text{yr}}$

Total Potential to Emit from Three Generators	
Pollutant	Potential to Emit (tons/year)
NO _x	9.49
CO	6.43
PM ₁₀	0.53
SO _x	1.54
VOC	3.23

Section A5: Reserve Marine Terminals Potential to Emit Torch Cutting

RESERVE MACHINE TERMINALS - CHICAGO, IL Torch-Cutting Emission

PTE Emissions Due to Natural Gas ⁽¹⁾ Consumption with Torches										
Harris Products Torch Type	Gas ⁽²⁾ Consumption (cu. ft./hr.)	Operating Hours (per year)	Number of Torches	Annual Gas Consumption (cu. ft.)	Annual Emissions (lbs/yr)					
					PM (Total)	CO	CH4	N2O	VOCs	SO2
62-5	4	8760	4	140,160	1	6	0	0	1	0
		Totals:	4	140,160						
PTE Emissions (tons/yr) =					0.0005	0.0028	0.0002	0.0002	0.0004	0.0000

POTENTIAL TO EMIT					ACTUAL EMISSIONS				
PTE for Particulate Matter (PM) - No Control					Projected PM Emissions - No Control				
PTE Total Torch Hours	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM PTE Emissions (tons/yr.)	Total Torch Hours per Year ⁽⁴⁾	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM Emissions (tons/yr.)
35,040	3	105,120	0.032	1.68	4,992	3	14,976	0.032	0.24

- Notes:
- ⁽¹⁾ USEPA AP-42, Chapter 1 External Combustion Sources, Table 1.4-2.
 - ⁽²⁾ Average natural gas consumption for torch type
 - ⁽³⁾ USEPA AP-42, Chapter 12.5 Iron and Steel Production, Table 12.5.1-1. Blast-Cutting Torches, natural gas fired.
 - ⁽⁴⁾ Based on actual work schedule for torch cutters (2,496 hours/year) and number of torches used.

PTE Calculation Details

Calculation for PTE of Particulate Matter (PM):
 Hourly: 12 tons/hr. X 0.032 lbs/ton = 0.38 lbs/hr.
 Annually: (105,120 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 1.68 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for PTE of CO from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0006 lbs/hr.
 Annually: (0.07 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0028 tons/yr.

Calculation for PTE of SOx from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.0000096 lbs/hr.
 Annually: (0.07 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00004 tons/yr.

Calculation for PTE of NOx from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.000036 lbs/hr.
 Annually: (0.07 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0002 tons/yr.

Calculation for PTE of VOC from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000088 lbs/hr.
 Annually: (0.07 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0004 tons/yr.

Actual Calculation Details

Calculation for Actual Particulate Matter (PM):
 Hourly: 3 ton/hr. X 0.032 lbs/ton = 0.096 lbs/hr.
 Annually: (14,976 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 0.24 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for Actual CO from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0002 lbs/hr.
 Annually: (0.02 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0008 tons/yr.

Calculation for Actual SOx from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.0000028 lbs/hr.
 Annually: (0.02 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000012 tons/yr.

Calculation for Actual NOx from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.00001 lbs/hr.
 Annually: (0.020 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000044 tons/yr.

Calculation for Actual VOC from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000026 lbs/hr.
 Annually: (0.020 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00011 tons/yr.

Section A6: Napuck Salvage of Waupaca, LLC Potential to Emit Calculations for American Pulverizer and Crusher

Overview:

The description below was submitted as part of a previous application by Napuck Salvage of Waupaca (NSW) for registration under the ROSS program. These calculations will be used towards this application for a Lifetime Operating Permit to allow the full potential to emit at this address to be accounted for. NSW will still operate as an individual source under the ROSS program (Site ID No.:031600GYI). This section of the document includes a description of the emission units/processes associated with this source, estimations of the Potential To Emit (PTE) from the source, and a description of any associated control equipment for which the ROSS Application was submitted.

The NSW aluminum/steel recycling operation incorporates an American Pulverizer Hammer-mill and Ring-mill Crusher to recycle/process sheet and cast aluminum and some mixed steel scrap. This equipment and all associated processing is housed inside buildings, is limited to relatively clean material, and is too small to accommodate automobile sized materials. The main action is size reduction and magnetic screening/separation to produce both ferrous and non-ferrous commodities. Finished product sizes range from 6" material down to -1/8" material and are sold to a variety of ferrous and non-ferrous consumers in both bulk and non-bulk form.

Rationale for Determining PTE – Emission Calculations:

The only emissions generated in this process is particulate matter (PM and PM₁₀). The units are electrically powered and there are no VOC, NO_x, SO₂, or CO emissions. Although we have conducted an extensive search of both the Illinois EPA website and the USEPA website, we have found no emission factors for this equipment that are specific to the material being processed. Therefore, emissions were estimated using the Illinois EPA Web-based "Calculate Emissions Tool" to develop this data. As mentioned, there are no emission factors for hammer-mill or ring-mill crushers, and only a limited number of processes/production operations that are available for estimating emissions from processes similar to ours. The closest production operation Emission Tool identified was for Quarries/Rock Crushing operations. This process includes crushing, screening and conveying which are common activities to our operations. Therefore, we chose this tool as the closest process to calculate our potential to emit. It should be noted that NSW processes cast and sheet aluminum and small volumes of steel. These products do not produce anywhere near the dust and small particle sizes that can be expected in a quarry or rock crushing operation. Therefore, it can be concluded that using this tool inflates PTE well beyond any actual emission levels. As with typical PTE calculations, this tool incorporates maximum operating hours of 8,760 hrs/year. These calculations are not taking credit for any pollution control equipment or settling of particles inside the buildings that house this equipment. The NSW operating schedule will never actually reach these hours of operation, further reducing any actual emissions below this estimate. Additionally, the entire process is conducted indoors, which greatly restricts and minimizes any actual emissions to the atmosphere.

The following table provides a summary of the PM₁₀ emissions from this source based on the "Calculate Emissions Tool" provided by Illinois EPA. Maximum production levels are as follows: Hammermill Shredder = 30 Tons/Hr; Ringmill Crusher = 2 Tons/Hr.

Table A6(a): Quarries/Rock Crushing Operations – “Calculate Emissions Tool”

Hammermill Max = 30 TPH	Throughput (Tons/Year)	PM₁₀ Emission Factor (lbs/ton)	PM₁₀ Emissions (tons/year)
Crushing	262,800 T/Y	0.00054 #/t	0.0710 t/y
Screening	262,800 T/Y	0.00074 #/t	0.0972 t/y
Conveying	262,800 T/Y	0.000046 #/t	0.0060 t/y
Slow Speed Crusher Max = 2 TPH			
Crushing	17,520 T/Y	0.00054 #/t	0.0047 t/y
Screening	17,520 T/Y	0.00074 #/t	0.0065 t/y
Conveying	17,520 T/Y	0.000046 #/t	0.0004 t/y
Total Estimated Emissions			0.1858 Tons/Year

Based on these calculations as well as processing and local site factors, the actual emissions from this process are well below the actual emissions threshold of 5 Tons/Year for all combined pollutants for the ROSS Program.

Additional Emission Controls:

Based on the PTE calculations, total estimated annual emissions from this process are 0.1858 TPY. These levels don't warrant the need or requirement to utilize additional emission control devices. However, depending on the type and nature of material being processed, a water spray is utilized to pre-wet material to minimize dust generation. This has proven to minimize airborne dust throughout the processing train, thereby improving indoor air quality and virtually eliminating visible emissions from the process. In addition to water spray, a dust collection system has been installed to further limit and capture dust/particulate emissions from this source. This equipment further reduces any airborne emissions from this source.

Section A7: Napuck Salvage of Waupaca, LLC Mini-Crusher PTE Calculations

Overview:

This document has been developed as supporting data for facility permitting purposes. This includes a description of the emission unit(s)/processes associated with this source, estimations of the Potential to Emit (PTE) from this source, and a description of any associated control equipment for which this application is being submitted. These calculations do not credit any air control equipment or settling of particles are fully uncontrolled.

Napuck Salvage of Waupaca (NSW) acquires, processes, and markets all grades of ferrous and nonferrous scrap, specializing in engine blocks, foundry steel and aluminum. The specific material going through this mini-crusher system is aluminum and aluminum mix. All processing is done indoors, and processing equipment in this application includes conveyors, a shaker table, an eddy current, a screener, and a mini-crusher where 3 aluminum products are generated by the end of the process all varying in size. The main action is size reduction using a crusher and magnetic screening for separation to lead to the commodities. Finished product sizes range from 0 inches (fines) to ½ inch plus.

Rationale for Determining PTE-Emission Calculations:

The only emissions generated in this process is particulate matter (PM and PM₁₀). The units are electrically powered and there are no VOC, NO_x, SO₂, CO or other emissions. In reviewing AP-42, there are no emission activities or processes that provide emission factors directly related to the process of shredding and processing metals, electronics, plastics, etc. Therefore, in order to attempt to estimate the potential to emit from these units, we have borrowed emission factors from other activities that incorporate similar actions – conveying, screening, transferring and crushing for crushed stone processing. Both of these processes incorporate much finer, drier, smaller sized material than we produce and it is assumed that these emission factors are inflated way above our actual emission levels. However, these elevated estimated potential emissions provide an added buffer and safety factor to our calculations – further reducing the actual emission rates from this operation over calculated estimates. With this added cushion, we feel very confident that these calculations demonstrate a very low level of PM. As with typical PTE calculations, these formulas incorporate maximum operating hours of 8,760 hours/year. This is well beyond our actual hours, which further reduces our actual emission levels. These calculations also call for maximum process load, so the tonnage used in the PTE calculations is much higher than what is normally ran through the processing equipment. The uncontrolled emission calculations were performed using the Crushed Stone Processing Emission Factors from AP-42 Chapter 11.19.2 table 11.19.2-2 and Aggregate Handling and Storage Piles Chapter 13.2.4 Equation 1.

Maximum Processing Hours

- Maximum Processing Hours: 8,760 per year

Production Values

- 10,000 lbs per 8 hour shift; 5 tons per 8 hour shift
 - 0.625 tons/hr=450 tons/month

Potential to Emit for Crushing, Screening, and Material Handling for NSW Mini-Crusher Process		
Emission Rate (total tons/year)	0.126 tons/year of PM	0.047 tons/year of PM₁₀

The uncontrolled emission calculations follow and reference the NSW Mini-Crusher Process Flow Diagram. The uncontrolled emission calculations were performed using the Crushed Stone Processing Emission Factors from AP-42 Chapter 11.19.2 table 11.19.2-2 and Aggregate Handling and Storage Piles Chapter 13.2.4 Equation 1.

Relevant Emission Factors from AP-42 Table 11.19.2-2		
Type	Total PM Emission Factor (lbs/ton)	Total PM ₁₀ Emission Factor (lbs/ton)
Screening Emission Factor	0.025	0.0087
Conveyor Transfer Point Emission Factor	0.003	0.0011
Tertiary Crushing/Shredding Emission Factor	0.0054	0.0024

Emissions from Load in to Feed Hopper and Drop to Storage Piles (Aggregate Handling and Storage Piles)

$$\text{Equation: } E = k(0.0032) \left[\frac{(U/5)^{1.3}}{(M/2)^{1.4}} \right]$$

E=particulate emission factor for drop and transfer operations (lb/ton per drop or transfer)

K=particle size diameter (no dimensions): 0.74 and 0.35 for PM₁₀

U=mean wind speed (mph): 2mph (assumed wind speed for indoor processing areas)

M=moisture content (%): 3%

$$E (PM) = 0.74(0.0032) \times \left(\frac{(2/5)^{1.3}}{(3/2)^{1.4}} \right) = 0.000409 \frac{lb}{ton} / drop$$

$$E (PM_{10}) = 0.35(0.0032) \times \left(\frac{(2/5)^{1.3}}{(3/2)^{1.4}} \right) = 0.000194 \frac{lb}{ton} / drop$$

The following table calculates PM emission rates for the NSW Mini-crusher. Methodology: multiply the throughput (tons/hour) by the PM emission factor (lb/ton) to get the fugitive emission rate (lb/hour).

Table A7(a): Uncontrolled PM and PM₁₀ Emissions At Maximum Production Levels (8760 hours/year)						
Process Points	Throughput (tons/hr)	Number of Process Points	PM Emission Factor (lb/ton)	PM ₁₀ Emission Factor (lb/ton)	PM Emission Rate (lb/hr)	PM ₁₀ Emission Rate (lb/hr)

Stockpile Loading Point	0.625	3	0.000409	0.000194	0.00077	0.00036
Conveyor Transfer Point	0.60625	5	0.003	0.0011	0.0091	0.0033
Stockpile Loading Point	0.01875	1	0.000409	0.000194	0.00000767	0.00000364
Crusher	0.60625	1	0.0054	0.0024	0.0033	0.0015
Screeners	0.60625	1	0.025	0.0087	0.0152	0.0053
Stockpile Loading Point	0.60625	1	0.000409	0.000194	0.00025	0.00012
Stockpile Loading Point	0.2728	2	0.000409	0.000194	0.00022	0.00011
Emission Rate (Total lbs/hour)					0.0288 lbs/hour of PM	0.0107 lbs/hour of PM ₁₀
Emission Rate (total lbs/day)					0.69 lbs/day of PM	0.26 lbs/day of PM ₁₀
Emission Rate (total tons/year)					0.126 tons/year of PM	0.047 tons/year of PM ₁₀

Based on these calculations as well as processing and local site factors, the total Potential to Emit from this process/source is well below the any PM regulatory limit.

Additional Emission Controls:

Based on the PTE calculations, total estimated annual emissions from this process are 0.125 tons/year. These levels don't warrant the need or requirement to utilize additional emission control devices. However, a DustBoss water sprayer is employed and sprayed/pointed on areas where dust tends to accumulate. This has proven to minimize airborne dust throughout the processing train, thereby improving indoor air quality and virtually eliminating visible emissions from the process. In addition to water spray, a dust collection system has been installed to further limit and capture dust/particulate emissions from this source. This equipment further reduces any airborne emissions from this source. These PTE emission calculations do not include emissions reduction from use of this control equipment.

NSW Mini-Crusher Process Flow



Conveyor



Conveyor



Conveyor



RSR Paved Roadway Emission Calculations

Paved Road Fugitive Emission Calculation Procedure

$$E_{ext} = (k * (sL)^{0.91} * (W)^{1.02}) * (1 - (P/(4N)))$$

Equation 2, AP-42 13.2.1 Paved Roads (Jan 2011)

equation does not include brake and tire wear.

where:

E_{ext} =		Size specific annual average particulate emission factor (lb/VMT)
k =	See Below	Particle size multiplier lb/VMT (AP-42 Table 13.2.1-1)
sL =	9.7	mean controlled silt content, % (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79; mean 9.7-g/m2)
W =		Mean vehicle weight, tons (use weighted average where available)
P =	120	Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365	Averaging Period, annual
Control Eff % =	75.00%	Emission Control Efficiency for sweeping or watering
Daily Operating Hours	8	Hours per Year
Weekly Operating Days	5	Days /Week
Annual Operating Weeks =	52	Weeks/Yr
Annual Operating hours =	2,008	Hours per Year

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	PM Particle size multiplier (k) = 0.011				
			Annual Average Uncontrolled Emissions 3.4372-lb/VMT		Annual Average Controlled Emissions 0.8593-lb/VMT		Annual PM Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal/electronics)	40.00	11.03	37.912	0.493	9.478	0.123	1.23
Weighted Average Weight:	40.00	Subtotals:	37.912	0.493	9.478	0.123	1.23

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	PM10 Particle size multiplier (k) = 0.0022				
			Annual Average Uncontrolled Emissions 0.6874-lb/VMT		Annual Average Controlled Emissions 0.1719-lb/VMT		Annual PM10 Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal/electronics)	40.00	11.03	7.582	0.099	1.896	0.025	0.25
Weighted Average Weight:	40.00	Subtotals:	7.582	0.099	1.896	0.025	0.25

Section A9: Napuck Salvage of Waupaca: PTE Calculations for Paved Roadways

Napuck Salvage of Waupaca is an entity included in the single source designation for 11600 S Burley Avenue, and has paved roadways leading to its indoor screening operation. The information and values used for these calculations are found in AP-42 Chapter 13.2.1 Paved Roads. Detailed below is a spreadsheet of the paved roadway emission calculations.

- Napuck Salvage of Waupaca’s daily traffic totals to 12 trucks total, inbound and outbound. The truck route is 1.15 miles long, and all of the trucks are full-load 40 ton semis. The daily miles traveled is equal to 13.80.
- The uncontrolled potential to emit (calculated in spreadsheet) is 6.17 tons/year for PM and 1.23 tons/year for PM₁₀. The monthly emissions are considered 10% of annual emissions. This calculation does not include the control efficiency of 75% for sweeping or watering paved roads. The controlled roadway emissions are found behind Appendix B, and sweeping and watering will be utilized daily during operating hours.

Figure 5 Napuck Salvage of Waupaca Route



NSW Paved Roadway Emission Calculations

Paved Road Fugitive Emission Calculation Procedure

$$E_{ext} = (k * (sL)^{0.91} * (W)^{1.02}) * (1 - (P/(4N)))$$

Equation 2, AP-42 13.2.1 Paved Roads (Jan 2011)
equation does not include brake and tire wear.

where:

E_{ext} =		Size specific annual average particulate emission factor (lb/VMT)
k =	See Below	Particle size multiplier lb/VMT (AP-42 Table 13.2.1-1)
sL =	9.7	mean controlled silt content, % (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79; mean 9.7-g/m2)
W =		Mean vehicle weight, tons (use weighted average where available)
P =	120	Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365	Averaging Period, annual
Control Eff % =	75.00%	Emission Control Efficiency for sweeping or watering
Daily Operating Hours	8	Hours per Year
Weekly Operating Days	5	Days /Week
Annual Operating Weeks =	52	Weeks/Yr
Annual Operating hours =	2,008	Hours per Year

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM Emissions tpy
			3.4372-lb/VMT		0.8593-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	13.80	47.433	0.617	11.858	0.154	1.54
Weighted Average Weight:	40.00	Subtotals:	47.433	0.617	11.858	0.154	1.54

Material Hauling

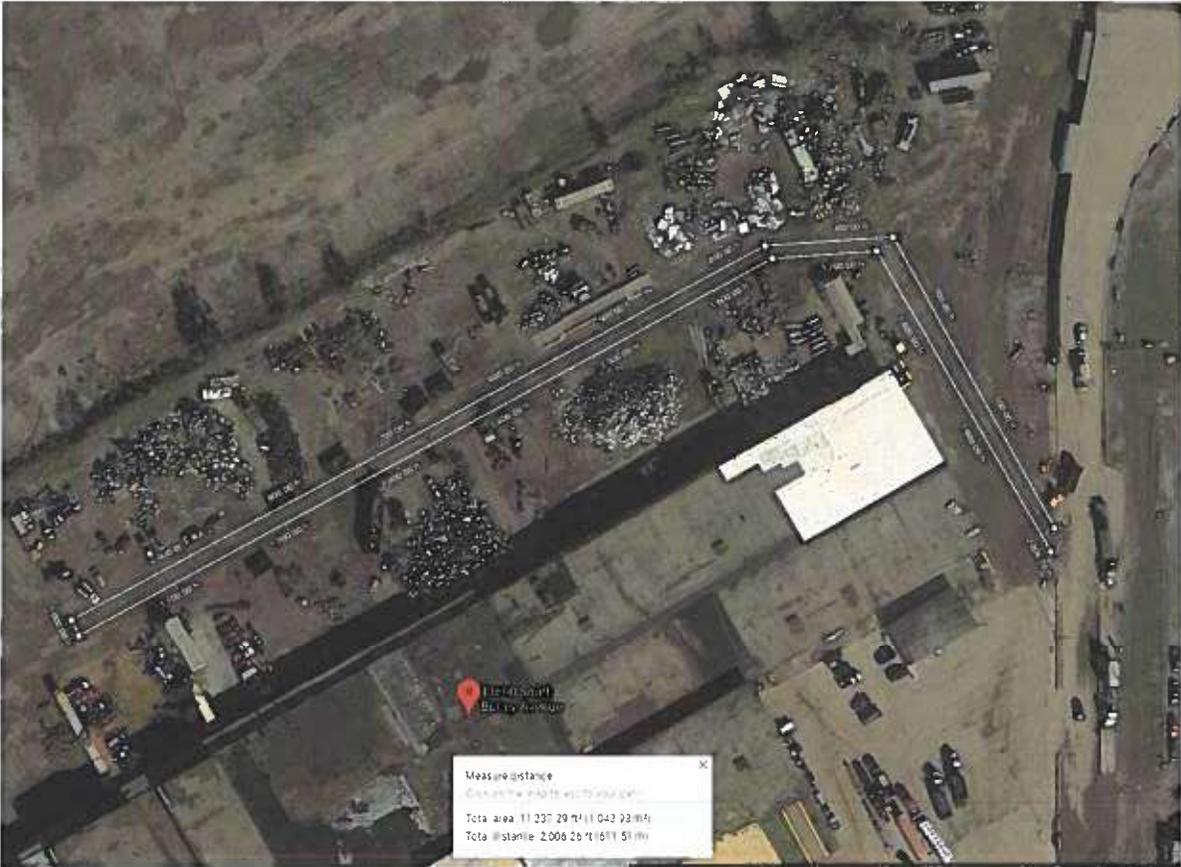
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM10 Emissions tpy
			0.6874-lb/VMT		0.1719-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	13.80	9.486	0.123	2.372	0.031	0.31
Weighted Average Weight:	40.00	Subtotals:	9.486	0.123	2.372	0.031	0.31

Section A10: South Shore Recycling: PTE Calculations for Unpaved Roadways

Detailed below is a spreadsheet of the unpaved roadway emission for South Shore Recycling. These calculations are based off Chapter 13.2.2 Unpaved Roads of AP-42 and utilize many values and information from this document.

- South Shore Recycling’s daily traffic totals to 51 vehicles total, inbound and outbound. The route is 0.37997 miles long, and all of the vehicles are 1.75 ton peddler vehicles. The daily miles traveled is equal to 19.38.
- The uncontrolled potential to emit (calculated in spreadsheet) is 4.0 tons/year for PM and 1.07 tons/year for PM₁₀. The monthly emissions are considered 10% of annual emissions. This calculation does not include the control efficiency of 50% for sweeping or watering unpaved roads. The controlled roadway emissions are found behind Appendix B, and watering will be utilized daily during operating hours.

Figure 6: Round-trip Distance on Unpaved Road at South Shore Recycling: 2,006.26 feet



SSR Unpaved Roadway Emission Calculations

Unpaved Industrial Road Fugitive Emission Calculation Procedure

$$E_{ext} = [(k * (s/12)^a * (W/3)^b)] * [(N-P)/N]$$

Equation 1a & 2, AP-42 13.2.2-2 (Nov 2006)

where:

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k =	See Below Particle size multiplier lb/VMT (AP-42 Table 13.2.2-2)
s =	6 mean material silt content (%) (AP42 Table 13.2.2-1 Nov 2006 - Iron & Steel Production: mean = 6.0%)
W =	Mean vehicle weight, tons (use weighted average where available)
P =	120 Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365 Averaging Period, annual
Control Eff % =	50.00% Emission Control Efficiency for watering
Daily Operating Hours =	8 Hours per Year
Weekly Operating Days =	5 Days /Week
Annual Operating Weeks =	52 Weeks/Yr
Annual Operating hours =	2,008 Hours per Year

(AP42 Table 13.2.2-2 Nov 2006 - Industrial Roads (Eq. 1a))			
EQ 1a Constants	PM	PM10	PM2.5
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

Material Hauling

		PM Particle size multiplier (k) =				4.9	
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions 1.5886-lb/VMT		Annual Average Controlled Emissions 0.7943-lb/VMT		Annual PM Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Peddler Vehicles (scrap metal)	1.75	19.38	30.787	0.400	15.394	0.200	2.00
0							
0							
0							
0							
0							
Weighted Average Weight:	1.75	Subtotals:	30.787	0.400	15.394	0.200	2.00

Material Hauling

		PM10 Particle size multiplier (k) =				1.5	
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions 0.4234-lb/VMT		Annual Average Controlled Emissions 0.2117-lb/VMT		Annual PM10 Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Peddler Vehicles (scrap metal)	1.75	19.38	8.205	0.107	4.103	0.053	0.53
Weighted Average Weight:	1.75	Subtotals:	8.205	0.107	4.103	0.053	0.53

Section A11: South Shore Recycling Potential to Emit Torch Cutting

SOUTH SHORE RECYCLING - CHICAGO, IL										
Torch-Cutting Emission										
PTE Emissions Due to Natural Gas ⁽¹⁾ Consumption with Torches										
Harris Products Torch Type	Gas ⁽²⁾ Consumption (cu. ft./hr.)	Operating Hours (per year)	Number of Torches	Annual Gas Consumption (cu. ft.)	Annual Emissions (lbs/yr)					
					PM (Total)	CO	CH4	N2O	VOCs	SO2
62-5	4	8760	2	70,080	1	3	0	0	0	0
Totals:				70,080	1	3	0	0	0	0
PTE Emissions (tons/yr) =					0.0003	0.0014	0.0001	0.0001	0.0002	0.0000

POTENTIAL TO EMIT					ACTUAL EMISSIONS				
PTE for Particulate Matter (PM) - No Control					Projected PM Emissions - No Control				
PTE Total Torch Hours	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM PTE Emissions (tons/yr.)	Total Torch Hours per Year ⁽⁴⁾	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM Emissions (tons/yr.)
17,520	0.03	526	0.032	0.01	2,496	0.03	75	0.032	0.00

- Notes:
- ⁽¹⁾ USEPA AP-42, Chapter 1 External Combustion Sources, Table 1.4-2.
 - ⁽²⁾ Average natural gas consumption for torch type.
 - ⁽³⁾ USEPA AP-42, Chapter 12.5 Iron and Steel Production, Table 12.5.1-1, Billet-Cutting Torches, natural gas fired.
 - ⁽⁴⁾ Based on actual work schedule for torch cutters (2,496 hours/year) and number of torches used.

PTE Calculation Details

Calculation for PTE of Particulate Matter (PM):
 Hourly: 0.06 tons/hr X 0.032 lbs/ton = 0.0019 lbs/hr.
 Annually: (526 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 0.008 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for PTE of CO from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0003 lbs/hr.
 Annually: (0.07 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0014 tons/yr.

Calculation for PTE of SOx from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.0000048 lbs/hr.
 Annually: (0.07 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00002 tons/yr.

Calculation for PTE of NOx from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.000018 lbs/hr.
 Annually: (0.07 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0001 tons/yr.

Calculation for PTE of VOC from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000044 lbs/hr.
 Annually: (0.07 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0002 tons/yr.

Actual Calculation Details

Calculation for Actual Particulate Matter (PM):
 Hourly: 3 ton/hr. X 0.032 lbs/ton = 0.096 lbs/hr.
 Annually: (75 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 0.000012 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for Actual CO from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0001 lbs/hr.
 Annually: (0.02 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0004 tons/yr.

Calculation for Actual SOx from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.0000014 lbs/hr.
 Annually: (0.02 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000006 tons/yr.

Calculation for Actual NOx from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.000005 lbs/hr.
 Annually: (0.02 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000022 tons/yr.

Calculation for Actual VOC from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000013 lbs/hr.
 Annually: (0.02 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000055 tons/yr.

Section A12: Napuck Salvage of Waupaca Potential to Emit Propane Burner/Aluminum Drier

NSW utilizes a Fives North American 6 MMBtu/hour propane burner to power the aluminum dryer indoors. The only emissions from this unit come from the propane burner itself; the dryer does not emit anything but steam. Emission calculations utilize emission factors from AP-42 Chapter 1.5: Liquid Petroleum Gas Combustion Table 1.5-1 for commercial boilers (0.3 MMBtu/hr-10 MMBtu/hr). The emission factors used are shown in the table below. The burner is ran in batches periodically when there is an order to fill, so daily usage is not consistent. The burner is ran for approximately two shifts per week at 7 hours per shift, totaling to 14 hours per week and 728 hours per year. The potential to emit for the burner is displayed in a table below, calculated using an 8,760 hour year.

AP-42 Table 1.5-1 Emission Factors for LPG Combustion	
Pollutant	Emission Factor (lb/10 ³ gallon)
Nitrous Oxides (NO _x)	13
Carbon Monoxide (CO)	7.5
Particulate Matter (PM)	0.7
Sulfur Dioxide (SO ₂)	0.10S
Total Organic Compounds (TOC)	1.0

Potential to Emit: Fives North American Liquefied Petroleum Burner	
NO _x Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{13 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{8760 \text{ hours}}{\text{yr}} = \frac{3.73 \text{ tons}}{\text{yr}} \text{ NO}_x$
CO Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{7.5 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{8760 \text{ hours}}{\text{yr}} = \frac{2.15 \text{ tons}}{\text{yr}} \text{ CO}$
PM Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{0.7 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{8760 \text{ hours}}{\text{yr}} = \frac{0.201 \text{ tons}}{\text{yr}} \text{ PM}$
SO ₂ * Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{0.054 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{8760 \text{ hours}}{\text{yr}} = \frac{0.016 \text{ tons}}{\text{yr}} \text{ SO}_2$
TOC Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{1 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{8760 \text{ hours}}{\text{yr}} = \frac{0.29 \text{ tons}}{\text{yr}} \text{ TOC}$

*Sulfur content(S)=0.54 gr/100ft³

Appendix B: Actual Annual Source-Wide Emission Calculations

Purpose and Scope:

This section of the document has been developed to demonstrate the actual emission levels at SCPM and its associated entities that comprise a single source at this location. These calculations cannot be used towards determining permitting applicability, but will properly demonstrate that SCPM is not subject to the requirements in 35 IAC 212 Subpart U – Additional Control Measures. The requirements of section 212 subpart U apply to facilities located within an area defined in 212.324(a)(1) and that have an actual annual source-wide PM₁₀ emissions of at least 15 tpy. Actual annual source-wide emissions are defined as the total fugitive emissions from process emission units and fuel combustion units, as reported on a facility's annual emission report. SCPM's facility is located in the area described by 212.324(a)(1)(B), but this permit application estimated annual source-wide PM₁₀ emissions from fugitives and process emission units do not exceed 15 tpy. Therefore, the requirements of 212 subpart U are not applicable to the facility.

The actual, controlled emission calculations follow the same methodology from the potential to emit calculations presented earlier in this document. However, instead of maximum production and operating hours of 8,760 per year, the actual calculations utilize average production and operating hours of 2,008 per year. The roadway calculations also take credit for a 50% control efficiency for watering unpaved roadways and a 75% control efficiency for sweeping and watering paved roadways. SCPM will use these control methods consistently during operating hours to minimize road dust. All of the emission factors are from the following chapters of AP-42: 1.3, 3.3, 11.19.2, 12.5, 13.2.1, 13.2.2, and 13.2.4. As demonstrated by the summary table below, RMT's actual PM₁₀ emissions, as defined by 35 IAC 212 Subpart U, are lower than 15 tons per year, such that RMT is not subject to the requirements of 35 IAC 212 Subpart U.

Pollutant	Emission Level (tons/year)
Particulate Matter (10 microns and below (PM ₁₀))	3.67
Particulate Matter (PM)	13.02
Carbon Monoxide (CO)	1.65
Nitrous Oxides (NO _x)	2.49
Volatile Organic Compounds (VOCs)	0.766
Sulfur Oxides (SO _x)	0.351

*Includes facility wide emissions from all single sources at 11600 South Burley Avenue. Also includes controlled fugitive emissions from roadways that were not included when calculating the PTE.

Section B1: Actual Emission Calculations for Unpaved Roadways:

Source	PM ₁₀ Emission Level (ton/year)	PM Emission Level (ton/year)
Reserve Marine Terminals Scrap Yard	1.36	5.09
South Shore Recycling	0.53	2.00

RMT Scrap Yard Unpaved Roadway Emissions

Unpaved Industrial Road Fugitive Emission Calculation Procedure

$$E_{\text{cont}} = [(k * (s/12)^a * (W/3)^b) * ((N-P)/N)]$$

Equation 1a & 2, AP-42 13.2.2-2 (Nov 2006)

where:

E_{cont} =	Size specific annual average particulate emission factor (lb/VMT)
k =	See Below Particle size multiplier lb/VMT (AP-42 Table 13.2.2-2)
s =	6 mean material silt content (%) (AP42 Table 13.2.2-1 Nov 2006 - Iron & Steel Production - mean = 6.0%)
W =	Mean vehicle weight, tons (use weighted average where available)
P =	120 Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365 Averaging Period, annual
Control Eff % =	50.00% Emission Control Efficiency for watering
Daily Operating Hours =	8 Hours per Year
Weekly Operating Days =	5 Days /Week
Annual Operating Weeks =	52 Weeks/Yr
Annual Operating hours =	2,008 Hours per Year

EQ 1a Constants	PM	PM10	PM2.5
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM Emissions tpy	
			6.4949-lb/VMT		3.2475-lb/VMT			
			(lb/day)	(ton/month)	(lb/day)	(ton/month)		
Semi (scrap metal)	40.00	12.05	78.264	1.017	39.132	0.509	5.09	
Weighted Average Weight:	40.00	Subtotals:	78.264	1.017	39.132	0.509	5.09	

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM10 Emissions tpy
			1.7309-lb/VMT		0.8655-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	12.05	20.857	0.271	10.429	0.136	1.36
Weighted Average Weight:	40.00	Subtotals:	20.857	0.271	10.429	0.136	1.36

SSR Unpaved Roadway Emission Calculations

Unpaved Industrial Road Fugitive Emission Calculation Procedure

$$E_{ext} = [(k * (s/12)^a * (W/3)^b) * ((N-P)/N)]$$

Equation 1a & 2, AP-42 13.2.2-2 (Nov 2006)

where:

E_{ext} =		Size specific annual average particulate emission factor (lb/VMT)
k =	See Below	Particle size multiplier lb/VMT (AP-42 Table 13.2.2-2)
s =	6	mean material silt content (%) (AP42 Table 13.2.2-1 Nov 2006 - Iron & Steel Production: mean = 6.0%)
W =		Mean vehicle weight, tons (use weighted average where available)
P =	120	Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365	Averaging Period, annual
Control Eff % =	50.00%	Emission Control Efficiency for watering
Daily Operating Hours	8	Hours per Year
Weekly Operating Days	5	Days /Week
Annual Operating Weeks =	52	Weeks/Yr
Annual Operating hours =	2,008	Hours per Year

(AP42 Table 13.2.2-2 Nov 2006 - Industrial Roads (Eq. 1a))			
EQ 1a Constants	PM	PM10	PM2.5
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions 1.5886-lb/VMT		Annual Average Controlled Emissions 0.7943-lb/VMT		Annual PM Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
			PM Particle size multiplier (k) = 4.9				
Peddler Vehicles (scrap metal)	1.75	19.38	30.787	0.400	15.394	0.200	2.00
0							
0							
0							
0							
0							
0							
Weighted Average Weight:	1.75	Subtotals:	30.787	0.400	15.394	0.200	2.00

Material Hauling

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions 0.4234-lb/VMT		Annual Average Controlled Emissions 0.2117-lb/VMT		Annual PM10 Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
			PM10 Particle size multiplier (k) = 1.5				
Peddler Vehicles (scrap metal)	1.75	19.38	8.205	0.107	4.103	0.053	0.53
Weighted Average Weight:	1.75	Subtotals:	8.205	0.107	4.103	0.053	0.53

Section B2: Actual Emission Calculations for Paved Roadways:

Source	PM ₁₀ Emission Level (ton/year)	PM Emission Level (ton/year)
Reserve Marine Terminals Screening Operation	0.37	1.86
Regency Technologies	0.25	1.23
Napuck Salvage of Waupaca	0.31	1.54

RMT Screening Operation Paved Roadway Calculations

Paved Road Fugitive Emission Calculation Procedure

$$E_{ext} = (k \cdot (sL)^{0.91} \cdot (W)^{1.01}) \cdot (1 - (P/(4N)))$$

Equation 2, AP-42 13.2.1 Paved Roads (Jan 2011)
equation does not include brake and tire wear.

where:

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k =	See Below Particle size multiplier lb/VMT (AP-42 Table 13.2.1-1)
sL =	9.7 mean controlled silt content, % (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79; mean 9.7-g/m ²)
W =	Mean vehicle weight, tons (use weighted average where available)
P =	120 Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365 Averaging Period, annual
Control Eff % =	75.00% Emission Control Efficiency for sweeping or watering
Daily Operating Hours	8 Hours per Year
Weekly Operating Days	5 Days/Week
Annual Operating Weeks =	52 Weeks/Yr
Annual Operating hours =	2,008 Hours per Year

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	PM Particle size multiplier (k) = 0.011				Annual PM Emissions tpy
			Annual Average Uncontrolled Emissions 3.4372-lb/VMT		Annual Average Controlled Emissions 0.8593-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (foundry sand)	40.00	16.68	57.332	0.745	14.333	0.186	1.86
Weighted Average Weight:	40.00	Subtotals:	57.332	0.745	14.333	0.186	1.86

Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	PM ₁₀ Particle size multiplier (k) = 0.0022				Annual PM ₁₀ Emissions tpy
			Annual Average Uncontrolled Emissions 0.6874-lb/VMT		Annual Average Controlled Emissions 0.1719-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (foundry sand)	40.00	16.68	11.466	0.149	2.867	0.037	0.37
Weighted Average Weight:	40.00	Subtotals:	11.466	0.149	2.867	0.037	0.37

RSR Paved Roadway Calculations

Paved Road Fugitive Emission Calculation Procedure

$$E_{ext} = (k * (sL)^{0.91} * (W)^{1.02}) * (1 - (P/(4N))) \quad \text{Equation 2, AP-42 13.2.1 Paved Roads (Jan 2011)}$$

equation does not include brake and tire wear.

where:

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k =	See Below Particle size multiplier lb/VMT (AP-42 Table 13.2.1-1)
sL =	9.7 mean controlled silt content, % (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79, mean 9.7-g/m2)
W =	Mean vehicle weight, tons (use weighted average where available)
P =	120 Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365 Averaging Period, annual
Control Eff % =	75.00% Emission Control Efficiency for sweeping or watering
Daily Operating Hours	8 Hours per Year
Weekly Operating Days	5 Days /Week
Annual Operating Weeks =	52 Weeks/Yr
Annual Operating hours =	2,008 Hours per Year

Material Hauling

			PM Particle size multiplier (k) = 0.011				
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions 3.4372-lb/VMT		Annual Average Controlled Emissions 0.8593-lb/VMT		Annual PM Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal/electronics)	40.00	11.03	37.912	0.493	9.478	0.123	1.23
Weighted Average Weight:	40.00	Subtotals:	37.912	0.493	9.478	0.123	1.23

Material Hauling

			PM10 Particle size multiplier (k) = 0.0022				
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions 0.6874-lb/VMT		Annual Average Controlled Emissions 0.1719-lb/VMT		Annual PM10 Emissions tpy
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal/electronics)	40.00	11.03	7.582	0.099	1.896	0.025	0.25
Weighted Average Weight:	40.00	Subtotals:	7.582	0.099	1.896	0.025	0.25

NSW Paved Roadway Calculations

Paved Road Fugitive Emission Calculation Procedure

$$E_{ext} = (k * (sL)^{0.91} * (W)^{1.02}) * (1 - (P/(4N)))$$

Equation 2, AP-42 13.2.1 Paved Roads (Jan 2011)

equation does not include brake and tire wear.

where:

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k =	See Below Particle size multiplier lb/VMT (AP-42 Table 13.2.1-1)
sL =	9.7 mean controlled silt content, % (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79; mean 9.7 g/m2)
W =	Mean vehicle weight, tons (use weighted average where available)
P =	120 Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N =	365 Averaging Period, annual
Control Eff % =	75.00% Emission Control Efficiency for sweeping or watering
Daily Operating Hours	8 Hours per Year
Weekly Operating Days	5 Days /Week
Annual Operating Weeks =	52 Weeks/Yr
Annual Operating hours =	2,008 Hours per Year

Material Hauling

			PM Particle size multiplier (k) =				0.011
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM Emissions tpy
			3.4372-lb/VMT		0.8593-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	13.80	47.433	0.617	11.858	0.154	1.54
Weighted Average Weight:	40.00	Subtotals:	47.433	0.617	11.858	0.154	1.54

Material Hauling

			PM10 Particle size multiplier (k) =				0.0022
Vehicle Type	Vehicle Weight (W) (tons)	Miles Traveled per Day	Annual Average Uncontrolled Emissions		Annual Average Controlled Emissions		Annual PM10 Emissions tpy
			0.6874-lb/VMT		0.1719-lb/VMT		
			(lb/day)	(ton/month)	(lb/day)	(ton/month)	
Semi (scrap metal)	40.00	13.80	9.486	0.123	2.372	0.031	0.31
Weighted Average Weight:	40.00	Subtotals:	9.486	0.123	2.372	0.031	0.31

Section B3: Actual Emission Calculations for Processing:

Source	PM ₁₀ Emission Level (ton/year)	PM Emission Level (ton/year)
Reserve Marine Terminals Screening Operation	0.37	1.03
Napuck Salvage of Waupaca Shredder and Mini-Crusher	0.0656	0.1007

Process Point	Throughput (tons/hr)	Number of Process Points	PM Emission Factor (lb/ton)	PM ₁₀ Emission Factor (lb/ton)	PM Emission Rate (lb/hr)	PM ₁₀ Emission Rate (lb/hr)
Load-in Path: Consists of the first steps before path Divergence						
Load- in to Feed Hopper	5.0	1	0.000409	0.000194	0.002	0.00097
Stockpile Loading Points	0.5	1	0.000409	0.000194	0.000205	0.000097
Conveyor Transfer Point	4.5	2	0.003	0.0011	0.027	0.0099
Screeener	4.5	1	0.025	0.0087	0.113	0.039
Path A: Starting with 3.72 tons/hour of material.						
Conveyor Transfer Point	2.5	2	0.003	0.0011	0.015	0.0055
Conveyor Transfer Point	1.25	2	0.003	0.0011	0.0075	0.00275
Stockpile Loading Point	1.25	2	0.000409	0.000194	0.00102	0.000485
Path B: Starting with 1.488 tons/hour of material.						
Conveyor Transfer Point	1	2	0.003	0.0011	0.006	0.0022
Stockpile loading Point	0.5	1	0.000409	0.000194	0.000205	0.000097
Conveyor Transfer Point	0.5	9	0.003	0.0011	0.0135	0.00495
Crusher	0.5	1	0.0054	0.0024	0.0027	0.0012
Screeener	0.5	1	0.025	0.0087	0.0125	0.00435

Conveyor Transfer Point	0.25	2	0.003	0.0011	0.0015	0.00055
Stockpile Loading Point	0.25	2	0.000409	0.000194	0.000205	0.000097
Path C: Starting with 1.488 tons/hour of material.						
Conveyor Transfer Point	1	2	0.003	0.0011	0.006	0.0022
Stockpile Loading Point	0.5	1	0.000409	0.000194	0.000205	0.000097
Conveyor Transfer Point	0.5	7	0.003	0.0011	0.0105	0.00385
Crusher	0.5	1	0.0054	0.0024	0.0027	0.0012
Screeners	0.5	1	0.025	0.0087	0.0125	0.00435
Conveyor Transfer Point	0.25	2	0.003	0.0011	0.0015	0.00055
Stockpile Loading Point	0.25	2	0.000409	0.000194	0.000205	0.000097
Emission Rate (Total lbs/hour)					0.236 lbs/hour of PM	0.0845 lbs/hr of PM ₁₀
Emission Rate (total lbs/day)					5.66 lbs/day of PM	2.028 lbs/day of PM ₁₀
Emission Rate (total tons/year)					1.03 tons/year of PM	0.37 tons/year of PM₁₀

Napuck Salvage of Waupaca Mini-Crusher

Table B3(c): Actual Controlled PM and PM₁₀ Emissions At Average Production Levels (2008 hours/year)

Process Points	Throughput (tons/hr)	Number of Process Points	PM Emission Factor (lb/ton)	PM ₁₀ Emission Factor (lb/ton)	PM Emission Rate (lb/hr)	PM ₁₀ Emission Rate (lb/hr)
Stockpile Loading Point	0.5	3	0.000409	0.000194	0.000614	0.00029
Conveyor Transfer Point	0.485	5	0.003	0.0011	0.0073	0.0027
Stockpile Loading Point	0.015	1	0.000409	0.000194	0.0000061	0.0000029
Crusher	0.485	1	0.0054	0.0024	0.0026	0.0012
Screeners	0.485	1	0.025	0.0087	0.012	0.0042
Stockpile Loading Point	0.05	1	0.000409	0.000194	0.0000205	0.0000097

Stockpile Loading Point	0.2175	2	0.000409	0.000194	0.00018	0.000084
Emission Rate (Total lbs/hour)					0.023 lbs/hour of PM	0.0085 lbs/hour of PM ₁₀
Emission Rate (total lbs/day)					0.552 lbs/day of PM	0.204 lbs/day of PM ₁₀
Emission Rate (total tons/year)					0.1007 tons/year of PM	0.037 tons/year of PM ₁₀

Table B3(d): Napuck Salvage of Waupaca Shredding System			
Actual Controlled Emissions			
Quarries/Rock Crushing Operations – “Calculate Emissions Tool”			
Hammermill	Throughput (Tons/Year)	PM₁₀ Emission Factor (lbs/ton)	PM₁₀ Emissions (tons/year)
Actual = 20 TPH			
Crushing	40,160 T/Y	0.00054 lb/ton	0.0108 ton/year
Screening	40,160 T/Y	0.00074 lb/ton	0.0149 ton/year
Conveying	40,160 T/Y	0.000046 lb/ton	0.0009 ton/year
Slow Speed Crusher			
Actual = 1.5 TPH			
Crushing	3,012 T/Y	0.00054 lb/ton	0.0008 ton/year
Screening	3,012 T/Y	0.00074 lb/ton	0.0011 ton/year
Conveying	3,012 T/Y	0.000046 lb/ton	0.0001 ton/year
Total Estimated Emissions			0.0286 Tons/Year

Section B4: Actual Emissions for Torch Cutting:

Source	PM ₁₀ Emission Level (ton/year)	PM Emission Level (ton/year)
Reserve Marine Terminals	0.12	0.24
South Shore Recycling	0.00	0.00

RESERVE MACHINE TERMINALS - CHICAGO, IL Torch-Cutting Emission											
PTE Emissions Due to Natural Gas ⁽¹⁾ Consumption with Torches											
Harm Products Torch Type	Gas ⁽²⁾ Consumption (cu. ft./hr.)	Operating Hours (per year)	Number of Torches	Annual Gas Consumption (cu. ft.)	Annual Emissions (lbs/yr)						
					PM (Total)	CO	CH ₄	N ₂ O	VOCs	SO ₂	
62-5	4	8760	4	140,160	1	6	0	0	1	0	
Totals:				4	140,160						
PTE Emissions (tons/yr) =					0.0005	0.0028	0.0002	0.0002	0.0004	0.0000	

POTENTIAL TO EMIT					ACTUAL EMISSIONS				
PTE for Particulate Matter (PM) - No Control					Projected PM Emissions - No Control				
PTE Total Torch Hours	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM PTE Emissions (tons/yr.)	Total Torch Hours per Year ⁽⁴⁾	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM Emissions (tons/yr.)
35,040	3	105,120	0.032	1.68	4,992	3	14,976	0.032	0.24

- Notes:
- ⁽¹⁾ USEPA AP-42, Chapter 1 External Combustion Sources, Table 1.4-2.
 - ⁽²⁾ Average natural gas consumption for torch type.
 - ⁽³⁾ USEPA AP-42, Chapter 12.5 Iron and Steel Production, Table 12.5.1-1, Billet-Cutting Torches, natural gas fired.
 - ⁽⁴⁾ Based on actual work schedule for torch cutters (2,496 hours/year) and number of torches used.

PTE Calculation Details

Calculation for PTE of Particulate Matter (PM):
 Hourly: 12 tons/hr. X 0.032 lbs/ton = 0.38 lbs/hr.
 Annually: (105,120 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 1.68 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for PTE of CO from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0006 lbs/hr.
 Annually: (0.07 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00028 tons/yr.

Calculation for PTE of SO_x from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.0000096 lbs/hr.
 Annually: (0.07 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00004 tons/yr.

Calculation for PTE of NO_x from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.000036 lbs/hr.
 Annually: (0.07 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0002 tons/yr.

Calculation for PTE of VOC from Natural Gas Consumed:
 Hourly: (16 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000088 lbs/hr.
 Annually: (0.07 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0004 tons/yr.

Actual Calculation Details

Calculation for Actual Particulate Matter (PM):
 Hourly: 3 ton/hr. X 0.032 lbs/ton = 0.096 lbs/hr.
 Annually: (14,976 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 0.24 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for Actual CO from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0002 lbs/hr.
 Annually: (0.02 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0008 tons/yr.

Calculation for Actual SO_x from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.000028 lbs/hr.
 Annually: (0.02 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000012 tons/yr.

Calculation for Actual NO_x from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.00001 lbs/hr.
 Annually: (0.020 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000044 tons/yr.

Calculation for Actual VOC from Natural Gas Consumed:
 Hourly: (4.6 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000026 lbs/hr.
 Annually: (0.020 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00011 tons/yr.

SOUTH SHORE RECYCLING - CHICAGO, IL
Torch-Cutting Emission

PTE Emissions Due to Natural Gas ⁽¹⁾ Consumption with Torches						Annual Emissions (lbs/yr)					
Harris Products Torch Type	Gas ⁽²⁾ Consumption (cu. ft./hr.)	Operating Hours (per year)	Number of Torches	Annual Gas Consumption (cu. ft.)	PM (Total)	CO	CH4	N2O	VOCs	SO2	
62-5	4	8760	2	70,080	1	3	0	0	0	0	
Totals:			2	70,080							
PTE Emissions (tons/yr) =					0.0003	0.0014	0.0001	0.0001	0.0002	0.0000	

POTENTIAL TO EMIT					ACTUAL EMISSIONS				
PTE for Particulate Matter (PM) - No Control					Projected PM Emissions - No Control				
PTE Total Torch Hours	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM PTE Emissions (tons/yr.)	Total Torch Hours per Year ⁽⁴⁾	Tons per Torch per Hour Cut	Annual Tons Cut	PM Emission Factor (lbs/ton) ⁽³⁾	PM Emissions (tons/yr.)
17,520	0.03	526	0.032	0.01	2,496	0.03	75	0.032	0.00

- Notes:
- ⁽¹⁾ USEPA AP-42, Chapter 1 External Combustion Sources, Table 1.4-2.
 - ⁽²⁾ Average natural gas consumption for torch type.
 - ⁽³⁾ USEPA AP-42, Chapter 12.5 Iron and Steel Production, Table 12.5.1-1, Billet-Cutting Torches, natural gas fired.
 - ⁽⁴⁾ Based on actual work schedule for torch cutters (2,496 hours/year) and number of torches used.

PTE Calculation Details

Calculation for PTE of Particulate Matter (PM):
 Hourly: 0.06 tons/hr. X 0.032 lbs/ton = 0.0019 lbs/hr.
 Annually: (526 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 0.008 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for PTE of CO from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0003 lbs/hr.
 Annually: (0.07 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0014 tons/yr.

Calculation for PTE of SOx from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.000048 lbs/hr.
 Annually: (0.07 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.00002 tons/yr.

Calculation for PTE of NOx from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.000018 lbs/hr.
 Annually: (0.07 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0001 tons/yr.

Calculation for PTE of VOC from Natural Gas Consumed:
 Hourly: (8 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000044 lbs/hr.
 Annually: (0.07 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0002 tons/yr.

Actual Calculation Details

Calculation for Actual Particulate Matter (PM):
 Hourly: 3 ton/hr. X 0.032 lbs/ton = 0.096 lbs/hr.
 Annually: (75 tons/yr. X 0.032 lbs/ton)/2,000 lbs/ton = 0.000012 tons/yr.

Calculation for PM10 assumes the amount is half of PM.

Calculation for Actual CO from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 40 lbs per 1.0 mcf = 0.0001 lbs/hr.
 Annually: (0.02 mcf of NG X 40 lbs per 1.0 mcf)/2,000 lbs/ton = 0.0004 tons/yr.

Calculation for Actual SOx from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 0.6 lbs per 1.0 mcf = 0.000014 lbs/hr.
 Annually: (0.02 mcf of NG X 0.6 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000006 tons/yr.

Calculation for Actual NOx from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 2.2 lbs per 1.0 mcf = 0.000005 lbs/hr.
 Annually: (0.020 mcf of NG X 2.2 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000022 tons/yr.

Calculation for Actual VOC from Natural Gas Consumed:
 Hourly: (2.3 scf/hr of NG/1E6) X 5.5 lbs per 1.0 mcf = 0.000013 lbs/hr.
 Annually: (0.020 mcf of NG X 5.5 lbs per 1.0 mcf)/2,000 lbs/ton = 0.000055 tons/yr.

Section B5: Actual Emission Calculations for Gasoline and Diesel Industrial Engines

Table B5(a): Actual Emissions from Two Generators	
Pollutant	Actual Emissions
NO _x	2.18
CO	1.47
PM ₁₀	0.12
SO _x	0.349
VOC	0.742

Potential to Emit: RMT Ingersoll Rand/John Deere Diesel Fired Generator Set 2	
NO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.012 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.99998 \frac{\text{tons NO}_x}{\text{yr}}$
CO Emissions per Year	$83 \text{ horsepower} \times \frac{0.00816 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.68 \frac{\text{tons CO}}{\text{yr}}$
PM ₁₀ Emissions per Year	$83 \text{ horsepower} \times \frac{0.00066 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.055 \frac{\text{tons PM}}{\text{yr}}$
SO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.00205 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.17 \frac{\text{tons SO}_x}{\text{yr}}$
VOC Emissions per Year	$83 \text{ horsepower} \times \frac{0.00247 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.206 \frac{\text{tons VOC}}{\text{yr}}$

Potential to Emit: RMT Ingersoll Rand/John Deere Diesel Fired Generator Set 2	
NO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.012 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.99998 \frac{\text{tons NO}_x}{\text{yr}}$
CO Emissions per Year	$83 \text{ horsepower} \times \frac{0.00816 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.68 \frac{\text{tons CO}}{\text{yr}}$
PM ₁₀ Emissions per Year	$83 \text{ horsepower} \times \frac{0.00066 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.055 \frac{\text{tons PM}}{\text{yr}}$
SO _x Emissions per Year	$83 \text{ horsepower} \times \frac{0.00205 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.17 \frac{\text{tons SO}_x}{\text{yr}}$
VOC Emissions per Year	$83 \text{ horsepower} \times \frac{0.00247 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.206 \frac{\text{tons VOC}}{\text{yr}}$

Actual Emissions: RMT Generac Gasoline Fired Generator	
NO _x Emissions per Year	$16 \text{ horsepower} \times \frac{0.011 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.18 \frac{\text{tons NO}_x}{\text{yr}}$
CO Emissions per Year	$16 \text{ horsepower} \times \frac{0.00696 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.11 \frac{\text{tons CO}}{\text{yr}}$
PM ₁₀ Emissions per Year	$16 \text{ horsepower} \times \frac{0.000721 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.011 \frac{\text{tons PM}}{\text{yr}}$
SO _x Emissions per Year	$16 \text{ horsepower} \times \frac{0.000591 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.009 \frac{\text{tons SO}_x}{\text{yr}}$
VOC Emissions per Year	$16 \text{ horsepower} \times \frac{0.0205 \text{ lb}}{\text{hp/hr}} \times \frac{2008 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 0.32 \frac{\text{tons VOC}}{\text{yr}}$

Section B6: Actual Emission Calculations for Propane Burner/Aluminum Drier

Actual Emissions*: Fives North American Liquefied Petroleum Burner	
NO _x Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{13 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{728 \text{ hours}}{\text{yr}} = \frac{0.31 \text{ tons}}{\text{yr}} \text{ NO}_x$
CO Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{7.5 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{728 \text{ hours}}{\text{yr}} = \frac{0.18 \text{ tons}}{\text{yr}} \text{ CO}$
PM Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{0.7 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{728 \text{ hours}}{\text{yr}} = \frac{0.017 \text{ tons}}{\text{yr}} \text{ PM}$
SO ₂ ** Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{0.054 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{728 \text{ hours}}{\text{yr}} = \frac{0.001 \text{ tons}}{\text{yr}} \text{ SO}_2$
TOC Emissions per Year	$\frac{6 \text{ MMBtu}}{\text{hr}} \times \frac{10^3 \text{ gal}}{91.5 \times 10^6 \text{ Btu}} \times \frac{1 \text{ lb}}{10^3 \text{ gal}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times \frac{728 \text{ hours}}{\text{yr}} = \frac{0.024 \text{ tons}}{\text{yr}} \text{ TOC}$

*Actual emissions based on average fuel usage and actual hours the burner is ran.

**Sulfur content=0.54 gr/100ft³

Appendix C: Negligible Emission Sources

Appendix C: South Chicago Property Management, Ltd. Negligible Emission Sources

South Chicago Property Management, Ltd. is applying for a lifetime operating permit. This section of the supplemental document details the calculations which demonstrate that certain activities that take place on the facility property are considered insignificant or negligible sources of emissions. The requirements for these sources to be considered insignificant are that per emission unit and per pollutant, the emissions must not be greater than 0.1 pounds per hour or 0.44 tons per year. If these sources have evidence of being below these levels, they are considered insignificant and are not counted towards permitting requirements and thresholds. Evidence of these levels can be demonstrated by calculations, observations, or experiences with similar operations within the organization. The following sources are considered negligible for SPCM and fall below the thresholds stated above: shearing and breakage of large material, bailing, torch cutting, material storage piles, material dumping and transfer, and fuel tank storage.

Negligible Emission Source	Source Number	Emission Level (PM ₁₀ unless otherwise noted)
Material Dumping and Transfer	1	0.0068 tons/year of PM ₁₀
Fuel Tank Storage	2	0.0088 tons/year of VOM
Shearing and Breakage	3	<0.44 tons/year of PM ₁₀
Bailing	4	No emissions
Torch Cutting	5	<0.44 tons/year of each criteria pollutant
Material Storage Piles	6	<0.44 tons/year of PM ₁₀

Source 1: Material Dumping and Transfer Emissions (truck/railcar/barge)

Material dumping and transfer emissions at SPCM come from Napuck Salvage of Waupaca, Reserve Marine Terminals Screening Operation, and Reserve Marine Terminals Scrap Yard. The only emission that has the possibility of being generated during this process is particulate matter (size 10 microns and larger). The total PTE for the campus is detailed in the table below, and the detailed calculations for each unloading/loading operation (NSW, RMT Screening, RMT Scrap Yard) are described in the following pages.

PTE for Source 1: SPCM Emission Totals for Material Dumping and Transfer	
PTE for PM	PTE for PM ₁₀
0.014 tons/year	0.0068 tons/year

Napuck Salvage of Waupaca Media Plant:

Napuck Salvage of Waupaca (NSW) has a media and wash plant where inbound material is unloaded by a singular dump per dump truck. NSW receives 5 inbound trucks per week at one dump per truck,

or 260 truck dumps per year, and assumes all loads are full and weigh 20 tons/load. Emissions per dump are calculated by considering the tonnage per dump and then the dumps per year utilizing emission factors from AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing, detailed in the table below. NSW receives/processes scrap metals much larger in size than what is found in stone processing. The emission factors overinflate the potential to emit generated by NSW; this creates an added buffer to demonstrate that even with this over inflation, the emissions generated are negligible, and would be even smaller if scrap metal processing had standardized emission factors.

AP-42 Table 11.19.2-2: Emission Factors for Crushed Stone Processing Operations (lb/ton)		
Truck unloading – Fragmented stone	PM ₁₀ Emission Factor (lbs/ton)	PM Emission Factor (lbs/ton)
	0.000016	0.000033

Tons of material (aluminum) dropped per truck dump	PM ₁₀ Emission Factor (lbs/ton)	PM ₁₀ Emission Rating (lbs/dump)	Trucks unloaded per year (dumps)	PM ₁₀ Emission Rating (tons/year)
20 tons	0.000016	0.00032	260	0.000042

Tons of material (aluminum) dropped per truck dump	PM Emission Factor (lbs/ton)	PM Emission Rating (lbs/dump)	Trucks unloaded per year (dumps)	PM Emission Rating (tons/year)
20 tons	0.000033	0.00066	260	0.000086

Reserve Marine Terminals Screening Operation:

Reserve Marine Terminals has a screening operation of foundry sand and slag. This operation has inbound unloading by truck dump along with outbound truck and railcar loading by bucket. The calculations for material transfer from RMT screening operation utilize emission factors from AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing for inbound truck unloading along with emission factors from AP-42 Chapter 13.2.4 Aggregate Handling and Storage Piles Equation 1 for outbound material loading/dropping, detailed below. RMT screening deals with smaller, finer material but there is still a negligible amount of emissions generated from material transfer in this operation, as demonstrated by the calculations below.

AP-42 Table 11.19.2-2: Emission Factors for Crushed Stone Processing Operations (lb/ton)		
Truck unloading – Fragmented stone	PM ₁₀ Emission Factor (lbs/ton)	PM Emission Factor (lbs/ton)
	0.000016	0.000033

Truck unloading: inbound material is unloaded by a singular dump per dump truck. RMT Screening receives around 65-70 tons per day of material by dump truck, or approximately 4 dumps of material per day. At 20 tons/load, this equates into 1,460 dumps/year for the purpose of PTE calculations.

Tons of material (foundry sand) dropped per truck dump	PM ₁₀ Emission Factor (lbs/ton)	PM ₁₀ Emission Rating (lbs/dump)	Trucks unloaded per year (dumps)	PM ₁₀ Emission Rating (tons/year)
20 tons	0.000016	0.00032	1460	0.00023

Tons of material (foundry sand) dropped per truck dump	PM Emission Factor (lbs/ton)	PM Emission Rating (lbs/dump)	Trucks unloaded per year (dumps)	PM Emission Rating (tons/year)
20 tons	0.000033	0.00066	1460	0.00048

Outbound: Truck and railcar loading by bucket dumping

RMT screening operation loads processed material, which consists of fine scrap metal and re-use sand, into truck or railcar using a bucket. This 11 ton bucket is dumped into a truck or a railcar until the desired capacity of either container is reached. The material transfer emissions from dumping/dropping are calculated using AP-42 Chapter 13.2.4 Aggregate Handling and Storage Piles: Equation 1. These emission factors for PM and PM₁₀ are utilized to estimate the potential to emit from these material drop operations.

- o AP-42 Chapter 13.2.4 Aggregate Handling and Storage Piles: Equation 1
 - Equation:

- $E \left(\frac{lb}{ton} \right) = k(0.0032) \times \left(\frac{(U/5)^{1.3}}{(M/2)^{1.4}} \right)$
 - o E=particulate emission factor for drop and transfer operations (lb/ton per drop or transfer)
 - o K=particle size diameter (no dimensions)
 - 0.74 for PM, 0.35 for PM₁₀
 - o U (mph)=mean wind speed
 - Assumed wind speed for indoor processing areas: 2 mph
 - o M (%)= Moisture content
 - 3% from Table 13.2.4-1, slightly more moisture than slag at its max

PM Emission Factor per drop	$E(PM) = 0.74(0.0032) \times \left(\frac{(2/5)^{1.3}}{(3/2)^{1.4}} \right) = 0.000409 \frac{lb}{ton} / drop$
PM ₁₀ Emission Factor per drop	$E(PM_{10}) = 0.35(0.0032) \times \left(\frac{(2/5)^{1.3}}{(3/2)^{1.4}} \right) = 0.000194 \frac{lb}{ton} / drop$

Outbound: Railcar loading by bucket

RMT Screening operation loads approximately 7 rail cars/month at 85 tons/car or 560 tons of material per month, or 84 railcars loaded per year. Each rail car requires approximately 11 buckets to load at 11 tons/bucket. The calculations below demonstrate the potential to emit for loading into railcar by bucket.

Tons of material (foundry sand) loaded by bucket into railcar	PM ₁₀ Emission Factor (lbs/ton)	PM ₁₀ Emission Rating (lbs/drop)	Drops per railcar	Railcars loaded per year	PM ₁₀ Emission Rating (tons/year)
11 tons per bucket	0.000194	0.0021	8	84	0.0007

Tons of material (foundry sand) loaded by bucket into railcar	PM Emission Factor (lbs/ton)	PM Emission Rating (lbs/drop)	Drops per railcar	Railcars loaded per year	PM Emission Rating (tons/year)
11 tons per bucket	0.000409	0.00449	8	84	0.0015

Outbound: Truck loading by bucket

RMT Screening operation loads about 2296 tons of material into trucks by bucket per month, or 115 trucks/month at 20 tons/truck, which totals approximately 1380 trucks loaded per year. Each bucket contains 11 tons of material, so it is dumped about 2 times to fill one truck. The calculations below demonstrate the potential to emit for loading into truck by bucket.

Tons of material (foundry sand) loaded by bucket into truck	PM ₁₀ Emission Factor (lbs/ton)	PM ₁₀ Emission Rating (lbs/drop)	Drops per Truck	Trucks loaded per year	PM ₁₀ Emission Rating (tons/year)
11 tons per bucket	0.000194	0.0021	2	1380	0.0029

Tons of material (foundry sand) loaded by bucket into truck	PM Emission Factor (lbs/ton)	PM Emission Rating (lbs/drop)	Drops per Truck	Trucks loaded per year	PM Emission Rating (tons/year)
11 tons per bucket	0.000409	0.00449	2	1380	0.0062

Reserve Marine Terminals Scrap yard:

Reserve Marine Terminal scrap yard inbound material is unloaded by a singular dump per dump truck. RMT receives 50 inbound trucks per day at one dump per truck, or 18,520 trucks dumping per year at 20 tons/truck. The material being received is all large material (iron, steel 6"+, obsolete machinery,

equipment), so emissions per dump are negligible. Emissions per dump are calculated by considering the tonnage per dump and then the dumps per year utilizing emission factors from AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing, detailed in the table below. The material RMT receives is much larger size than what is found in stone processing, as described above. The emission factors overinflate the potential to emit generated by the scrap yard; this creates an added buffer to demonstrate that even with this over inflation, the emissions generated are negligible, and would be even smaller if scrap metal processing had standardized emission factors.

AP-42 Table 11.19.2-2: Emission Factors for Crushed Stone Processing Operations (lb/ton)		
Truck unloading – Fragmented stone	PM ₁₀ Emission Factor (lbs/ton)	PM Emission Factor (lbs/ton)
	0.000016	0.000033

Tons of material (iron, steel 6"+) dropped per truck dump	PM ₁₀ Emission Factor (lbs/ton)	PM ₁₀ Emission Rating (lbs/dump)	Trucks unloaded per year (dumps)	PM ₁₀ Emission Rating (tons/year)
20 tons	0.000016	0.00032	18250	0.0029

Tons of material (iron, steel 6"+) dropped per truck dump	PM Emission Factor (lbs/ton)	PM Emission Rating (lbs/dump)	Trucks unloaded per year (dumps)	PM Emission Rating (tons/year)
20 tons	0.000033	0.00066	18250	0.006

Source 2: Emissions from fuel storage tanks

PTE for Source 2: SCPM Fuel Storage Tanks	
PTE for VOM	0.0088 tons/year

South Chicago Property Management houses two fuel storage tanks on the facility property. These tanks are sized at 1,000 gallons for a tank that holds off-road diesel fuel and 500 gallons for a tank that holds gasoline. The tanks are small and are used to store the fuel that powers various trucks, mobile equipment, and generators on site. The annual fuel consumption of gasoline is about 3,000 gallons, and the annual fuel consumption of diesel fuel is 24,000 gallons. The tanks have the capacity to emit small amounts of volatile organic matter from standing losses and working losses. This potential to emit in tons per year was calculated using the Illinois EPA Emission Calculator for Storage Tanks. An image of the potential to emit for the tanks according to the calculator is shown below. The PTE for the two storage tanks at max fuel storage is 0.0088 tons per year of VOM.



Storage Tanks

Production Information

Gasoline throughput gallons/year

Diesel, Fuel Oil throughput gallons/year

Control Factors (check all that apply):

- All tanks are underground
- Submerged loading is used
- Vapor recovery is used

Calculate Emissions

Emissions (tons/year)

VOM

Source 3: Shearing and Breakage

RMT and Napuck conduct mechanical size reduction activities via shear and breakage of various ferrous/non-ferrous commodities. These activities are limited to shearing and breaking very large items into smaller pieces (typically 6" in size or larger). This activity has been observed thoroughly and it is clear that no visible emissions are produced during shearing and breakage. The only emission that has the possibility of being generated during this process is particulate matter (size 10 microns and larger). Quantifying the absence of emissions is not feasible due to the fact that no such emission factors exist to properly represent the action of breaking such large pieces of scrap metal. Visible observations and experience with this activity can demonstrate that there are no visible emissions, making this activity fall below the threshold of 0.44 tons per year of PM.

Source 4: Bailing

RMT conducts some limited bailing of lighter gage materials. There are no emissions associated with this process as material is typically in large sheet form and is only compacted into a baled unit – a process that does not release any fugitives. There is no heating or breakage involved. Observations of bailing operations demonstrate that no emissions are generated from this process and that this activity falls below the threshold of 0.44 tons per year.

Source 5: Torch Cutting

This activity is an exempt activity pursuant to 35.IAC.201.146(aa). The emissions from this activity are demonstrated in the Lifetime Operating Permit Application Supplemental Document Appendix A, and are shown to be negligible for criteria pollutants for South Shore Recycling.

Source 6: Material Storage Piles

RMT and NSW house outdoor storage piles of large sized material that is not prone to wind erosion and ~~has never been observed to have substantial fugitive emissions. The range of the size of the material~~ stores is typically 6"-3' or larger, and consists of various types of scrap including aluminum, iron, and steel. The facility does not store piles of material that are subject to become windborne. Observations demonstrate that this activity produces negligible emissions and is below the 0.44 tons per year threshold. SCPM also has data from other operations under similar conditions. These calculations demonstrate a very low level of emissions, well below 0.44 tons per year. These calculations were completed using data from an operation that stores much finer and smaller material than SCPM, furthering the point that the storage piles at SCPM do not emit fugitive particulates. This data can be provided upon request.

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Wind Roses

Scroll down this page for monthly climatologies!

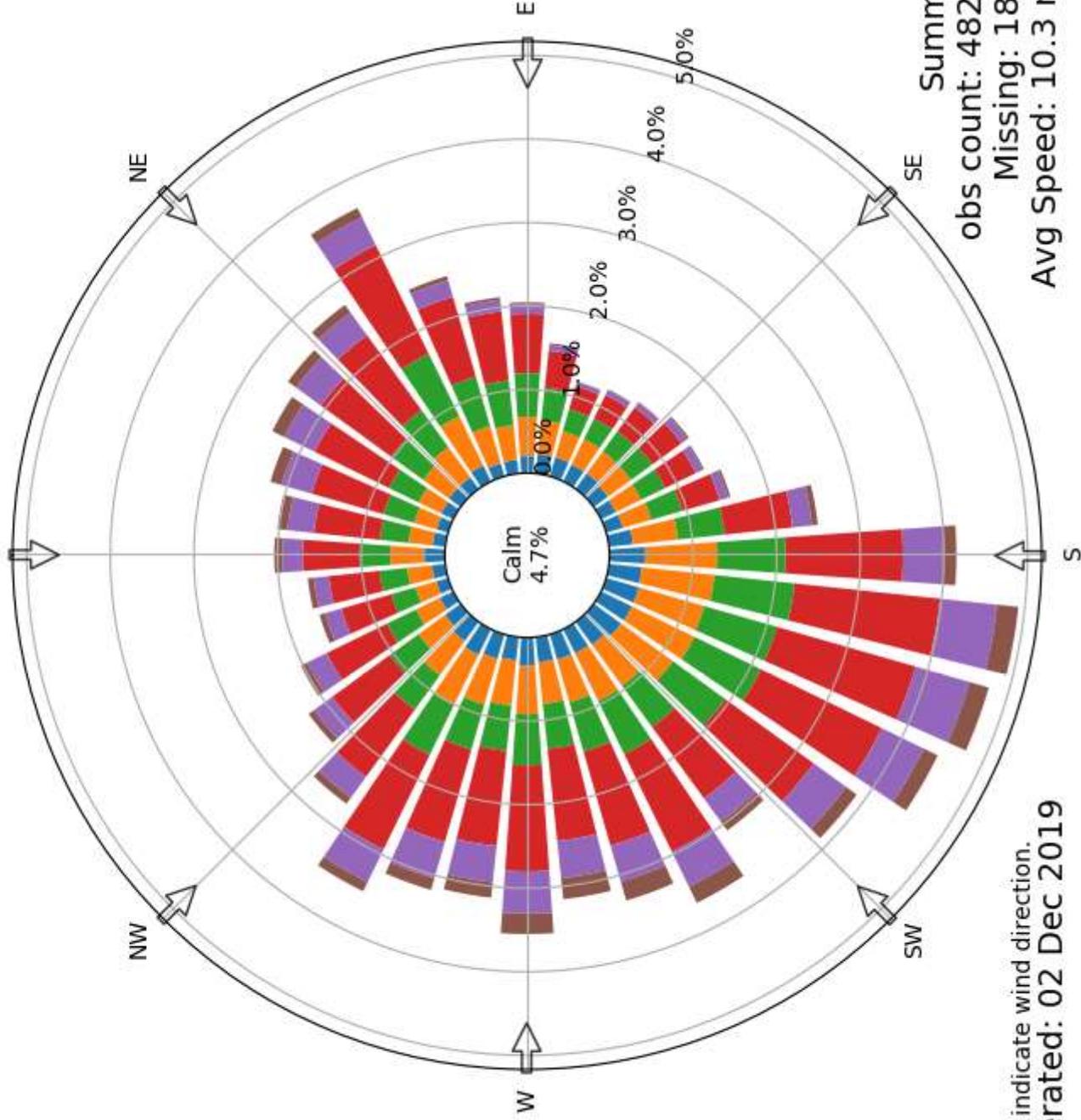
Wind roses are an information packed plot providing frequencies of wind direction and wind speed. A wind rose can quickly indicate the dominant wind directions and the direction of strongest wind speeds. The IEM has generated these wind roses based on our archive. The archive does contain errors and non representative data, so please use care when using these plots. In general, data from the airports is of good quality and representative of the local surrounding area.

Yearly Climatology:

 [View raw data](#)



[MDW] CHICAGO
Windrose Plot [All Year]
Period of Record: 01 Jan 1970 - 02 Dec 2019



Arrows indicate wind direction.
Generated: 02 Dec 2019

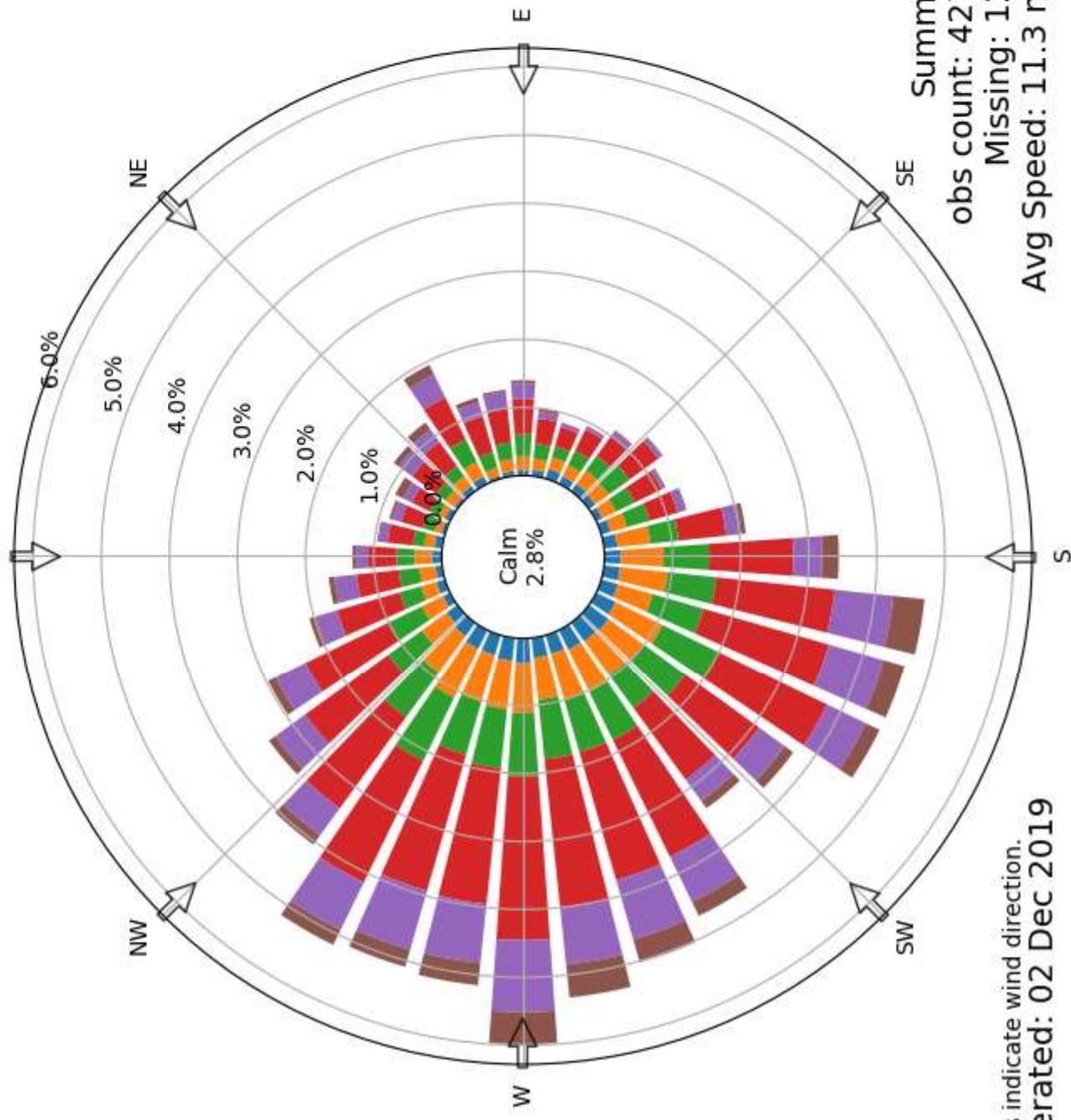


Monthly Climatology: (click thumbnail)

January  [View raw data](#)



[MDW] CHICAGO
Windrose Plot [Time Domain: Jan,]
Period of Record: 01 Jan 1970 - 31 Jan 2019



Summary
obs count: 42720
Missing: 1272
Avg Speed: 11.3 mph

Arrows indicate wind direction.
Generated: 02 Dec 2019

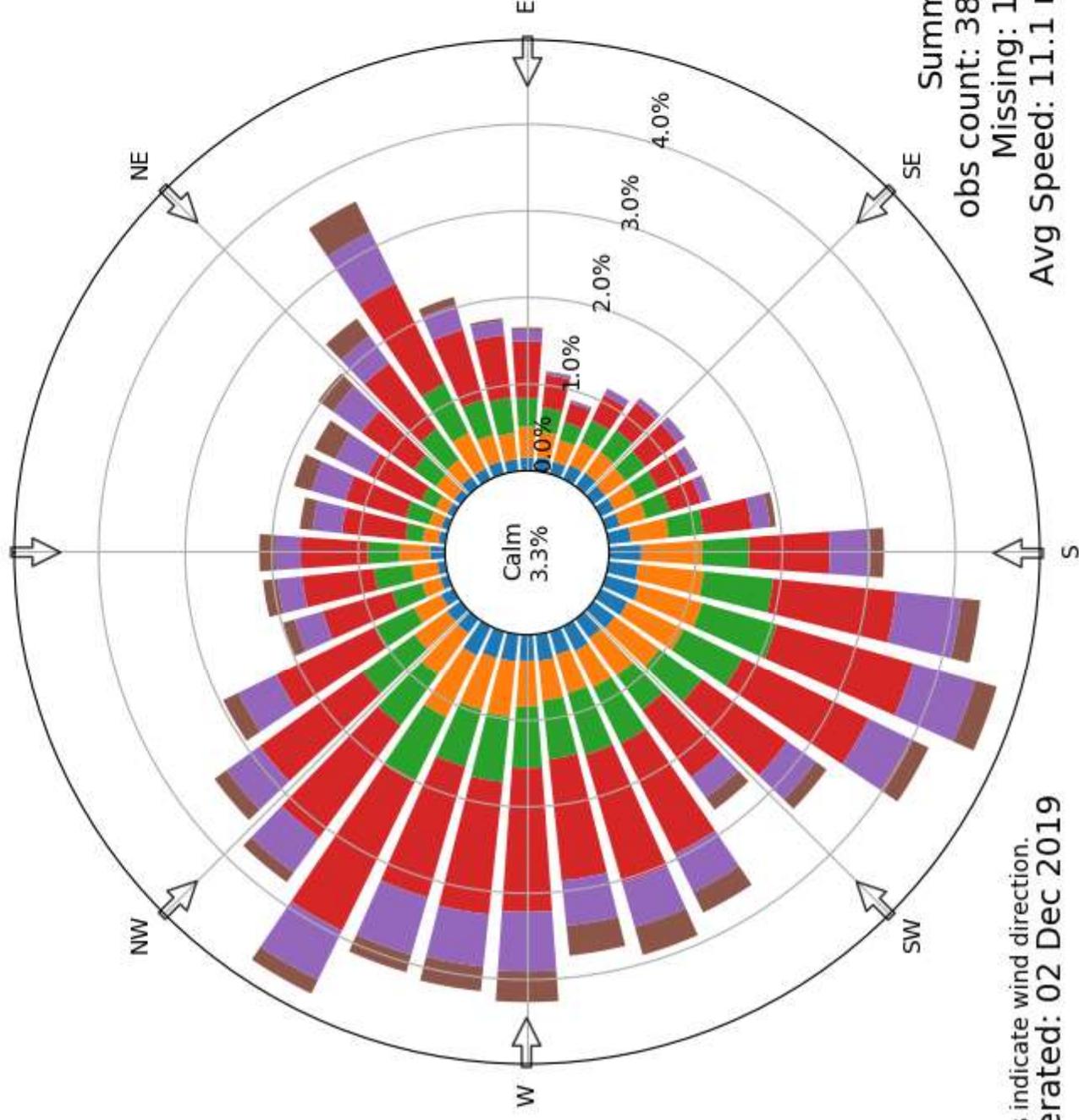


February

 [View raw data](#)



[MDW] CHICAGO
Windrose Plot [Time Domain: Feb,]
Period of Record: 01 Feb 1970 - 28 Feb 2019



Summary
 obs count: 38404
 Missing: 1147
 Avg Speed: 11.1 mph

Arrows indicate wind direction.
 Generated: 02 Dec 2019

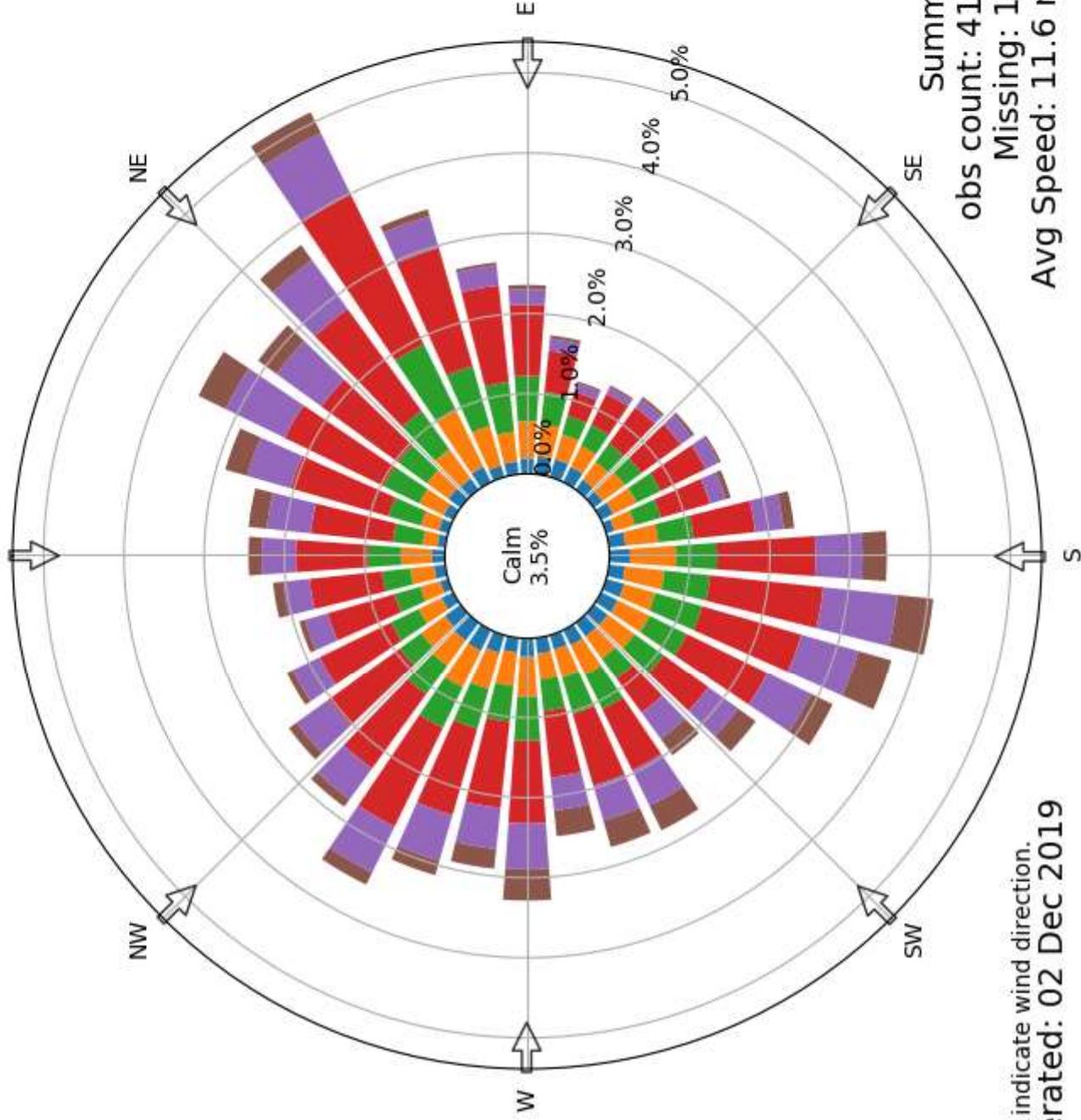


March

 View raw data



[MDW] CHICAGO
Windrose Plot [Time Domain: Mar,]
Period of Record: 01 Mar 1970 - 31 Mar 2019



Summary
obs count: 41280
Missing: 1363
Avg Speed: 11.6 mph

Arrows indicate wind direction.
Generated: 02 Dec 2019

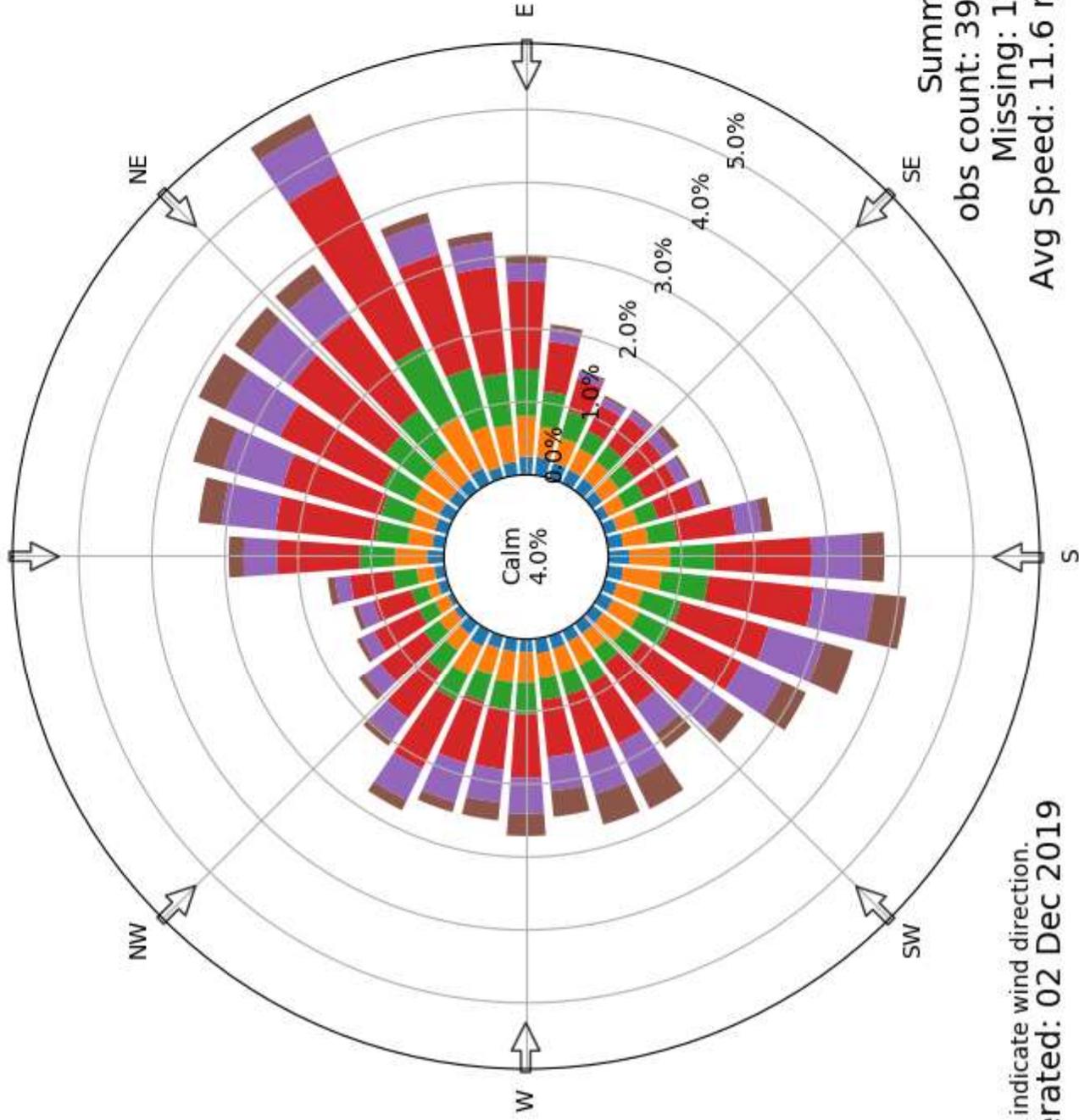


April

 View raw data



[MDW] CHICAGO
 Windrose Plot [Time Domain: Apr,]
 Period of Record: 01 Apr 1970 - 30 Apr 2019



Summary
 obs count: 39197
 Missing: 1398
 Avg Speed: 11.6 mph

Arrows indicate wind direction.
 Generated: 02 Dec 2019

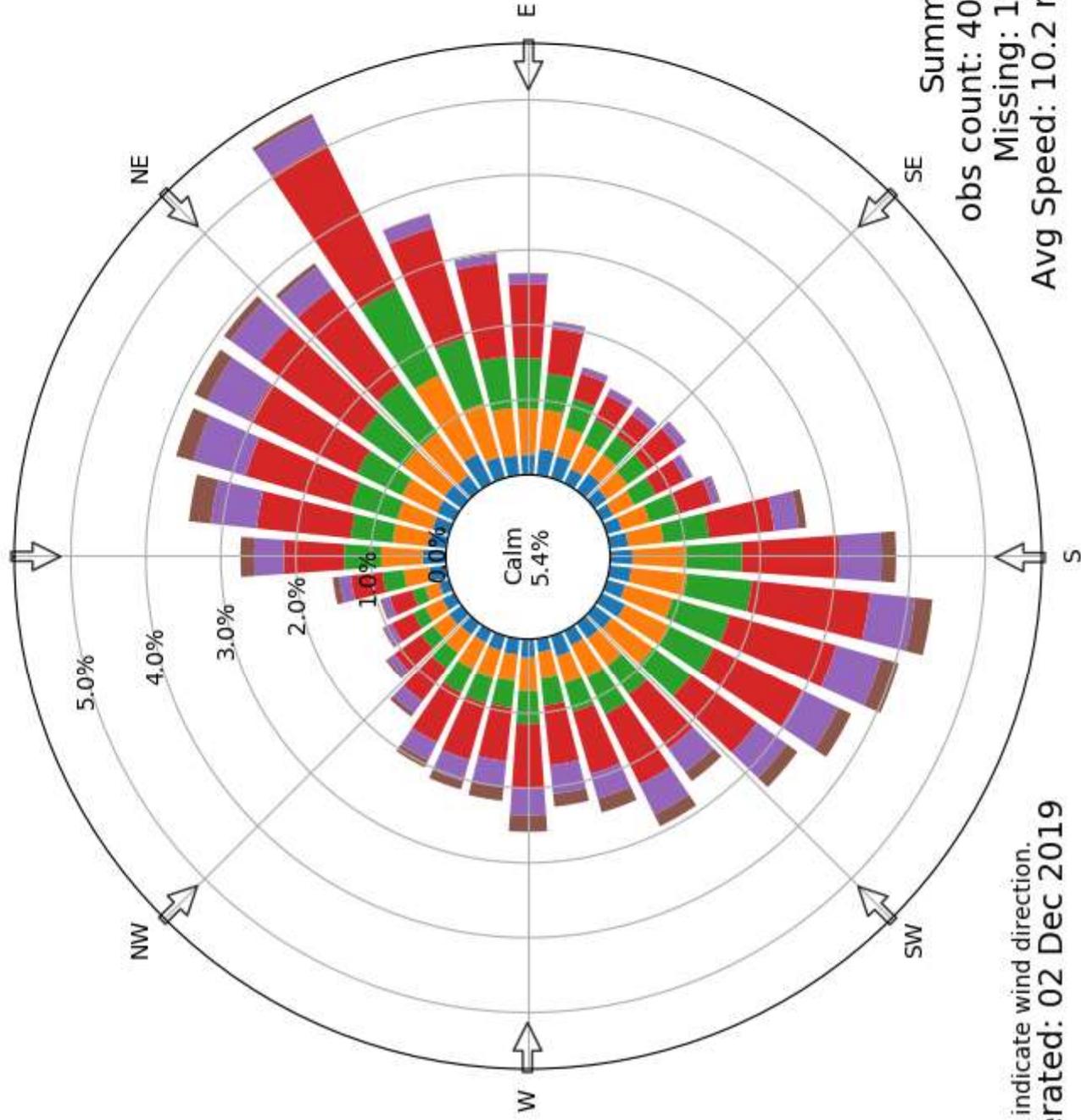


May

 View raw data



[MDW] CHICAGO
Windrose Plot [Time Domain: May,]
Period of Record: 01 May 1970 - 01 Jun 2019



Summary
obs count: 40735
Missing: 1592
Avg Speed: 10.2 mph

Arrows indicate wind direction.
Generated: 02 Dec 2019

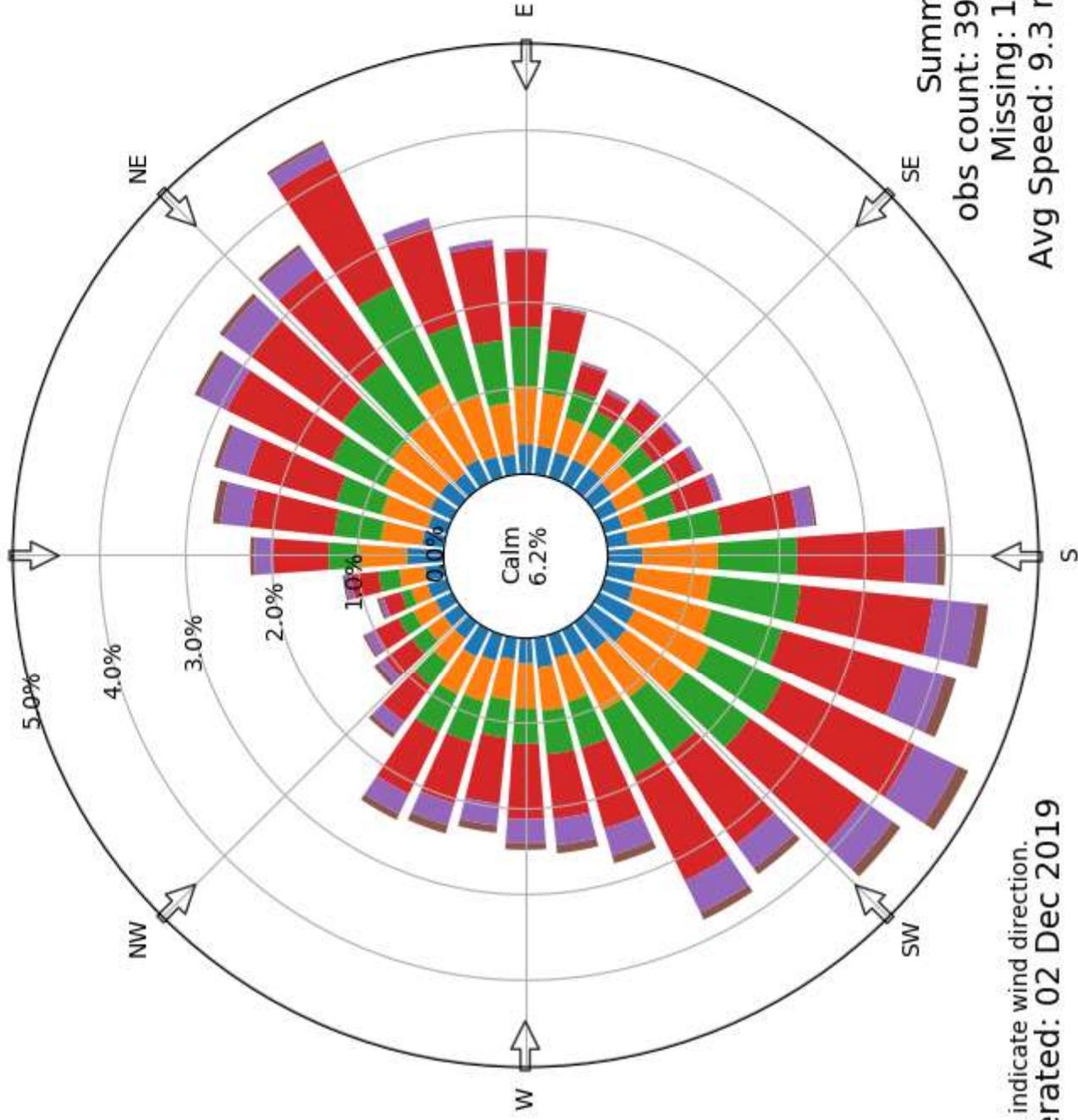


June

 [View raw data](#)



[MDW] CHICAGO
Windrose Plot [Time Domain: Jun,]
Period of Record: 01 Jun 1970 - 01 Jul 2019



Summary
 obs count: 39121
 Missing: 1638
 Avg Speed: 9.3 mph

Arrows indicate wind direction.
 Generated: 02 Dec 2019

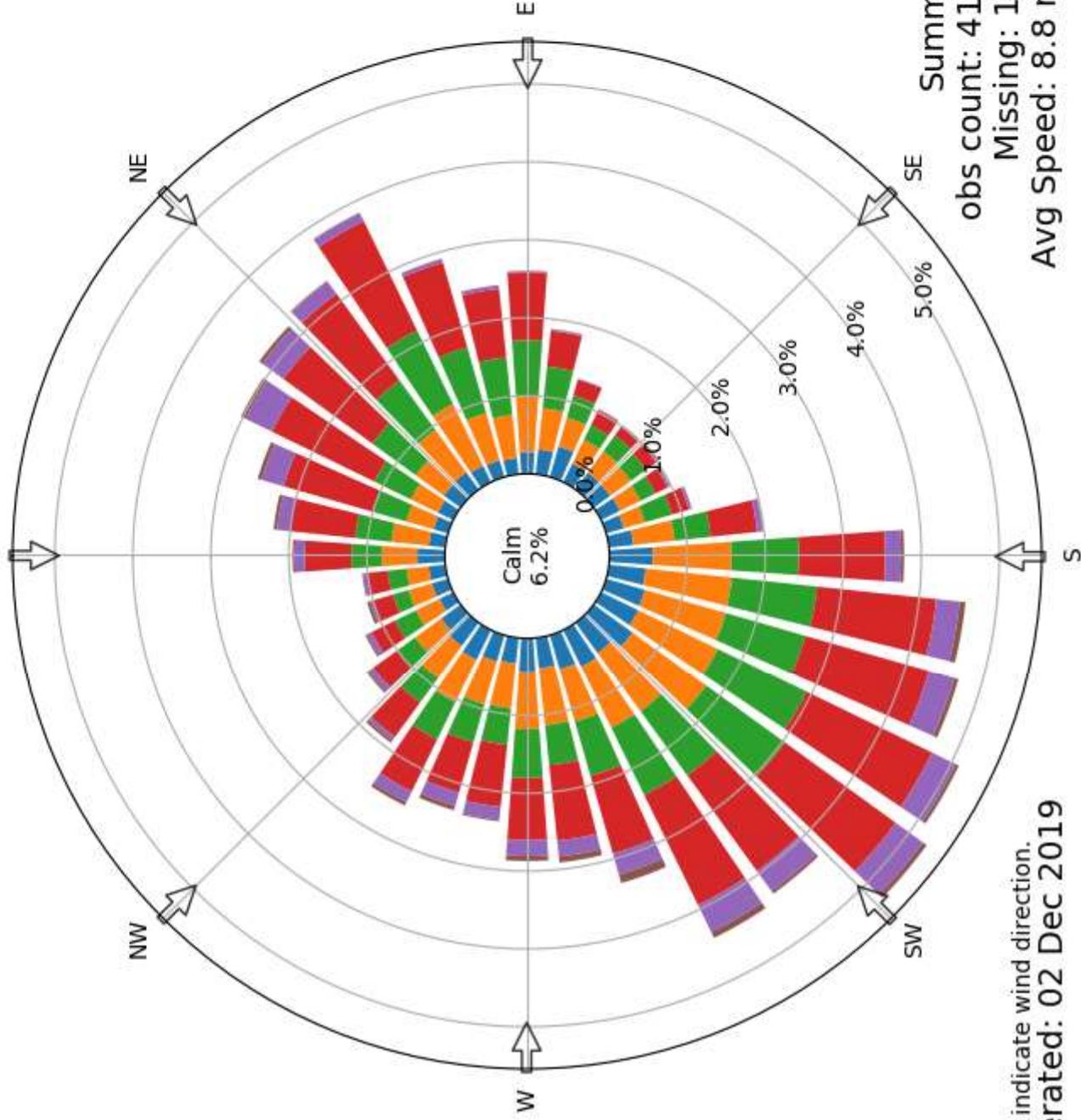


July

 [View raw data](#)



[MDW] CHICAGO
Windrose Plot [Time Domain: Jul,]
Period of Record: 01 Jul 1970 - 01 Aug 2019



Summary
 obs count: 41296
 Missing: 1937
 Avg Speed: 8.8 mph

Arrows indicate wind direction.
 Generated: 02 Dec 2019



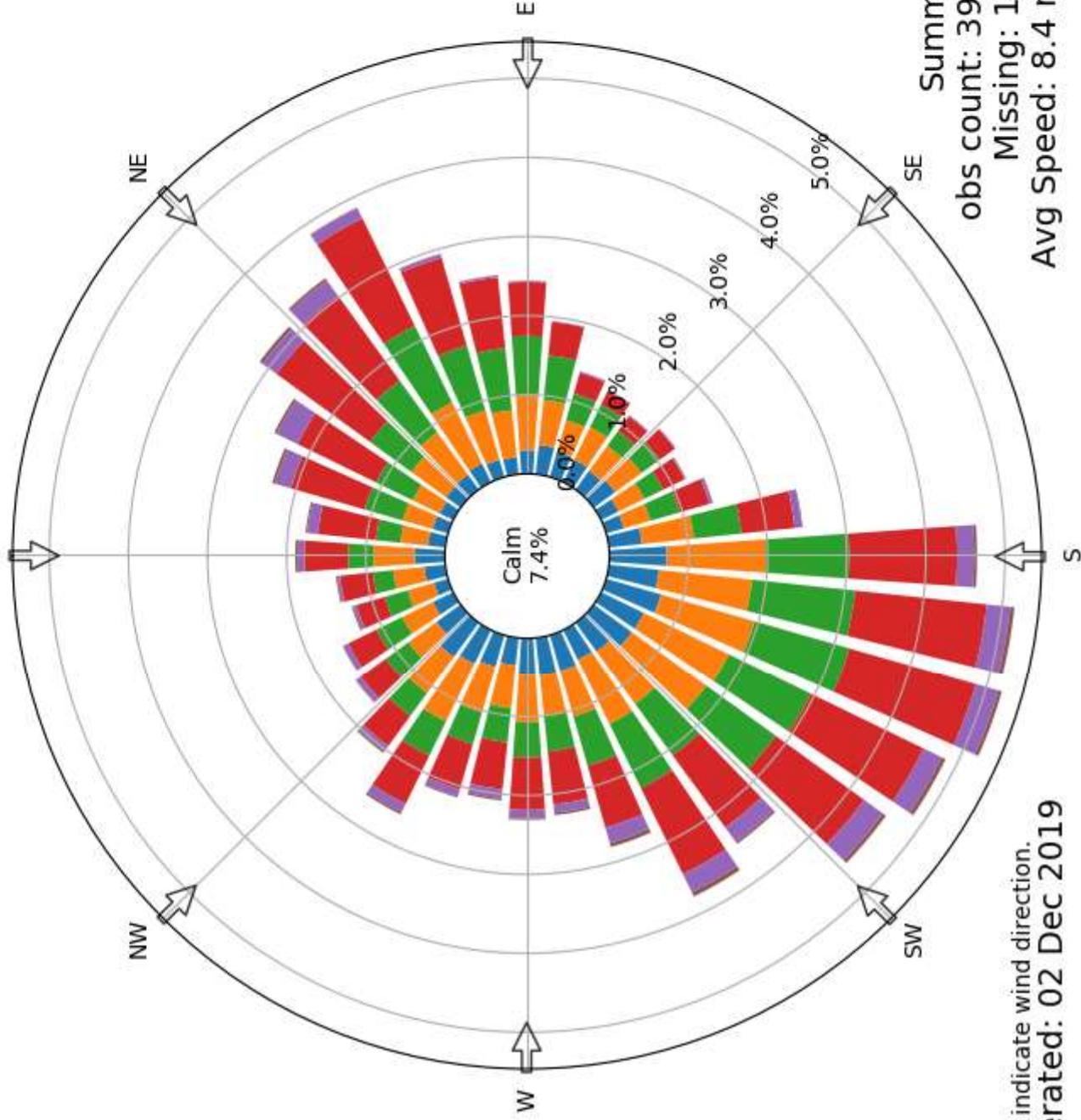
August  [View raw data](#)



[MDW] CHICAGO

Windrose Plot [Time Domain: Aug,]

Period of Record: 01 Aug 1970 - 01 Sep 2019



Arrows indicate wind direction.

Generated: 02 Dec 2019

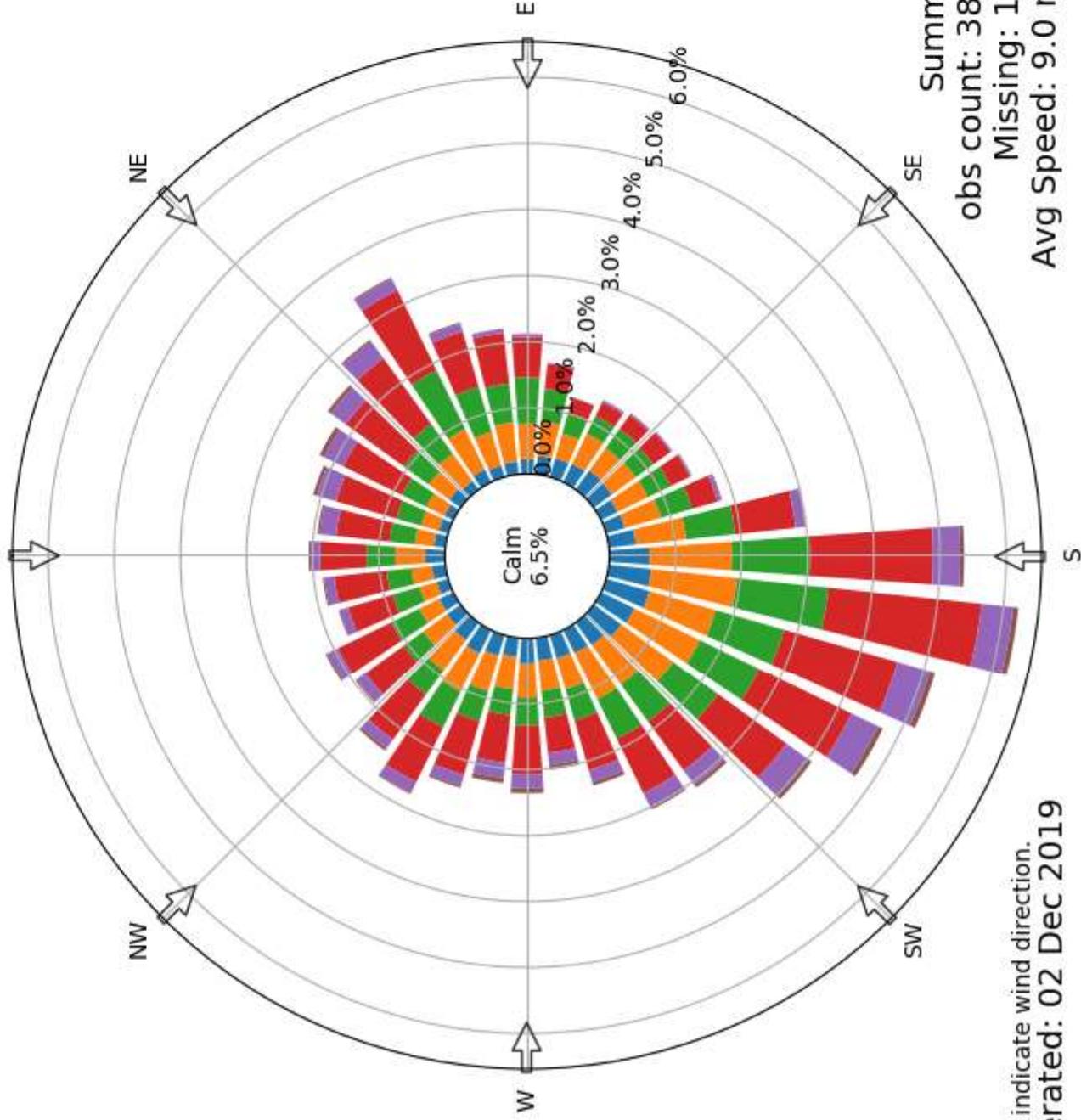


September

 [View raw data](#)



[MDW] CHICAGO
 Windrose Plot [Time Domain: Sep,]
 Period of Record: 01 Sep 1970 - 01 Oct 2019



Summary
 obs count: 38414
 Missing: 1743
 Avg Speed: 9.0 mph

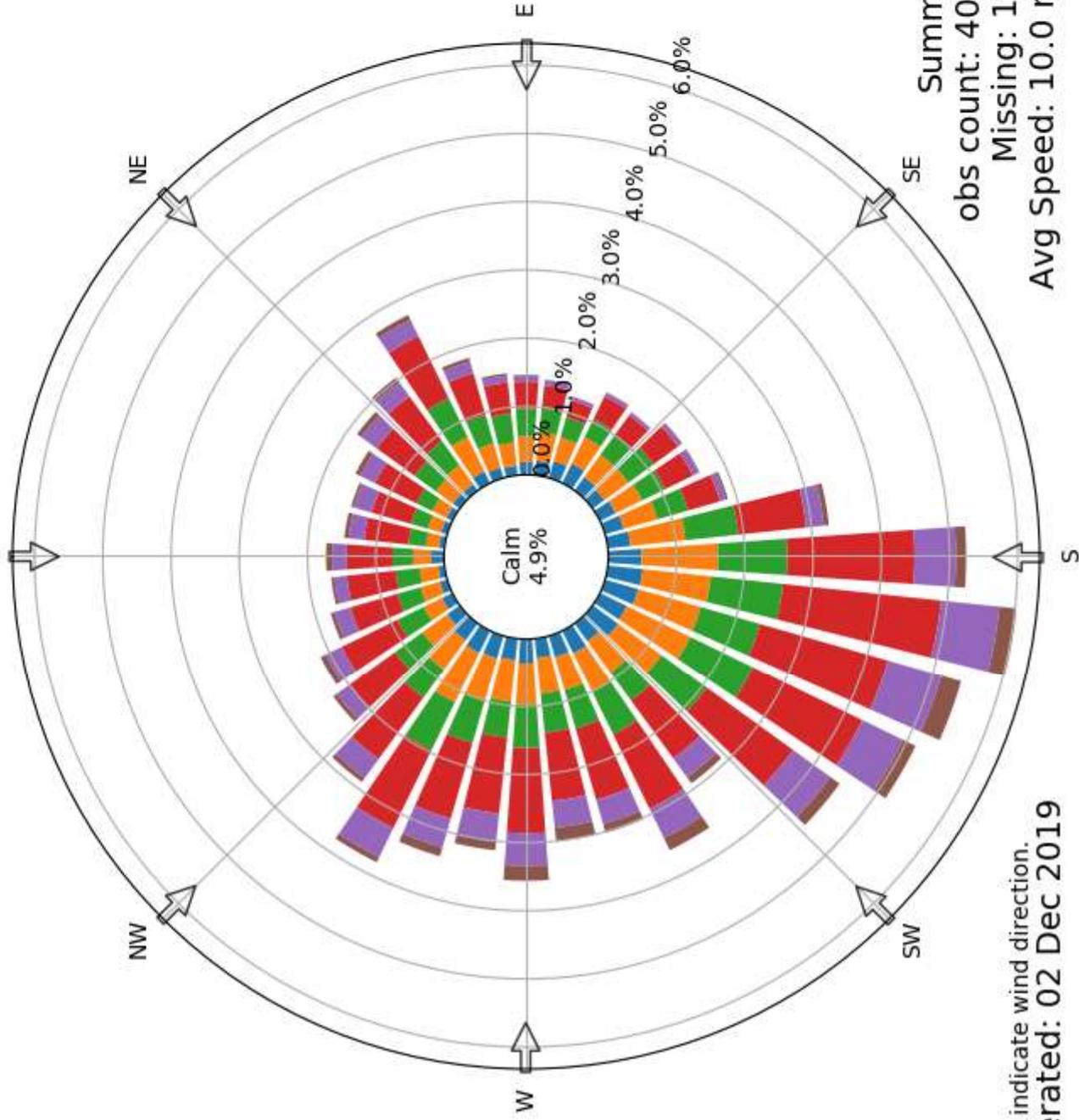
Arrows indicate wind direction.
 Generated: 02 Dec 2019



October  [View raw data](#)



[MDW] CHICAGO
Windrose Plot [Time Domain: Oct,]
Period of Record: 01 Oct 1970 - 31 Oct 2019



Arrows indicate wind direction.
 Generated: 02 Dec 2019



November

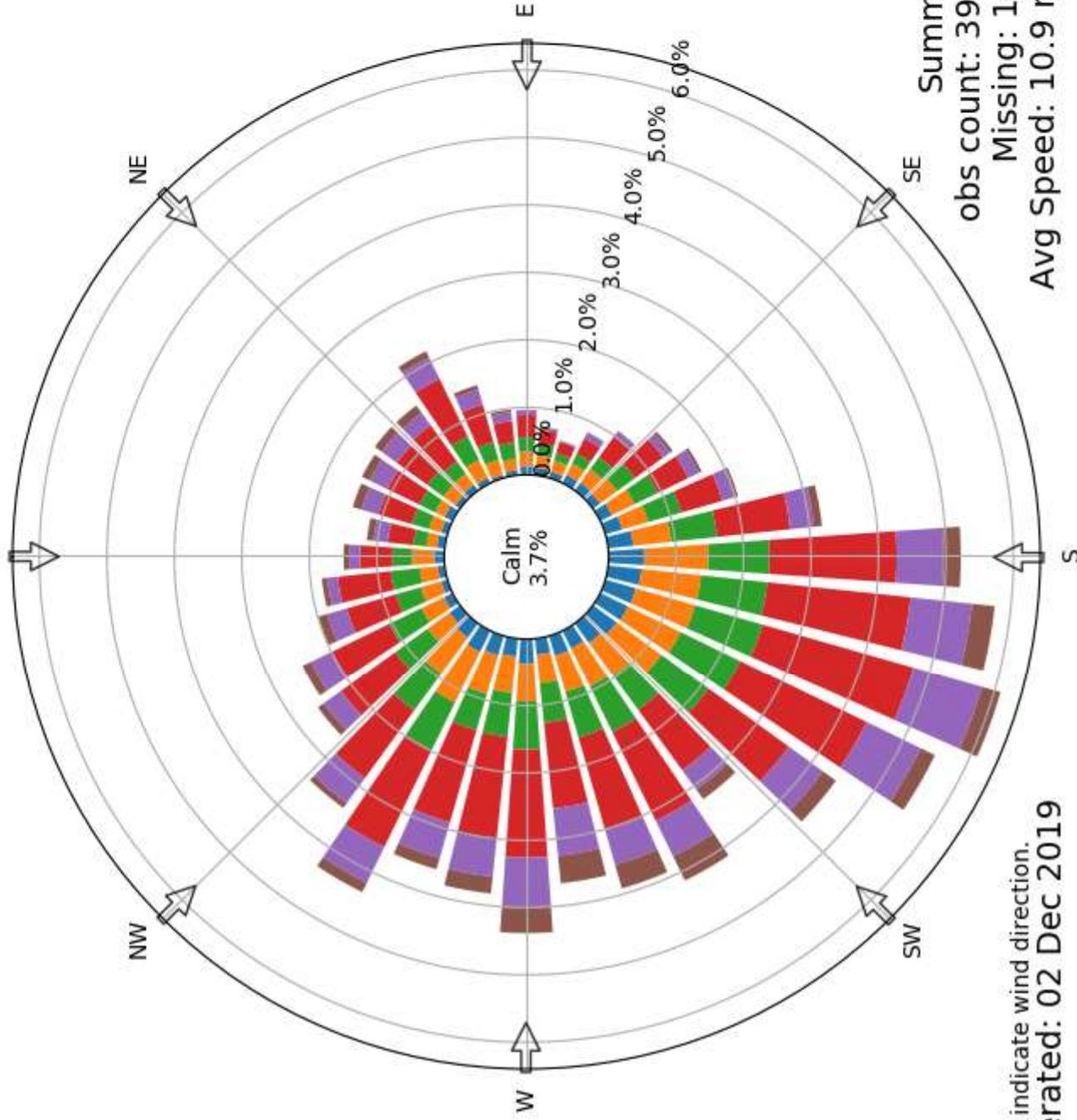
 [View raw data](#)



[MDW] CHICAGO

Windrose Plot [Time Domain: Nov,]

Period of Record: 01 Nov 1970 - 30 Nov 2019



Summary
 obs count: 39607
 Missing: 1441
 Avg Speed: 10.9 mph

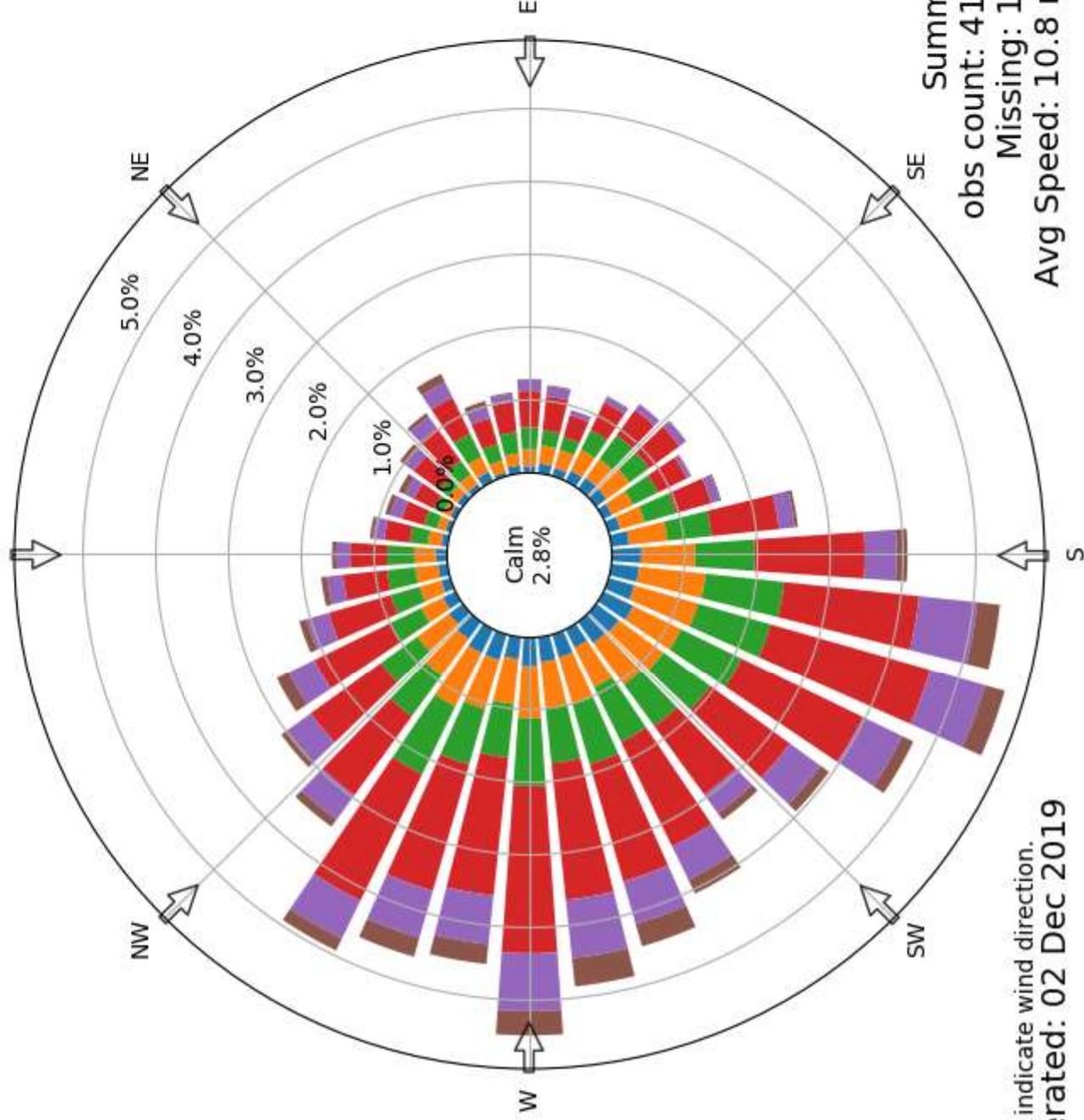
Arrows indicate wind direction.
 Generated: 02 Dec 2019



December  [View raw data](#)



[MDW] CHICAGO
Windrose Plot [Time Domain: Dec,]
Period of Record: 01 Dec 1970 - 02 Dec 2019



Summary
 obs count: 41737
 Missing: 1474
 Avg Speed: 10.8 mph

Arrows indicate wind direction.
Generated: 02 Dec 2019



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APPENDIX

A



DEPARTMENT OF PUBLIC HEALTH
CITY OF CHICAGO

May 3, 2017

Steven Caudle, Facility Manager
Kinder Morgan/Chicago Arrow Terminal
2926 E. 126th Street
Chicago, IL 60633

RE: Kinder Morgan/Chicago Arrow Terminal, 2926 E. 126th Street
Request for Variances from Air Pollution Control Rules and Regulations for Control of
Emissions from Handling and Storage of Bulk Material Piles

Dear Mr. Caudle,

The Chicago Department of Public Health ("CDPH") is in receipt of the June 11, 2014 submission from Kinder Morgan/Chicago Arrow Terminal ("Kinder Morgan"), requesting six variances from requirements of CDPH's Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Material Piles ("Bulk Material Regulations"), and supplemental materials in support of the variance request provided by Kinder Morgan dated August 25, 2014, March 2, 2015, April 1, 2015, and May 1, 2015. Pursuant to the Bulk Material Regulations, CDPH accepted written comments on the variance request during a comment period which was extended, upon request of the public, to September 2, 2014, as further described below.

In the March 2, 2015 letter, Kinder Morgan withdrew one of the six initial requests. The five remaining variance requests relate to the following regulations:

1. Fugitive Dust Monitoring: Kinder Morgan requested a variance from Section 3.0(4) of the Bulk Material Regulations, which requires the installation, operation, and maintenance of permanent, continuous Federal Equivalent Method (FEM) real-time PM10 monitors around the perimeter of the facility in accordance with specified requirements. Specifically, Kinder Morgan requested an extension of time until June 2016 to establish that its operations do not result in off-site fugitive dust emissions.

2. Wind Monitoring: Kinder Morgan requested a variance from Section 3.0(5) of the Bulk Material Regulations, which requires the installation, operation, and maintenance of a weather station or other permanent device to monitor and log wind speed and wind direction at the Facility. Specifically, Kinder Morgan requested permission to use aviation wind socks in place of a wind monitoring device.

3. High Wind Events: Kinder Morgan requested a variance from Section 5.0(4) of the Bulk Material Regulations, which requires that disturbance of outdoor piles be suspended during “high wind conditions.” Pursuant to Section 2.0(12), “high wind conditions” are “when average wind speeds exceed 15 miles per hour over two consecutive five minute intervals of time.” Kinder Morgan requested that the definition be changed to “15 knots,” in conjunction with its request to use aviation wind socks to detect wind speed and direction.

4. Transfer Points: Kinder Morgan requested a variance from Section 3.0(7) of the Bulk Material Regulations which requires all material transfer points to a) be totally enclosed; b) be operated with a water spray system; c) be vented to air pollution control equipment; or d) transfer only “moist material” in a manner that minimizes the exposed drop.

5. Dust Suppressant System – Freezing Weather Operations: Kinder Morgan requested a variance from Section 5.0(5)(b) of the Bulk Material Regulations, which requires facilities to apply chemical stabilizers and/or maintain and operate water spray bars, a misting system, water spray systems and/or water trucks to prevent fugitive dust emissions, and that when temperatures fall below freezing, the facility must use water heating systems and/or chemical stabilizers to ensure that dust suppression continues. Specifically, Kinder Morgan requested that this requirement not apply when temperatures fall below 32 degrees Fahrenheit.

SUMMARY OF CDPH VARIANCE DETERMINATIONS

As set forth in greater detail in subsequent sections of this document, following is a summary of CDPH’s determinations for each of Kinder Morgan’s variance requests:

1. Fugitive Dust Monitoring: With respect to Kinder Morgan’s request regarding installation of dust monitors, for the reasons set forth below, CDPH finds that Kinder Morgan has failed to meet the requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations for issuance of a variance, and the variance request is therefore denied. In summary, the basis for this determination includes, but is not limited to, CDPH’s finding that Kinder

Morgan has not demonstrated that issuance of the variance will not create a public nuisance or adversely impact the surrounding area.

Importantly, CDPH found that Kinder Morgan's implementation of its current Fugitive Dust Plan has not ensured the suppression of fugitive dust as evidenced by a recent City inspection. Further, the EPA metals study, referenced below, found evidence of manganese-containing dust coming from Kinder Morgan's facility. This information, combined with deficiencies identified in Kinder Morgan's supporting materials, leads CDPH to conclude that Kinder Morgan has not established that the facility's operations do not result in off-site fugitive dust emissions. Accordingly, the monitors required by Section 3.0(4) of the Regulations must be installed within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

2. Wind Monitoring and High Wind Events: With respect to Kinder Morgan's request regarding wind monitors and the associated definition of "high wind conditions," for the reasons set forth below, CDPH finds that Kinder Morgan has failed to meet the requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations for issuance of a variance, and the variance request is therefore denied. In summary, the basis for this determination includes, but is not limited to, CDPH's finding that, because of their limitations, wind socks are not an adequate substitute for a permanent, electronic wind monitoring device. Accordingly, Kinder Morgan must install a wind monitoring device that meets the requirements of Section 3.0(5) of the Bulk Material Regulations, within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

3. Transfer Points: In consideration of the facility's best management practices, and given that the PM-10 monitors will verify the effectiveness of its dust control measures, CDPH conditionally grants Kinder Morgan's variance request with regard to transfer points. CDPH grants the variance subject to the following conditions pursuant to Section 8.0(3)(c):

- 1) Kinder Morgan must always load silicon manganese and other moisture-sensitive alloys indoors, i.e. inside a four-walled, roofed building;
- 2) Kinder Morgan must ensure that a water source is always available for outdoor loading and unloading of non-moisture sensitive products, during non-freezing conditions; and

3) Kinder Morgan must ensure that all staff working at transfer points will watch for visible dust and adhere to the dust control procedures set forth in the facility's Fugitive Dust Plan¹, including the requirement to "cease operation if opacity or visible emission limits are reached and/or in question" as stated in Kinder Morgan's "Incremental Dust Control Procedures Decision Tree" document.

4. Dust Suppression System: As set forth below, and in consideration of the fact that PM-10 monitors will verify the effectiveness of Kinder Morgan's alternate dust controls, CDPH finds that any adverse impacts resulting from the suspension of dust suppressant application during freezing weather can be minimized with the addition of certain reasonable conditions. Therefore, CDPH grants Kinder Morgan's variance request regarding dust suppression system operation during freezing weather, subject to the following condition pursuant to Section 8.0(3)(c): Beginning November 1st and continuing through March 31st each year that bulk materials are stored or transferred outdoors, Kinder Morgan must assign on-site personnel to monitor for visible dust at all transfer points during freezing weather operations, and in the event visible dust is observed, immediately shut down such operations that are causing the visible dust, unless dust can be effectively suppressed in another manner in accordance with the approved Fugitive Dust Control Plan.

DETAILED DISCUSSION

I. Requirements for Issuance of a Variance

Under Section 8.0 of the Bulk Material Regulations, the burden of proof is upon the applicant for the variance to demonstrate that issuance of the requested variance will not create a public nuisance or adversely impact the surrounding area, the surrounding environment, or surrounding property uses. In the event that the applicant does not meet this burden, the variance request will be denied. Pursuant to Section 8.0(2), a variance request must be in writing and must set forth, in detail, all of the following (in pertinent part):²

¹ Please note that references to the Fugitive Dust Plan in this letter are not intended to imply that CDPH approves Kinder Morgan's Dust Plan in its entirety. CDPH will respond to the Dust Plan in a separate correspondence and notes that, in any event, the Dust Plan will need to be updated based on the terms in this variance response letter.

² Because the variance requests under review do not involve a request for an extension of time for full enclosure, requirement 8.0(2)(i) is not relevant to this discussion, and is therefore omitted.

- a) A statement identifying the regulation or requirement from which the variance is requested;
- b) A description of the process or activity for which the variance is requested, including pertinent data on location, size, and the population and geographic area affected by, or potentially affected by, the process or activity;
- c) The quantity and types of materials used in the process or activity in connection with which the variance is requested, as appropriate;
- d) A demonstration that issuance of the variance will not create a public nuisance or adversely impact the surrounding area, surrounding environment, or surrounding property uses;
- e) A statement explaining:
 - i. Why compliance with the regulations imposes an arbitrary or unreasonable hardship;
 - ii. Why compliance cannot be accomplished during the required timeframe due to events beyond the Facility Owner or Operator's control such as permitting delays or natural disasters; or
 - iii. Why the proposed alternative measure is preferable.
- f) A description of the proposed methods to achieve compliance with the regulations and a timetable for achieving that compliance, if applicable;
- g) A discussion of alternate methods of compliance and of the factors influencing the choice of applying for a variance;
- h) A statement regarding the person's current status as related to the subject matter of the variance request[.]

In addition, Section 8.0(3) of the Bulk Material Regulations sets forth the criteria for reviewing applications:

- a) In determining whether to grant a variance, the Commissioner [of CDPH] will consider public comments received pursuant to 8.0(4) and will evaluate the information provided in the application to meet the requirements of 8.0(2).
-

Particular consideration will be given to the following information:

- i. Inclusion of a definite compliance program;
 - ii. Evaluation of all reasonable alternatives for compliance;
 - iii. Demonstration that any adverse impacts will be minimal.
- b) The Commissioner may deny the variance if the application for the variance is incomplete or if the application is outside the scope of relief provided by variances.
 - c) The Commissioner may grant a variance in whole or in part, and may attach reasonable conditions to the variance to ensure minimization of any adverse impacts.
 - d) Issuance of a variance is at the sole discretion of the Commissioner. A variance may be revoked at any time if the Commissioner finds that operation of the Facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

II. Variance Process and Public Comments

In addition to the requirement that the Commissioner of CDPH ("Commissioner") consider public comments, as set forth in Section 8.0(3)(a) of the Bulk Material Regulations, Section 8.0(5) also provides that the Commissioner will not grant any variance until members of the public have had an opportunity to submit written comments on the variance application. This section further provides that public notice will be provided by publication in a newspaper of general circulation published within the City and by publication on the City's website, and that the Commissioner will accept written comments for a period of not less than thirty (30) days from the date of the notice.

On June 20, 2014, public notice of Kinder Morgan's variance request was provided by publication in the Chicago Sun-Times and on the City's website at www.cityofchicago.org/environmentalrules. This notice stated that, to be considered, written comments must be received by CDPH on or before July 21, 2014. On July 16, 2014, a subsequent public notice was published in the same manner, notifying the public that the comment period had been extended upon request of members of the public. The new deadline for public comments was September 2, 2014. During the public comment period, CDPH received two written submission from the public, which are posted on the website referenced above.

One of the comment letters was submitted on behalf of the Chemical Industry Council of Illinois (“CICI”) in support of the variance request. CICI stated that: “Almost all of the products handled at the terminal are stored indoors and do not create a risk for fugitive dust emissions. The primary product stored outdoors is pig iron, which poses a very small risk of fugitive dust emissions.” CICI further noted that Kinder Morgan offered alternative measures to control fugitive emissions and “rightly explained, for example, that there are technical limitations based on the types of products handled at the terminal and the configuration of the loading and unloading points.”

The other public comment letter, dated September 2, 2014, was submitted jointly by the Natural Resources Defense Council (“NRDC”) and the Southeast Environmental Task Force (“SETF”) (hereafter collectively referred to as “NRDC and SETF”). On March 10, 2017, NRDC submitted a supplement to the comments. The supplementary submissions are also posted on the above-referenced website.

In the September 2, 2014 letter, NRDC and SETF stated that the Kinder Morgan application was incomplete and failed to demonstrate that the requested variances would not have an adverse impact on the community and environment. In particular, NRDC and SETF stated that Kinder Morgan’s request to forego PM monitoring was premature since the company has not established that there are no off-site fugitive dust emissions. With regard to Kinder Morgan’s request to install a wind sock instead of a wind monitoring station, NRDC and SETF pointed out that a wind sock is not an acceptable substitute, as it “is not as protective of human health and the environment because it is incapable of detecting high wind events and deploying responsive measures at the mandated 15 mph wind speed.” Further, they stated that Kinder Morgan provided no cost estimates for installing a wind monitoring station, nor any financial information to demonstrate any hardship it would experience in order to comply. Finally, NRDC and SETF objected to Kinder Morgan’s request for a variance from dust suppression requirements when temperatures drop below 32 degrees, noting that the applicant did not explain why it cannot employ alternative dust suppression systems during freezing temperatures, especially because the highest average wind speed in Chicago occurs over the winter months.

As a supplement to these comments, NRDC submitted 1) an air quality monitoring study prepared by the United States Environmental Protection Agency (“EPA”), dated September 10, 2015, and 2) a copy of joint comments submitted on January 11, 2017 by NRDC, SETF, and the

Southeast Side Coalition to Ban Petcoke in opposition to S.H. Bell Company's variance application. Both of these documents are posted on the above-referenced website.

In the air quality monitoring study, EPA conducted a "Semi-continuous Ambient Metals Investigation" in Southeast Chicago with a particular focus on lead and toxic metals. While the study found no elevated lead concentrations, it did note a potential concern regarding manganese (Mn). EPA's report found that:

"Measured Mn concentrations were double the health comparison value previously used by EPA (108 ng/m³ as compared with the Reference Concentration of 50 ng/m³). However Mn was below the ATSDR Minimal Risk Level of 300 ng/m³ currently recommended by EPA. Follow-up monitoring closer to the fence line of the main Mn-contributing facility (Kinder Morgan) may be useful to characterize the maximum exposure level in the community. There are residences and a park immediately south of Kinder Morgan that may be experiencing metals concentrations significantly higher than what was measured in this study." [EPA Xact Metals Study: Southeast Chicago, p. 2.]

III. Variance Requests and Determinations Detailed Analysis

1. Fugitive Dust Monitoring.

A. Detailed Fugitive Dust Monitoring Variance Request: Kinder Morgan requested a variance from Section 3.0(4) of the Bulk Material Regulations, which requires installation and operation of permanent, continuous Federal Equivalent Method (FEM) real-time PM₁₀ monitors around the perimeter of all bulk material facilities. The company stated, "...based on the nature of the operations, the products handled, and the control measures that have been implemented to date, that fugitive dust emissions do not leave the property as a result of operational activities at the site." (June 11, 2014 Kinder Morgan Variance Request, p. 11.) Kinder Morgan further stated that "[r]ecognizing the difficulty of proving that no fugitive dust leaves the property, we request a variance in the form of a timeline extension of two (2) years to June 11, 2016," during which time the company would install additional control measures and monitor compliance through the use of visible observations. *Id.*

Following CDPH's request for additional information, Kinder Morgan noted that neither federal nor state law requires the installation of monitors and stated that it "believes in good faith

that it will be able to establish that its operations do not result in off-site fugitive dust emission” by June 2016. (May 1, 2015 Kinder Morgan Additional Information, p. 2.)

B. Analysis of Variance Request:

i. Minimization of Adverse Impacts. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. In this case, as pointed out by NRDC and SETF, more than 3,700 residents live within a one-mile radius of Kinder Morgan’s facility. Furthermore, densely populated residential streets and youth baseball fields are located directly to the south of the facility on the other side of 126th Street.

In its variance application, Kinder Morgan stated: “The properties of the products handled at the Chicago Arrow Terminal are the primary reason why the facility does not create the amount of fugitive dust as compared to Pet Coke and/or coal facilities.” (June 11, 2014 Kinder Morgan Variance Request, p. 12.) The company went on to provide information about the size and weight of some of its products. For example, with pig iron, the company stated that the “increased weight greatly reduces the potential for fugitive dust. The potential for fugitive dust will only occur when physically handling the product and controls are currently in place to address that process.” *Id.*

To control dust, the facility employs measures such as watering storage piles of “non-moisture sensitive” products, such as pig iron and aggregates (weather permitting), slow and careful loading and unloading operations, regular cleaning of roadways, storing material either indoors or, if outside, within 3-sided bins that are more than 50 feet from the property line, and other best management practices. *Id.* at 18-19. Products that cannot be watered are stored indoors. As Kinder Morgan stated, “Indoor storage is required for the majority of products handled at Chicago Arrow Terminal because these commodities must remain dry in order to maintain their value,” among other reasons. *Id.* at 9.

With regard to the request for a two-year extension, Kinder Morgan explained that it planned to pave all unpaved roads and install a baghouse in the truck loading building by June 11, 2016. (May 1, 2015 Kinder Morgan Additional Information, p. 3.) The company further stated that, “Because Arrow Terminal already uses the best available control measure, and

because Arrow terminal invested so much capital and time in controlling fugitive dust at the site, the PM-10 monitors are a poor use of its remaining capital resources and are unnecessary.” *Id.*

ii. Alternative Compliance Program. Instead of installing air monitors, Kinder Morgan stated that it would evaluate the effectiveness of its control measures using USEPA Method 9 and Method 22 visible emissions observations by trained and certified readers. As stated by Kinder Morgan, “Observations will be conducted at least quarterly as required by CDPH’s regulations and on a basis frequent enough to evaluate each new measure implemented.” (May 1, 2015 Kinder Morgan Additional Information, p. 3-4.)

C. CDPH Determination:

Upon review, CDPH finds that Kinder Morgan has not demonstrated that its dust control methods are effective to prevent fugitive dust from leaving the site. Therefore, this variance request is denied.

With regard to pig iron, while ingots may be heavier than other materials, CDPH disagrees that this material produces “almost no dust.” Indeed, it is commonly understood that pig iron has the potential to produce dust, which is why it is routinely watered during transport, handling, and storage. One of the concerns with pig iron is its tendency to corrode. As Kinder Morgan noted: “Greater corrosion means the product will create more dust.” (March 2, 2015 Kinder Morgan Additional Information, p. 6.)

In addition, in the variance request, Kinder Morgan acknowledged the potential for fugitive dust from pig iron “when physically handling the product.” (June 11, 2014 Kinder Morgan Variance Request, p. 12.) To reduce this dust, Kinder Morgan applies water to the stockpiles. (In the caption to a photo in the variance request, Kinder Morgan noted the difference in color between a pile that was being sprayed and a dry pile in the background. *Id.* at 18). The company also applies water prior to disturbing the materials during loading and unloading operations to reduce the potential for fugitive dust. *Id.* at 14-17.

Besides pig iron, the variance request described other materials stored outdoors as “certain aggregates.” (May 1, 2015 Kinder Morgan Additional Information, p. 2.) However, neither the request nor the supplemental materials explained what these aggregates are, what their properties are, and why they are purported to create very little dust.

With respect to the outdoor materials, Kinder Morgan noted that no water or other dust suppression is applied when temperatures fall below 32 degrees. During such conditions, the only means of dust control are operational practices such as “reduc[ing] the speed at which the product is handled.” *Id.* at 17. However, the variance request materials did not establish the effectiveness of these practices. In addition, there is some uncertainty about the consistency with which operator-controlled measures are employed. At a recent inspection (which occurred when temperatures were above 32 degrees and water, therefore, could be used), a CDPH inspector observed that the “access roads were very dry and dusty” and noted “track-out on 126th Street.” The inspector also recorded that “I observed truck wheels driving through, picking up and dispersing dust.” In addition, the inspector stated, “I did not observe any sweeper nor water truck in operation as at the time of this inspection.... According to the daily street sweeper/water truck log obtained from the facility; between January 2016 to August 2016, there was no indication or record that water was applied on the roads (the log only indicated sweeping).” (See the CDPH inspection report dated December 2, 2016, attached hereto as Exhibit A.)

With regard to ferroalloys, including ferro silicon and silicon manganese, Kinder Morgan noted that these materials are moisture sensitive and, therefore, cannot be watered as a means of dust control. These materials are stored indoors. However, they are routinely unloaded from barges outdoors before being transported to the storage buildings. Therefore, there is still a potential for dust to be released from the handling of these materials.

In fact, as noted by NRDC, the United States EPA conducted dust monitoring in Southeast Chicago from December 12, 2014 to July 23, 2015. In the September 10, 2015 report describing the results of the study, EPA noted elevated levels of manganese. (A copy of the EPA Report is attached hereto as Exhibit B.) Based on an analysis of wind direction and wind speed, the report specifically identified Kinder Morgan as “the main Mn-contributing facility.” (EPA Report, p. 2.) The report further stated, “There appear to be two distinct hot spots: one around Kinder Morgan....” *Id.* at 8. Further, “Kinder Morgan stores and processes ferro-alloys on site. Material unloading occurs during typical business hours, which is consistent with peak Mn values shown on Figure 7.” *Id.*

Thus, the presence of manganese-containing dust in areas directly downwind of Kinder Morgan’s facility is a strong indication that fugitive dust is leaving the facility’s property.

Manganese-containing materials are of particular concern given the potential health hazard from inhalation of manganese-containing dust.

The Bulk Material Regulations require monitors to confirm compliance with the regulations. As stated in Section 3.0(4) of the Bulk Material Regulations, installation of the specified monitors is required “[u]nless, pursuant to the Variance procedure set forth in 8.0 below, the Facility Owner or Operator establishes that the Facility’s operations do not result in off-site fugitive dust emissions.” For example, if a facility establishes that the material it handles is uniquely dust resistant when handled properly, or that the dust emissions are effectively contained, captured, or controlled, then a variance might be appropriate. In this case, the information submitted in support of the variance application did not include such evidence.

With regard to Kinder Morgan’s proposal to demonstrate compliance through visible emissions monitoring, CDPH notes that the Bulk Material Regulations require both perimeter air monitors and quarterly opacity and visibility observations. (See Section 3.0(f)(ii) of the Bulk Material Regulations.) Routine visible monitoring is important in order to ensure that dust controls are working on a localized level. However, it does not take the place of permanent fence line monitors which operate continuously, regardless of weather conditions or the hour of the day or night.

As expressed in CDPH’s Official Response to Public Comments on the Proposed Bulk Material Regulations, on March 13, 2014:

The requirement for fugitive dust monitoring is a critical component of the regulations to ensure that the facility’s dust control measures are working. City inspectors cannot observe facility operations on a daily basis. And facility workers who are occupied in doing their jobs may not always realize when there is a dust problem. Therefore, the PM monitors are important for alerting facility operators when there might be an issue with their dust control systems. They are also important to ensure compliance with the fugitive dust prohibition, as well as to give neighbors a level of comfort in knowing that the air is being monitored. [p. 23.]

Thus, Kinder Morgan’s proposal to rely solely on visible monitoring is not an adequate substitute for permanent PM10 monitors.

For the reasons set forth above, with respect to its request not to be required to install continuous FEM PM10 dust monitors, CDPH finds that Kinder Morgan has failed to meet the

requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations for issuance of a variance, and the variance request is therefore denied. Accordingly, Kinder Morgan must submit a dust monitoring plan to CDPH, and install dust monitors in accordance with the requirements of Section 3.0(4) of the Bulk Material Regulations, within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

2. Wind Monitoring and High Wind Events:

A. Detailed Wind Monitoring and High Wind Events Variance Request: Kinder Morgan requested a variance from Section 3.0(5) of the Bulk Material Regulations, which requires the installation, operation, and maintenance of a weather station or other permanent device to monitor and log wind speed and wind direction at the Facility. Specifically, Kinder Morgan requested permission to use aviation wind socks as a visual indicator of wind speed rather than installing an electronic monitoring system.

Because aviation windsocks are rated to 15 knots, which is equal to approximately 17.3 miles per hour, Kinder Morgan also requested a variance from Section 5.0(4) of the Bulk Material Regulations, which requires that disturbance of outdoor piles be suspended during “high wind conditions,” unless alternate measures are implemented to effectively control dust in accordance with the approved Fugitive Dust Control Plan. Pursuant to Section 2.0(12), “high wind conditions” are “when average wind speeds exceed 15 miles per hour over two consecutive five minute intervals of time.” Thus, Kinder Morgan requested that a high wind event be defined as wind speeds in excess of 15 knots instead of 15 miles per hour.

B. Analysis of Variance Request:

i. Minimization of Adverse Impacts. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. Kinder Morgan stated that using wind socks instead of an electronic weather station “provides greater protection to the environment than the City’s regulations,” because facility personnel will immediately know when a high wind event occurs, rather than needing to wait for two subsequent five-minute intervals. (June 11, 2014 Kinder Morgan Variance Request, p. 22.) Kinder Morgan further

stated that using an alternate form of measuring and recording wind speed and direction will not create a public nuisance or adversely impact the surrounding area because: “The processes and procedures already in place at Chicago Arrow Terminal reduce the risk of off-site fugitive dust emissions.” *Id.* at 12. Kinder Morgan also noted that it will still be required to comply with other local, state, and federal environmental regulations. *Id.* at 11.

ii. Alternative Compliance Program. As stated above, Kinder Morgan proposes installing aviation wind socks in place of a wind monitoring device. Kinder Morgan stated that: “This method of measuring wind speed is preferable for our operations, because it would allow any employee anywhere on the property to immediately assess the wind conditions and determine whether it is necessary to utilize heightened control measures.” *Id.* at 21. The company also noted that “wind socks are more convenient, more accurately reflect wind speed, and are easier for supervisors and operators to check throughout the facility.” (April 1, 2015 Kinder Morgan Additional Information, p. 2.) Kinder Morgan provided information from the Federal Aviation Administration regarding specifications for the wind socks. *Id.* The company also provided a sample Supervisor Wind Speed Monitoring log to show how a supervisor will note wind speed and direction four times throughout each shift. (June 11, 2014 Kinder Morgan Variance Request, p. 46.)

C. CDPH Determination:

While CDPH appreciates the convenience and immediacy of using wind socks as a visible indicator of wind speed and direction, CDPH finds that, because of their limitations, wind socks are not an adequate substitute for permanent, electronic weather devices. For one, the proposed wind socks can indicate only one wind speed: 15 knots. As pointed out in a public comment letter, changing the high wind event trigger to 15 knots is not as protective of human health and the environment because this speed is less than the 15-miles-per-hour standard set forth in the regulations. Secondly, there is no digital reader or other device to automatically record and preserve the information detected by the wind socks. Manual documentation of high wind conditions is not as reliable as continuous electronic data gathering since it is subject to human error. Moreover, it is not clear that there is any reliable way to verify the accuracy of information noted on a handwritten daily shift log.

In addition, verifiable and permanent documentation of wind direction and speed is needed to inform the placement of the PM-10 monitors. The Bulk Material Regulations provide, in Section 3.0(4)(b), that, after the first year of monitoring:

“During the second and subsequent years of monitoring, monitors shall be placed in accordance with an approved dust monitoring plan that shall be based on the data observed in the first year, with monitors located at a minimum of two upwind and two downwind locations and additional monitors as appropriate depending on the size of the facility and other relevant factors such as variability of wind direction at the site and the proximity of neighborhoods.”

Furthermore, in its objection to installing PM-10 monitors, Kinder Morgan argued that “the monitors will not accurately reflect PM-10 on the property because there are multiple major fugitive dust emission sources within one mile of the facility.” (May 1, 2015 Kinder Morgan Additional Information, p. 5.) However, with detailed wind information, the facility will be able to compare data from upwind and downwind monitors and, thus, will know when and if dust has blown onto its site from off-site locations.

Kinder Morgan is free to utilize wind socks for on-the-spot information as a supplement to a permanent weather station if it chooses to do so. However, CDPH finds that Kinder Morgan has not demonstrated that its proposal will not result in adverse impacts and, thus, has not met the requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations. Therefore, the variance request is denied. Accordingly, Kinder Morgan must install a wind monitoring device that meets the requirements of Section 3.0(5) of the Bulk Material Regulations, within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

3. Transfer Points:

A. Detailed Transfer Points Variance Request: Kinder Morgan requested a variance from Section 3.0(7) of the Bulk Material Regulations which requires all material transfer points to meet one of four requirements. They must: a) be totally enclosed; b) be operated with a water spray system; c) be vented to air pollution control equipment; or d) transfer only “moist material” in a manner that minimizes the exposed drop. Kinder Morgan stated that: “Given the

nature of the products handled and the configuration of the Terminal, we cannot comply with Subpart 7.” (June 11, 2014 Kinder Morgan Variance Request, p. 24.) Instead, the company stated it would use alternative measures to control emissions from transfer points, reiterating that the “dense nature of the products we handle combined with administrative and engineering controls will allow us to mitigate the possibility of fugitive dust.” *Id.* With regard to alloys, Kinder Morgan stated that: “Wetted alloys are a major safety concern for the customers, primarily steel mills, because the potential for molten melt splash which can lead to catastrophic explosions.” (March 2, 2015 Kinder Morgan Additional Information, p. 4.) In response to CDPH’s request for additional information, the company provided documentation that these products cannot become wet. *Id.*

B. Analysis of Variance Request:

Minimization of Adverse Impacts and Alternative Compliance Program. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. As mentioned above, Kinder Morgan stated that it can successfully control fugitive emissions at all transfer points through the use of the best management practices described in its Fugitive Dust Plan and as highlighted below.

Kinder Morgan identified the following transfer points at its facility: 1) barge unloading; 2) railcar loading; and 3) truck loading, and stated that barge loading and railcar and truck unloading occur very infrequently. (March 2, 2015 Kinder Morgan Additional Information, p. 3.) The company stated that “truck loading operations for all alloys and other moisture-sensitive materials are performed indoors.” *Id.* at 4. However, later the company stated that “these products are *almost always* loaded indoors.” *Id.* (Emphasis added.) Kinder Morgan did not provide any reason why said materials cannot always be loaded indoors.

With regard to pig iron and aggregates, Kinder Morgan stated that it “ensures that the product is wet, either by wetting with the water truck or by natural means, before truck loading operations begin or before the product is moved within the facility.” *Id.* Further, unless dust is “suppressed by other natural factors (snow and ice), the pig iron will be wetted as part of the unloading process, before it is placed on the outdoor pad.” *Id.* at 4-5.

With regard to barge unloading and railcar loading of moisture-sensitive materials, the company stated it implements comprehensive fugitive dust control measures, including “closing all but three barge lids during barge unloading operations during all weather conditions, even during low wind conditions, filling the unloading bucket only part way during barge unloading operations, closing all port holes except one to the railcar during railcar loading operations, and employing trained opacity readers on site.” *Id.* at 3. In addition, Kinder Morgan stated that it installed a cover on the railcar conveyor. *Id.*

Notably, Kinder Morgan also submitted a document entitled “Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products.” (March 2, 2015 Kinder Morgan Additional Information, Exhibit E.) Among other steps, this document provides that, at any wind speed, workers are to “Utilize ‘You Can Stop’ when visible emissions and/or opacity are in question.” *Id.* Further: “Any transfer point will cease operation if opacity or visible emission limits are reached and/or in question, until corrective actions are taken.” *Id.*

C. CDPH Determination:

Based on Kinder Morgan’s description of its loading and unloading activities in its March 2, 2015 letter, it appears that most transfer operations at the facility do meet the requirements of the Bulk Material Regulations in that the transfers either occur indoors (in the case of moisture-sensitive materials) or they are subject to a watering system (in the case of pig iron and aggregates). Therefore, it appears a variance is needed only for barge unloading and occasional train loading of alloys and other “moisture-sensitive materials.”

In consideration of the facility’s best management practices, and given that the PM-10 monitors will verify the effectiveness of the dust control measures, CDPH conditionally grants the variance request with regard to transfer points. CDPH grants the variance subject to the following conditions pursuant to Section 8.0(3)(c):

- 1) Kinder Morgan must always load silicon manganese and other moisture-sensitive alloys indoors, i.e. inside a four-walled, roofed building;
- 2) Kinder Morgan must ensure that a water source is always available for outdoor loading and unloading of non-moisture sensitive products, during non-freezing conditions; and
- 3) Kinder Morgan must ensure that all staff working at transfer points will watch for visible dust and adhere to the dust control procedures set forth in the facility’s Fugitive Dust

Plan, including the requirement to “cease operation if opacity or visible emission limits are reached and/or in question” as stated in Kinder Morgan’s “Incremental Dust Control Procedures Decision Tree” document.

In accordance with Section 8.0(3)(d) of the Bulk Material Regulations, CDPH reserves the right to revoke this variance if the Commissioner finds that operation of the facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

4. Dust Suppression System – When temperatures fall below 32 degrees:

A. Detailed Dust Suppression System Variance Request: Kinder Morgan requested a variance from Section 5.0(5)(b) of the Bulk Material Regulations, which requires facilities to apply chemical stabilizers and/or maintain and operate water spray bars, a misting system, water spray systems and/or water trucks to prevent fugitive dust emissions, and that when temperatures fall below freezing, the facility must use water heating systems and/or chemical stabilizers to ensure that dust suppression continues. Specifically, Kinder Morgan requested that this requirement not apply when temperatures fall below 32 degrees Fahrenheit.

As mentioned above, Kinder Morgan handles moisture-sensitive alloys which are generally stored and loaded indoors. Regarding materials that are stored outdoors, pig iron and aggregates, Kinder Morgan stated that: “During the winter months the application of water as a suppressant would create a potential safety hazard to our operators and third party truck drivers coming on site due to the creation of ice and subsequent reduction in traction. Chemical additives cannot be used for items destined for steel mills, as it can compromise the product and create health hazards when introduced to the mill.” (June 11, 2014 Kinder Morgan Variance Request, p. 29.)

In response to CDPH’s request for additional information, Kinder Morgan further stated that it “cannot use chemical dust suppressants when the temperature falls below freezing for several reasons. First, certain chemical dust suppressants contain salt, which will cause the pig iron to corrode much faster. ... Second, certain chemical dust suppressants are crusting agents, which will cause the pig iron ingots to stick together,” making it infeasible and unsafe to load. “Third, the chemical dust suppressants will change the chemical make-up of the pig iron.” (March 2, 2015 Kinder Morgan Additional Information, p. 6.)

With regard to the possibility of installing a watering system with heated water, Kinder Morgan noted that this “would require major changes to our infrastructure, including diverting water to the city water district, building a boiler/steam room in order to heat the pipes during the winter and applying for new permits in order to handle water potentially contaminated with chemicals to reduce the freezing point. This boiler/steam room would have to be powered and run 24/7 throughout the winter creating noise pollution combined with increased consumption of fossil fuels.” (June 11, 2014 Kinder Morgan Variance Request, p. 29-30.)

B. Analysis of Variance Request:

i. Minimization of Adverse Impacts and Alternative Compliance Program. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. Kinder Morgan stated that it will “utilize a water truck to spray outdoor storage piles in order to minimize fugitive dust during periods of warmer temperatures,” and that it will otherwise employ a number of best management practices. *Id.* at 30. The best management practices include minimizing the amount of product handled per scoop or bucket while discharging barges, slowly and gently maneuvering the excavator bucket when loading dump trucks, and storing pig iron in six-foot-high 3-sided concrete bins. *Id.* at 18-19.

The company also follows a decision tree which provides that non-moisture sensitive products will be loaded indoors if weather does not permit water suppression and the material is not already snow-covered or frozen, and further notes that activities will cease if opacity or visible emissions are in question. (March 2, 2015 Kinder Morgan Additional Information, Exhibit E.)

C. CDPH Determination:

Based on the considerations set forth above, and given that the PM-10 monitors will verify the effectiveness of its dust control measures, CDPH conditionally grants Kinder Morgan’s variance request regarding the application of dust suppressants during freezing conditions. CDPH grants the variance subject to the following condition pursuant to Section 8.0(3)(c): Beginning November 1st and continuing through March 31st each year that bulk materials are stored or transferred outdoors, Kinder Morgan must assign on-site personnel to

monitor for visible dust at all transfer points during freezing weather operations, and in the event visible dust is observed, immediately shut down such operations that are causing the visible dust, unless dust can be effectively suppressed in another manner in accordance with the approved Fugitive Dust Control Plan.

In accordance with Section 8.0(3)(d) of the Bulk Material Regulations, CDPH reserves the right to revoke this variance if the Commissioner finds that operation of the facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

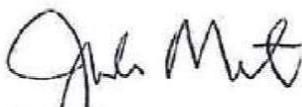
CONCLUSION

CDPH's determinations regarding Kinder Morgan's variance requests will be effective as of the date of this letter, and will be posted, along with appendices and supporting materials, on CDPH's website at www.cityofchicago.org/environmentalrules. Please be advised that if Kinder Morgan fails to comply with the Bulk Material Regulations within the timeframes provided above, Kinder Morgan will be subject to enforcement action including daily fines in the amount of \$1,000 to \$5,000 per violation as provided by Section 11-4-810(a)(7) of the Chicago Municipal Code. Furthermore, CDPH may issue a summary abatement order pursuant to Section 11-4-025(c) of the Chicago Municipal Code, requiring Kinder Morgan to correct any violations within a timeframe prescribed by the Commissioner.

Finally, in accordance with Section 8.0(3)(d) of the Bulk Material Regulations, CDPH reserves the right to revoke the variances granted herein if the Commissioner finds that operation of the facility pursuant to a variance is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

Please contact Assistant Commissioner Dave Graham at (312) 745-4034 if you have any questions regarding the above.

Sincerely,



Julie Morita, M.D.
Commissioner

cc: Mort Ames, DOL

Attachments

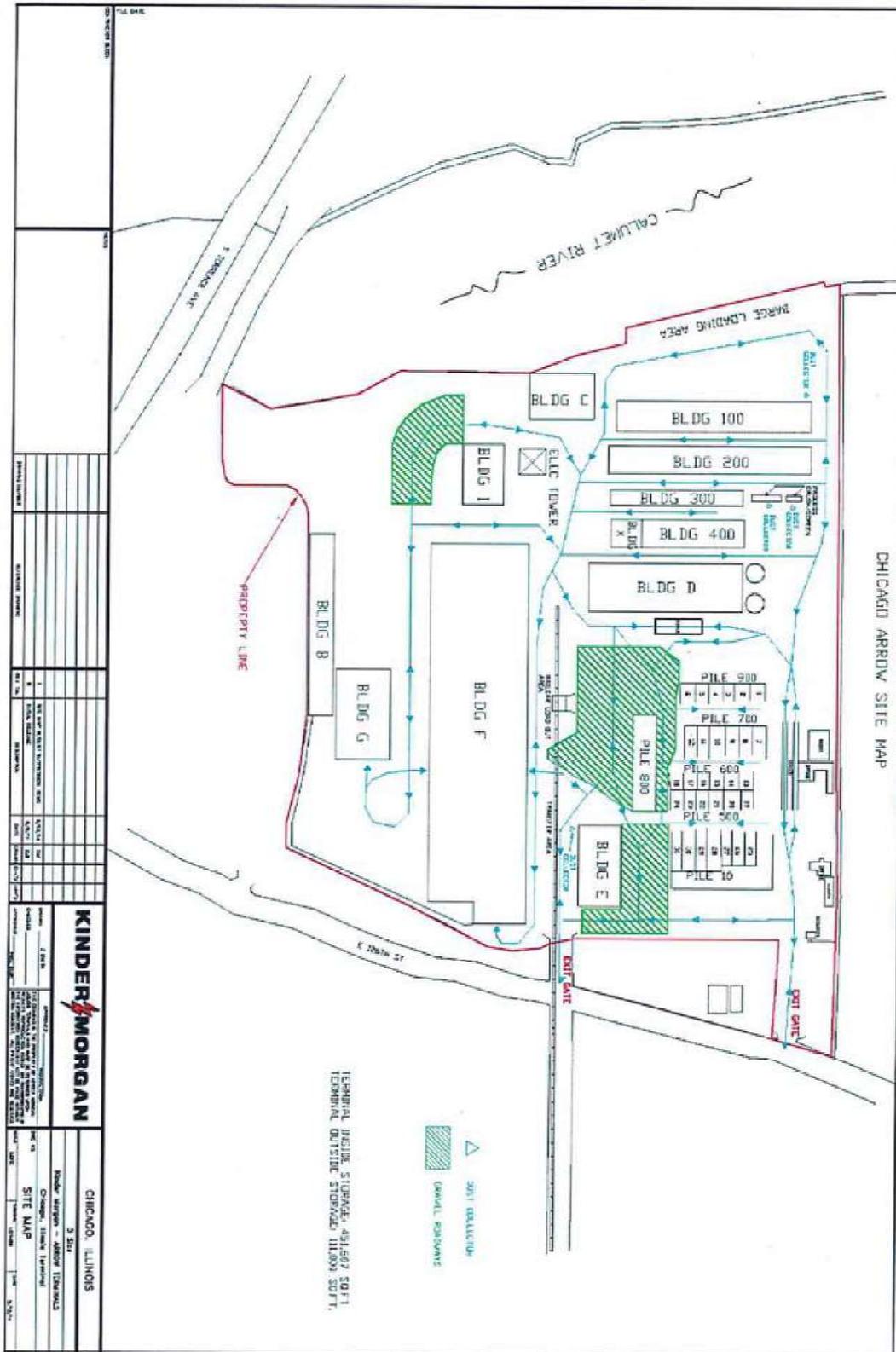
Exhibit A - CDPH inspection report, December 1, 2016

Exhibit B – EPA Study (“Xact Metals Study: Southeast Chicago), September 10, 2015

APPENDIX

B

Chicago Arrow Terminal – General Facility Site Arrangement Diagram



APPENDIX

C

Chicago Avenue Terminal 2926 126th Street Chicago, IL 60633												
Storage Capacity Calculations												
Inside Storage												
Storage Locations	Length, ft	Width, ft	Total Sq. Feet Area	Approximate Height	Maximum Height	Total # of Bays or Bins	Maximum Density, lbs/cu.foot	Normal Storage Tons/ Bin	Total Normal Storage, Tons	Total Area, Cubic feet	Maximum Average Storage At 20 feet	Comments
Building B	401	53	21253	N/A	30	0	N/A	0	0			Pig material not bulk
Building C (Coke/Coal Cell Bldg.)	120	100	12000	20	30	12	200	600	6600	73260	10250	
Building D (Clearspan)	300	100	30000	20	30	24	200	833	19992	471000	65340	
Building E (Packaging Building)	160	60	14400	N/A	N/A	0	N/A	0	0			No Storage only Packaging
Building F (90 Bin)	340	200	168000	20	30	90	200	1500	135000	1682400	516970	
Building G	200	100	20000	20	30	18	200	740	13320	209333	29307	
Building H (Barging Room)	95	64	6080	N/A	N/A	0	N/A	0	0			No Storage only Packaging
Building I	120	100	12000	20	30	10	200	600	6000	73260	10250	
Building K	75	60	4500	N/A	N/A	0	N/A	0	0			No Bulk Material in Building
100 Bin Building	215	64	138240	20	30	32	200	570	18240	435078	58511	
200 Bin Building	400	64	25600	20	30	40	200	640	25600	877333	117227	
300 Small Len Bin Building	265	30	7950	20	30	54	200	200	6800	367511	51452	
400 Bin Building	161	64	11584	20	30	18	200	644	11592	171449	24009	
			Total Square feet					Total Inside Storage	248144		885509	
Outside Storage												
Storage Locations	Length, ft	Width, ft	Total Sq. Feet Area	Approximate Height	Maximum Height	Total # of Bays or Bins	Maximum Density, lbs/cu.foot	Normal Storage Tons/ Bin	Total Normal Storage, Tons	Total Area, Cubic feet	Maximum Average Storage At 20 feet	Comments
500 Pads	200	100	20000	20	30	7	200	1429	10063	209333	29307	Pig Iron
600 Pads	200	100	20000	20	30	12	200	1111	13332	209333	29307	Pig Iron
700 Pads	200	100	20000	20	30	14	200	952	13328	209333	29307	Pig Iron
800 Pads	200	50	10000	20	30	1	120	13200	13200	253293	15198	Aggregate Storage
900 Pads	200	100	20000	20	30	6	200	1250	10000	209333	29307	Pig Iron
10 Pads	200	100	20000	20	30	1	200	1250	1250	209333	29307	Pig Iron
			Total Square feet					Total Outside Storage, Tons	61113		161731	

APPENDIX

D

Xact Metals Study: Southeast Chicago

Report Prepared by:

Motria Caudill
Region 5 Air and Radiation Division

Field Work Conducted by:

Scott Hamilton, Chad McEvoy, Bilal Qazzaz, & Anthony Ross
Region 5 Air and Radiation Division

Field monitoring requested by:

Enforcement and Compliance Branch
Region 5 Air and Radiation Division

Dates of field monitoring:

December 12, 2014 to July 23, 2015

Report Authorized by:

Michael Compher, Chief
Air Monitoring and Analysis Section
Region 5 Air and Radiation Division

Date

Southeast Chicago, Illinois, Semi-continuous Ambient Metals Investigation
Principal Investigator, Motria Caudill, PhD
September 10, 2015

Executive Summary and Background

The main objective of this study was to determine whether residents of the South Deering neighborhood are potentially exposed to lead (Pb) above the National Ambient Air Quality Standard (NAAQS) or toxic metals above acute and chronic health comparison levels. There is a long-term Pb and toxic metals monitor operated by Illinois EPA at Washington High School in this community. The station has shown that Pb concentrations are well below the NAAQS. Historic concentrations of manganese (Mn) have exceeded health comparison values and multiple industrial sources are potentially contributing Mn emissions.

The EPA metals trailer was deployed at Rowan Park, directly south of Washington High School, from December 12, 2014 to July 23, 2015. Pb concentrations during the study averaged 16 ng/m³, which is well below the NAAQS. Arsenic (As) was measured with a peak 8-hour concentration of 15 ng/m³, which is equal to California EPA's Reference Exposure Level (REL). The full-study As concentration was below the chronic health benchmark. It does not appear that As is a significant issue in this area.

Measured Mn concentrations were double the health comparison value previously used by EPA (108 ng/m³ as compared with the Reference Concentration of 50 ng/m³). However Mn was below the ATSDR Minimal Risk Level of 300 ng/m³ currently recommended by EPA. Follow-up monitoring closer to the fence line of the main Mn-contributing facility (Kinder Morgan) may be useful to characterize the maximum exposure level in the community. There are residences and a park immediately south of Kinder Morgan that may be experiencing metals concentrations significantly higher than what was measured in this study.

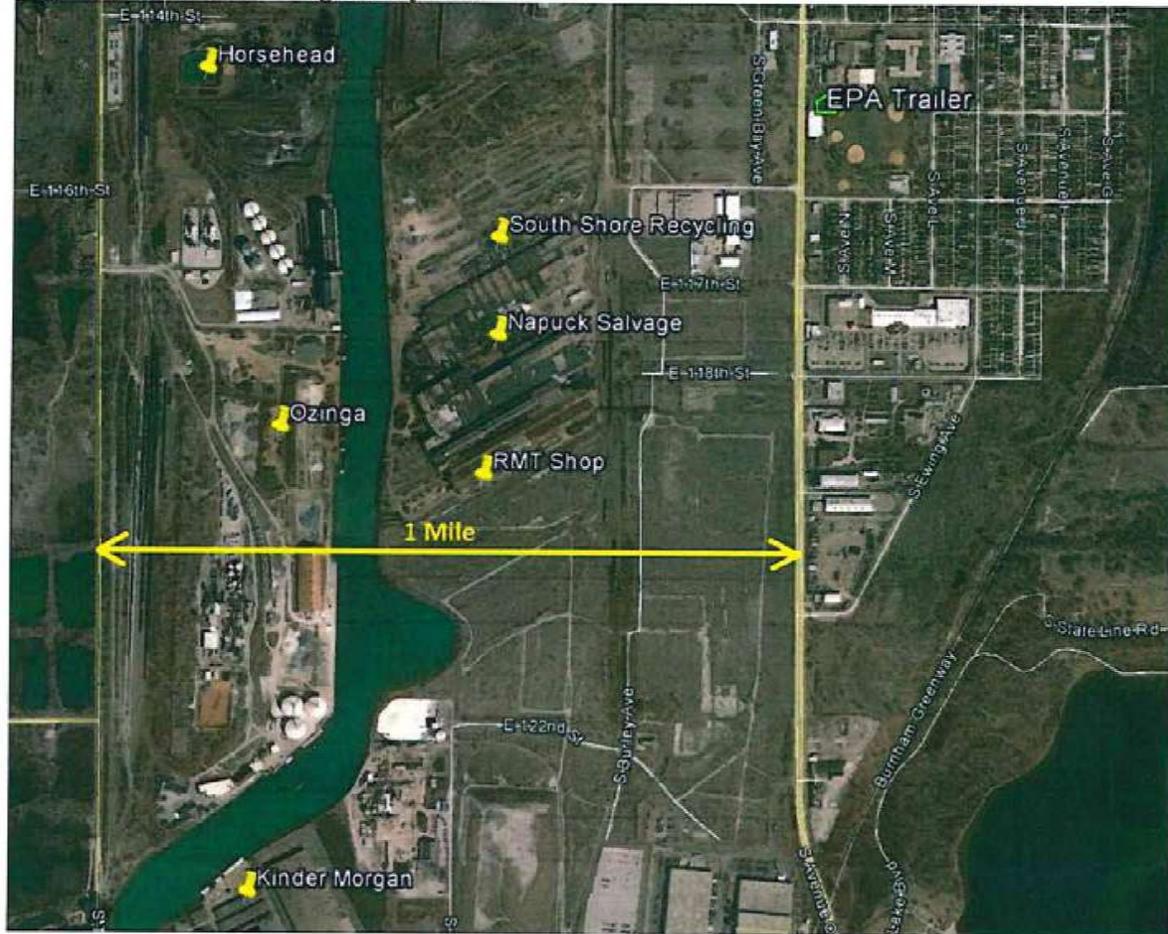
Study Design

Study background and methodology are documented in the Quality Assurance Project Plan "Southeast Chicago, Illinois, Semi-continuous Ambient Metals Investigation" version 1.0 dated December 11, 2014. The EPA trailer was deployed on Chicago Park District property in Rowan Park. See map on Figure 1. Several metallurgic industries and bulk storage facilities are located between 0.5 and 1.5 miles west, southwest, and northwest of the monitoring station.

Quality Assurance Review

Metals measurements were of sufficient quantity and quality for project objectives. Results from each individual sample hour were quality-checked according to the EPA Xact Standard Operating Procedures and study QAPP. Specific quality assurance criteria and findings are described below.

Figure 1. Southeast Chicago Study Area



1) Data completeness should be $\geq 75\%$, or 1620-2160 samples, over a 90 day period;

- The EPA metals trailer operated from December 12, 2014 through July 23, 2015. There were 15 hours of data invalidated because the sample flow rate was below acceptable limits. The metals monitor was offline briefly during routine field visits for equipment maintenance and due to occasional technical issues. No data were collected between March 20 and May 12, 2015 because of an electrical problem that was subsequently corrected. A total of 3932 valid samples were collected over a period of 223 days or 5344 possible samples. Completeness was $3932/5344 * 100\% = 73.6\%$.

2) The lowest non-zero values reported in this study should be equal to or lower than the detection limits (DLs) specified in the instrument manual. DLs and lowest reported values are shown below on Table 1.

- Lead and toxic metals were measured well below expected DLs during this study.

Table 1. Metals DLs and lowest reported concentration of toxic metals in Chicago study, ng/m³

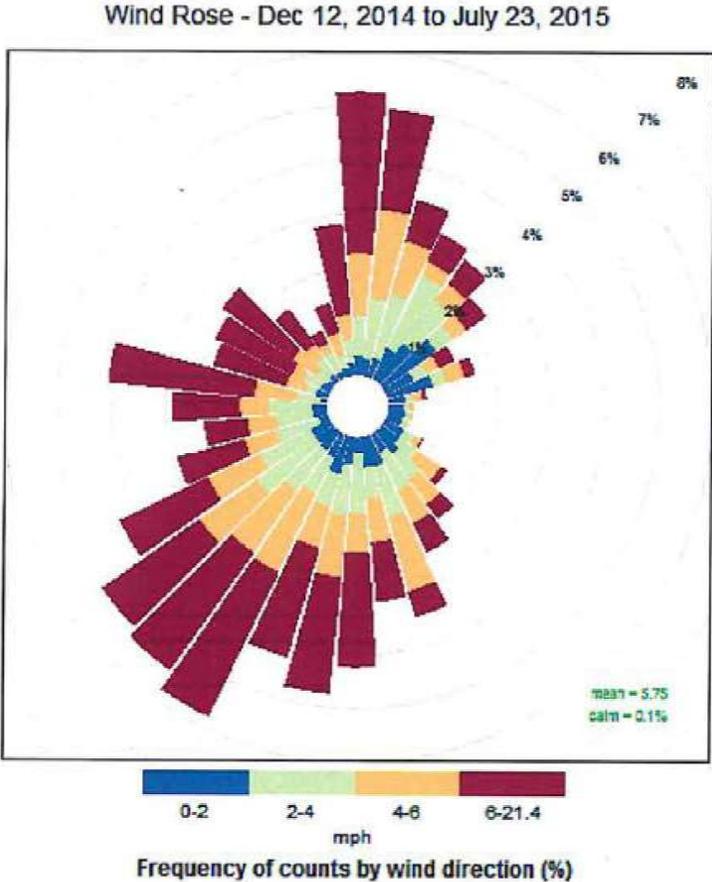
<u>Metal</u>	<u>DL</u>	<u>Lowest Reported</u>
Arsenic	0.051	0.001
Lead	0.099	0.547*
Manganese	0.077	0.219
Nickel	0.083	0.001
Chromium	0.092	0.003
Cadmium	1.138	0.049
Mercury	0.0912	0.001

* There were no nondetects for Pb in this study.

3) Sufficient samples should be collected when the predominant wind direction is from the target source(s).

- West, southwest, and northwest winds were the most desirable for this study because they resulted in the metals trailer being downwind of various industries along the Calumet River. A wind rose is shown on Figure 2. Winds were predominantly from the southwest, south, and north. The monitor site was directly downwind of target industries about 50% of the study period.

Figure 2. Study period wind rose



Study Findings

Concentrations for 20 metals monitored as TSP are summarized below on Table 2. These metals had nondetect rates between zero and 79%, which is acceptable for data analysis. Antimony, cobalt, and thallium had nondetect rates over 95% and thus were not included in the data analysis.

Table 2. SE Chicago, Illinois, metals data summary

Element, Symbol	Nondetect rate, %	Average, ng/m ³	Health Comparison Value, ng/m ³
Arsenic, As	73	0.46	2.3 ^b
Barium, Ba	10	11	
Bromine, Br	0	7.0	
Cadmium, Cd	0	4.0	5.6 ^b
Calcium, Ca	0	3665	
Chromium, Cr	11	8.9	42 ^{bc}
Copper, Cu	0	19	
Iron, Fe	0	1760	
Lead, Pb	0	16	(see NAAQS)
Manganese, Mn	0	108	300 ^d
Mercury, Hg	39	0.18	300 ^d
Molybdenum, Mo	0	22	
Nickel, Ni	2	2.4	42 ^b
Potassium, K	0	224	
Rubidium, Rb	14	0.61	
Selenium, Se	10	0.61	20,000 ^d
Strontium, Sr	0	9.8	
Thorium, Th	79	0.27	
Titanium, Ti	0	48	
Zinc, Zn	0	192	
a) Averages calculated using zeroes in place of nondetects.			
b) Concentration equivalent to 10-in-1-million excess cancer risk.			
c) Assuming 2% of chromium is in most toxic hexavalent form.			
d) Reference concentration (RfC) for noncancer health effects.			

The Pb NAAQS is violated when any 3-month rolling average is higher than 150 ng/m³ meter. EPA defines the *potential* to exceed the NAAQS as short-term monitoring or modeling with results greater than 50% of the NAAQS (75 ng/m³). For air toxics, monitoring data are compared against health screening values for long-term (full study average) and short-term (1-hour, 8-hour, 24-hour, and 14-day peaks) health effects, as described on the below EPA website “Dose-Response Assessment for Assessing Health Risks Associated With Exposure to Hazardous Air Pollutants”. Full-study averages and the long-term health comparison values are shown above in Table 2. There are a short-term health comparison values for only three toxic

metals: 1) Arsenic has California EPA Reference Exposure Levels (RELs) for 1-hour peaks (200 ng/m³) and 8-hour peaks (15 ng/m³); 2) Cadmium has an ATSDR acute Minimum Risk Level (MRL) for 1-14 days (30 ng/m³); and 3) Nickel has an intermediate MRL for 14-365 days (200 ng/m³).

<http://www2.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants>

Metals risk screening results

Lead concentrations over the full study averaged 16 ng/m³, which is notably lower than 50% of the NAAQS (75 ng/m³). According to the data reported at IEPA's adjacent Washington High School site, the highest Pb 3-month average in 2011-13 was 50 ng/m³. Also, the 24-hour averages of EPA's Pb monitoring were found to correlate well with IEPA's findings for samples collected between December 2014 and June 2015. For matching sample dates, the relative percent difference (RPD) was 39% with IEPA's results higher. This amount of discrepancy is to be expected for a pollutant with concentrations that are not much higher than the detection limits. In contrast, the RPD for Mn was 13% higher at the IEPA site during the study period.

Short-term and intermediate health comparison values were not exceeded for cadmium and nickel. The highest 24-hour cadmium average was 6 ng/m³, compared with the 30 ng/m³ MRL. The highest 14-day nickel concentration was 5 ng/m³, compared with the 200 ng/m³ MRL.

Arsenic (As) concentrations did not exceed the 1-hour REL (200 ng/m³), however there was a 1-hour measurement at 1 PM on January 27th of 93 ng/m³. When averaged over 8 hours, the concentration was 15 ng/m³, equal to the 8-hour MRL. The wind direction at this time was from the northeast. The area north and east of the monitor is not industrialized and there is no apparent explanation for the spike. Other elevated As concentrations tended to emanate from the industrial areas southwest of the monitor station.

The average manganese concentration was 108 ng/m³, which is one-third of the health comparison value currently used by EPA, the ATSDR MRL of 300 ng/m³. The manganese average is twice as high as the EPA RfC previously used for health screening (50 ng/m³). The measured levels are consistent with historic data reported at the Washington High School station.

Metals source contributions

The arsenic frequency distribution plot on Figure 3 shows the approximate location of the January spike northeast of the monitor station (in red), the less extreme values to the southwest (in yellow), and lowest values elsewhere (in blue). This type of plot displays the total contribution of a pollutant measured at the monitor site, distributed by wind direction and wind speed.

Arsenic concentrations on Figure 4 are displayed on a polar plot, where values are averaged by wind direction and wind speed. In contrast to the previous frequency plot, the polar plot is less influenced by short-term spikes and gives a more comprehensive view of the areas of pollutant contribution. The January arsenic spike area shows up as a faint yellow zone, whereas the more consistent area of arsenic emissions (in red) is the site of various recycling facilities southwest of the monitor.

Figure 3. Arsenic frequency plot, percent contribution binned by wind direction and speed

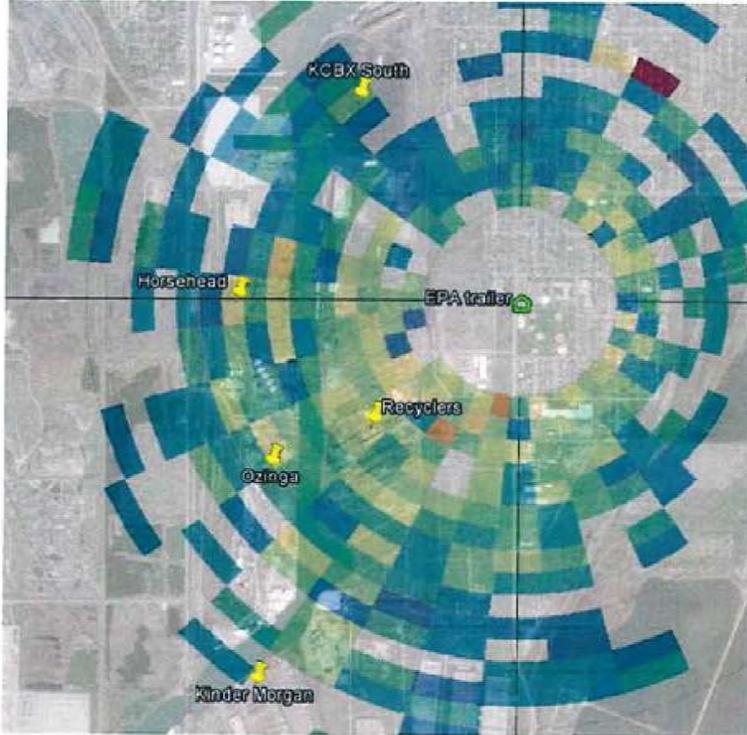
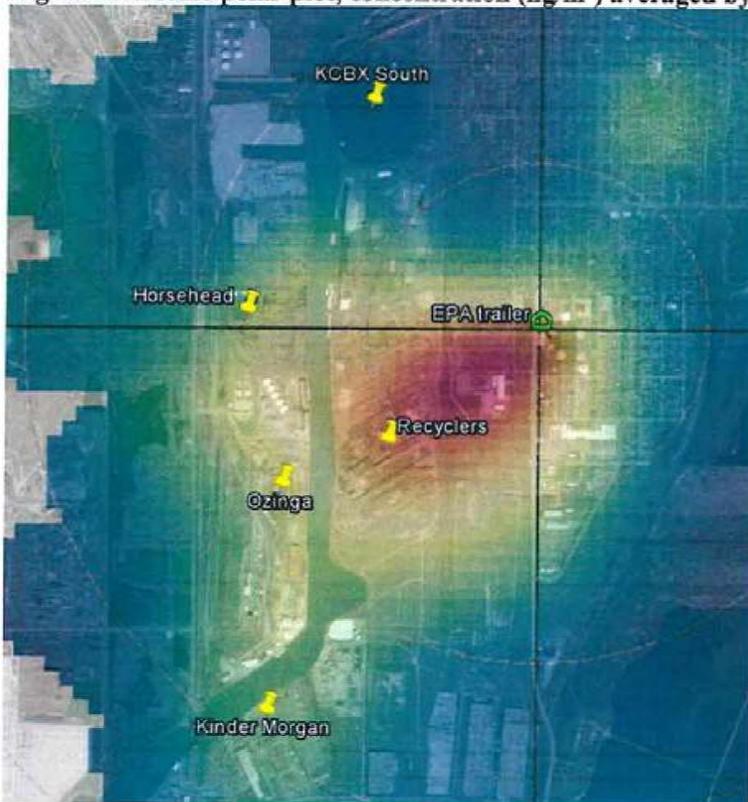


Figure 4. Arsenic polar plot, concentration (ng/m³) averaged by wind direction and speed



The manganese (Mn) frequency distribution on Figure 5 and the polar plot on Figure 6 both point toward the southwest as the area of most significant and consistent emissions. There appear to be two distinct hot spots: one around Kinder Morgan and the second including Ozinga, the area over the Calumet River, and possibly the recycling facilities. The hour-of-day (diurnal) pattern and day-of-week patterns on Figure 7 show that Mn concentrations are highest during typical industry business hours, i.e. 8 AM to 4 PM, Monday through Friday. Mn levels drop down overnight and on the weekend.

To distinguish between temporal patterns at Kinder Morgan and Ozinga, Figure 8 contains month-to-month and day-of-week patterns only when wind direction is from these two specific source areas. The peak Mn values that emanate from Kinder Morgan are highest on Mondays and Tuesdays, with a secondary spike on Fridays. These levels were highest February to March. The peaks from Ozinga happen Tuesday-Thursday with a distinct spike in May.

Kinder Morgan, Ozinga, and the various recyclers at Reserve Marine Terminal (RMT) were all recently inspected by EPA air enforcement engineers. Kinder Morgan stores and processes ferro-alloys on site. Material unloading occurs during typical business hours, which is consistent with peak Mn values shown on Figure 7. Ozinga is also believed to handle some manganese-containing product(s) on their site, but less is known about the facility's operations schedule. Both Kinder Morgan and Ozinga may be required by the City of Chicago to develop new fugitive dust plans, which could lessen metals emissions into the community.

Figure 5. Manganese frequency plot, percent contribution binned by wind direction and speed

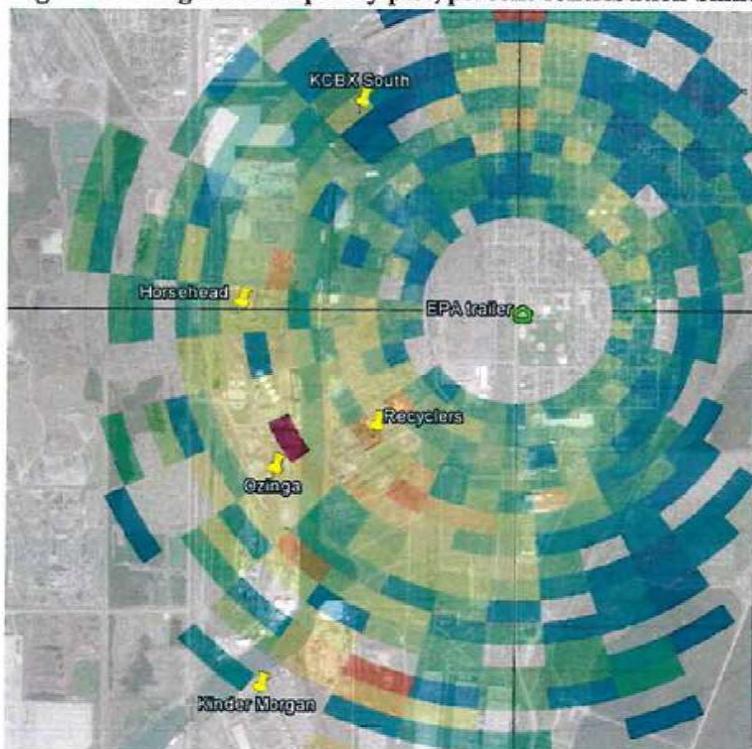


Figure 6. Manganese polar plot, concentration (ng/m³) averaged by wind direction and speed

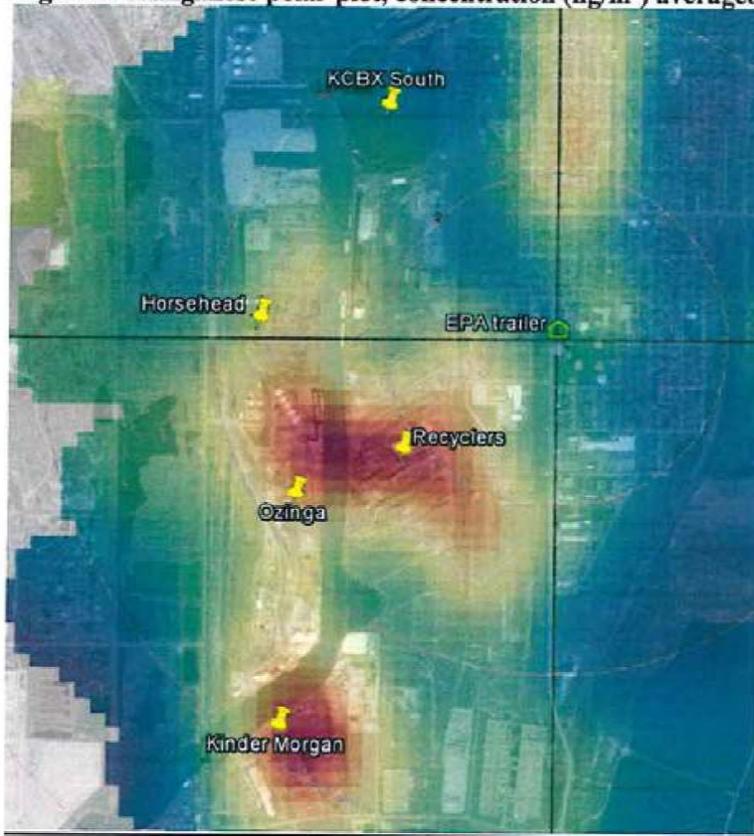


Figure 7. Manganese concentrations (ng/m³) averaged by hour-of-day and day-of-week.

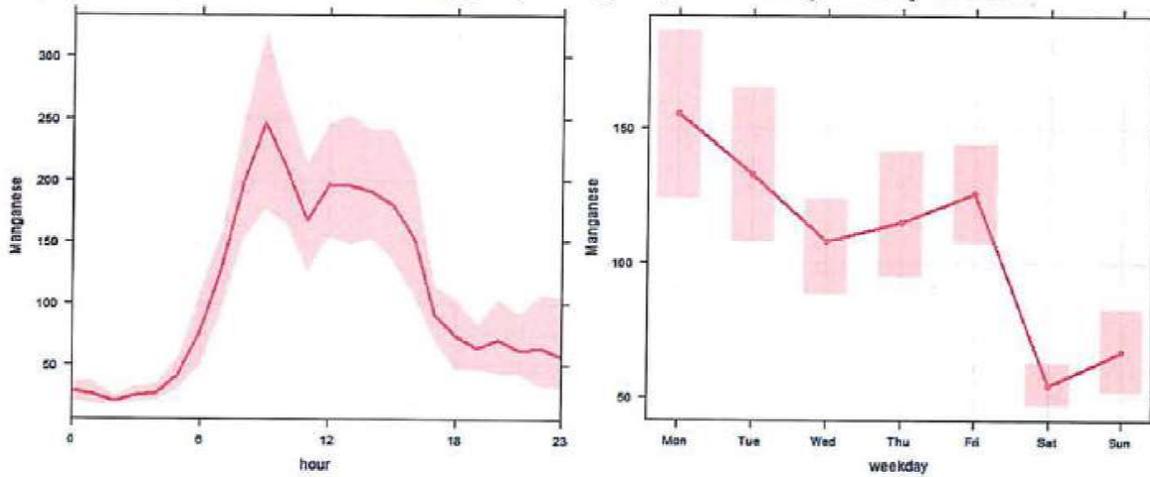
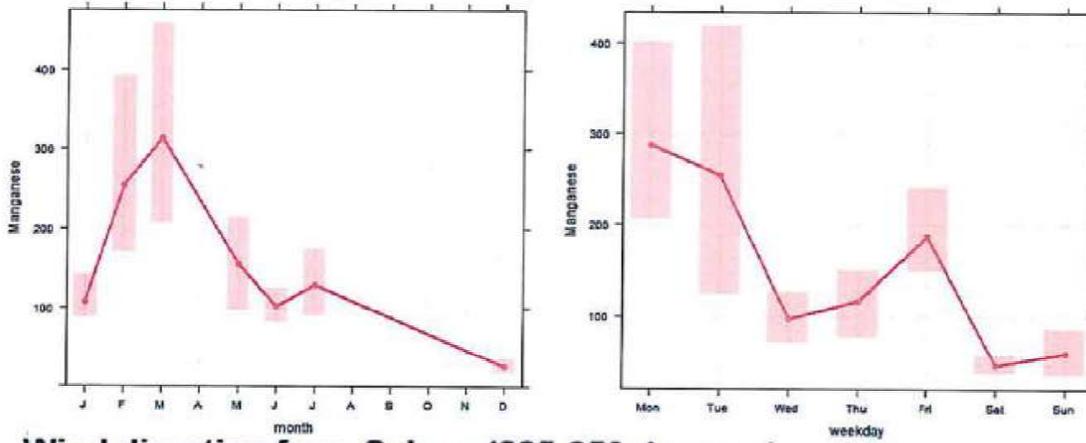
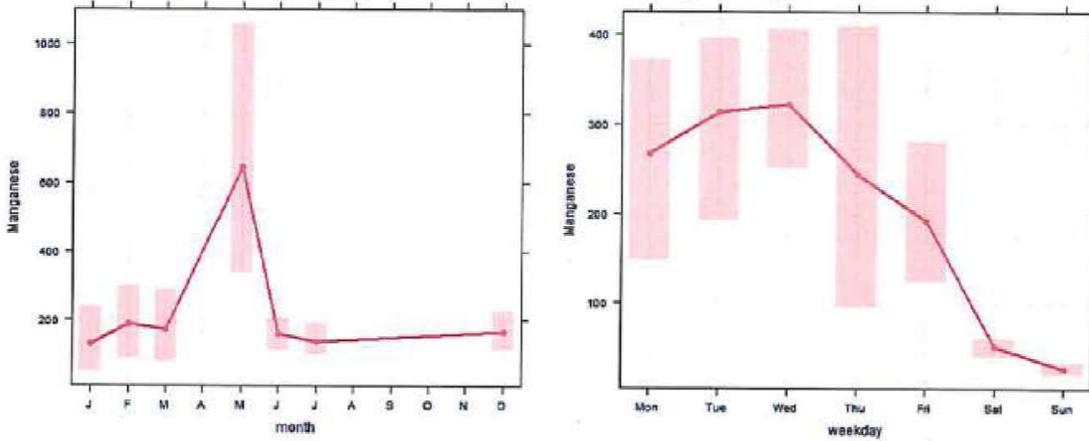


Figure 8. Manganese concentrations (ng/m³) averaged by month and day-of-week when wind direction is from direction of Kinder Morgan as compared with Ozinga.

Wind direction from Kinder Morgan (190-225 degrees)



Wind direction from Ozinga (225-250 degrees)



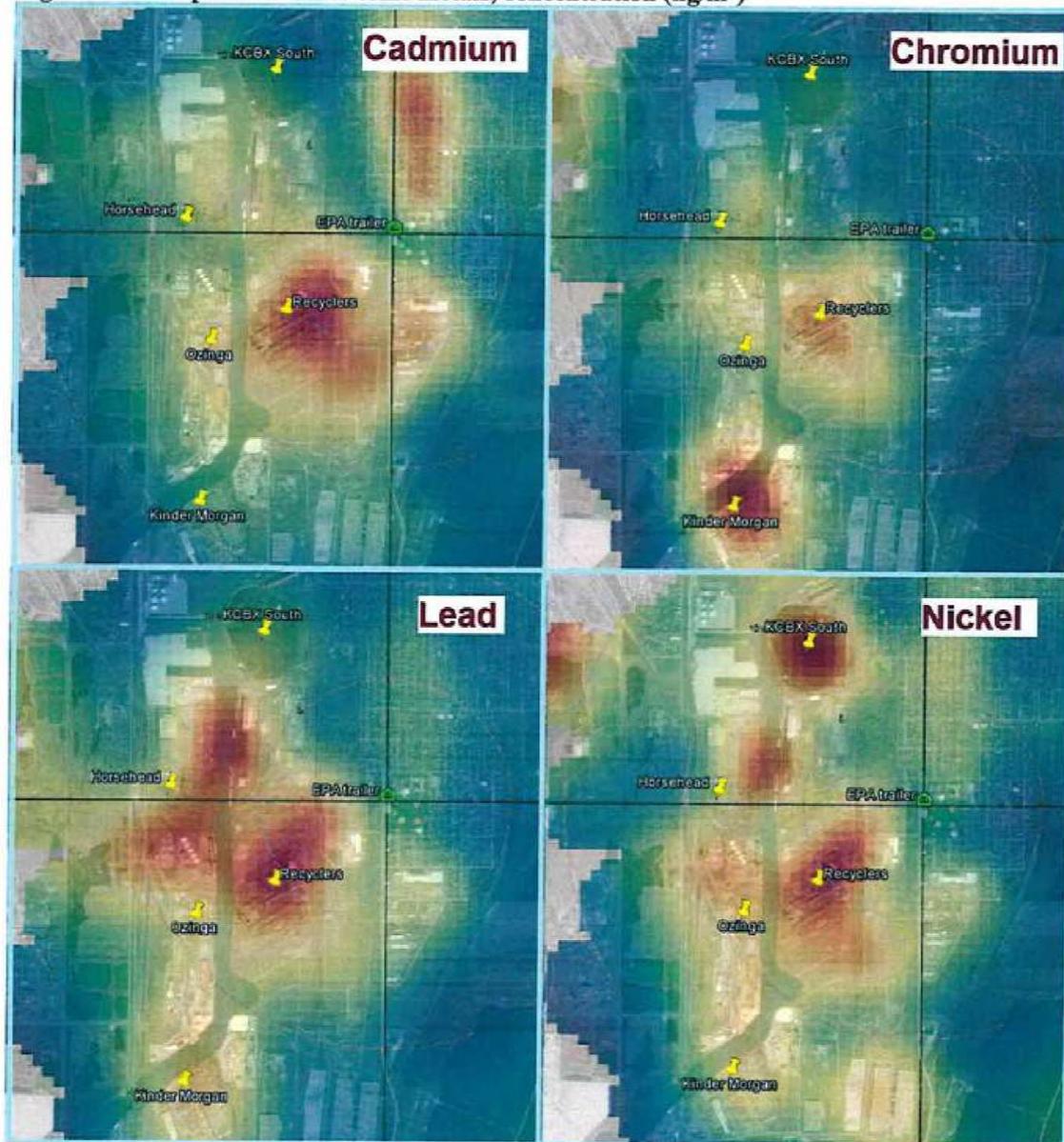
Peak manganese periods are shown on Table 3. These are the 34 hours when manganese was more than ten times the average concentration, i.e. the top 1% of data. The majority of these peak periods had winds emanating from the area of Kinder Morgan.

Table 3. Details of Peak Manganese Periods (ng/m³)

Date	Day	Time	Mn	WD	WS
23-Dec-14	Tues	2:00 PM	1151	190	4.9
23-Dec-14	Tues	3:00 PM	1155	187	4.2
31-Dec-14	Weds	11:00 AM	1313	234	6.6
31-Dec-14	Weds	12:00 PM	1223	224	6.8
31-Dec-14	Weds	1:00 PM	2033	223	6.9
31-Dec-14	Weds	3:00 PM	1114	209	7.3
31-Dec-14	Weds	5:00 PM	1126	208	7.6
2-Jan-15	Fri	11:00 AM	1601	184	2.4
15-Jan-15	Thurs	4:00 PM	3685	199	4.8
15-Jan-15	Thurs	5:00 PM	3338	204	4.8
13-Feb-15	Fri	10:00 AM	1148	215	6.6
13-Feb-15	Fri	3:00 PM	1141	205	6.6
14-Feb-15	Sat	10:00 AM	1807	324	8.8
17-Feb-15	Tues	5:00 PM	2313	247	5.7
24-Feb-15	Tues	7:00 AM	1863	204	7.8
24-Feb-15	Tues	8:00 AM	1710	205	8.8
24-Feb-15	Tues	9:00 AM	2775	206	9.3
24-Feb-15	Tues	10:00 AM	4353	212	8.0
24-Feb-15	Tues	11:00 AM	1255	222	7.9
24-Feb-15	Tues	12:00 PM	1441	217	7.6
24-Feb-15	Tues	3:00 PM	1465	229	5.9
5-Mar-15	Thurs	6:00 PM	1373	231	4.0
5-Mar-15	Thurs	9:00 PM	2247	239	2.3
9-Mar-15	Mon	9:00 AM	2860	174	2.1
9-Mar-15	Mon	10:00 AM	2902	176	3.3
13-Mar-15	Fri	10:00 AM	1723	199	2.6
15-Mar-15	Sun	8:00 PM	1151	215	7.5
16-Mar-15	Mon	11:00 AM	1796	216	4.9
16-Mar-15	Mon	12:00 PM	2018	201	6.1
16-Mar-15	Mon	1:00 PM	3273	205	6.5
16-Mar-15	Mon	2:00 PM	3086	200	6.2
16-Mar-15	Mon	3:00 PM	1516	190	6.5
16-Mar-15	Mon	4:00 PM	1463	201	7.3
16-Mar-15	Mon	5:00 PM	2350	204	5.3

Polar plots for the remaining toxic metals, which did not exceed levels of potential health concern, are shown on Figure 9. Cadmium appears to emanate mainly from the RMT recycling facilities east of the Calumet River. Chromium peaks come from the area of Kinder Morgan. Lead seems to be emitted by a combination of the nearby recycling facilities and Horsehead. Nickel emissions emanate from KCBX's South Terminal, Horsehead, and the recycling facilities.

Figure 9. Polar plots for other toxic metals, concentration (ng/m³)



Summary and Conclusions

1. This short-term investigation showed that Pb concentrations are well below 50% of the NAAQS.
2. Arsenic (As) was equal to the short-term health comparison level, the California EPA's 8-hour REL (15 ng/m³) on one day, January 27th. This high 8-hour average was driven by a 1-hour peak of 93, which itself did not cause an exceedance of the 1-hour REL (200 ng/m³).
3. Data trends analyses show that dominant As emission are from the southwest, i.e. the area of various recyclers east of the Calumet River. However, the January 27th date peak value happened during a period when winds were from the northeast, where industrial sources are not present.
4. The full-study average for Arsenic is well below the chronic health comparison value. This study does not suggest that there is a long-term issue with As health risks.
5. Ambient concentrations of other toxic metals were below EPA's long-term and short-term health comparison levels.
6. The ambient manganese (Mn) concentration was higher than EPA's previously used comparison value (the RfC of 50 ng/m³) in this study. The Mn average was 108 ng/m³, consistent with data reported at the Illinois EPA station at Washington High School.
7. Peak Mn levels correspond to wind direction from the area of the Kinder Morgan facility. Secondary peaks are from the vicinity of Ozinga and RMT.
8. The monitoring trailer was sited about one mile away from the Ozinga and Kinder Morgan properties. Follow up metals monitoring may be useful in the residential area south of Kinder Morgan to determine whether Mn concentrations are significantly higher in this area.
9. Mn and other toxic metal trends at the Washington High School monitor should be evaluated over the next year to determine whether new fugitive dust controls at local industries have reduced metals emissions into ambient air.

APPENDIX

E

9



9

Customer First Safety Always

SSP ID: 2926-14
Title: CHFT Street/Sweeper & Water Truck
Issue Date: 05-22-2014
Revision Date:

TERMINALS O&M PROCEDURE

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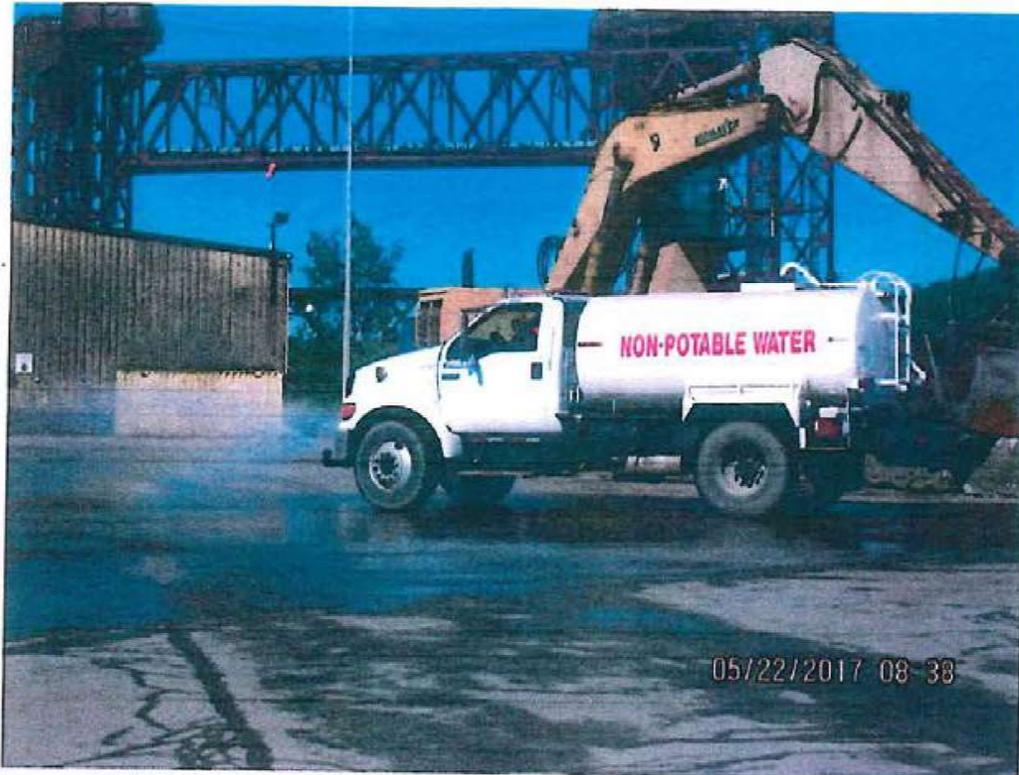
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1. Applicability

- Bulk Terminals

2. Scope

This document provides the Standard Operating Procedure (SOP) for safe operations of Street Sweeper and Water Truck at Watco Companies Chicago Ferro Facility.



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Customer First Safety Always

SSP ID: 2926-14
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TERMINALS O&M PROCEDURE



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Customer First Safety Always

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TERMINALS O&M PROCEDURE



SQE Statement

This procedure follows Best Management Practices (BMPs), and is one of the steps necessary in establishing and implementing Watco Companies Terminal Safety, Quality, and Environmental (SQE) programs and culture.

SQE program elements were developed through aggregating best management practices and lessons learned across our organization. The elements of SQE are intended to help develop a culture where all Teammates perform their daily tasks in a manner that upholds our commitment to running safe, environmentally compliant, quality focused, efficient operations.

3. PPE Requirments and tools needed.

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Customer First Safety Always

SSP ID: 2926-14
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TERMINALS O&M PROCEDURE

- 1 Hard hat
2. Safety glasses
3. Gloves
4. Reflective uniform
5. Steel toe shoes
6. Respirator protection

EHS/Quality Precautions

1. Pre-use inspection of this equipment is required.
2. Only Properly trained employees are authorized to operate equipment.
3. No equipment will be placed in service if identified unsafe.
4. No Safety devices may be bypassed in order to operate this equipment.
5. Operating parameters must be monitored continually during operation of this equipment.
6. All terminal traffic and safety regulations shall be followed at all times.

Water Truck Procedures:

1. Enter cab and ensure its free of all debris.
2. Adjust seat position as necessary, fasten seat belt.
3. Start machine up and ensure all gauges and controls operate properly.
4. Fill machine up with water to max capacity (2,000 gallons).
5. Turn pumps on and start watering the pavement following the traffic pattern list below.
 - Section 1 start with the front entrance, wetting down pavement completely up to truck scales.
 - Section 2 start with main drive area just North of the truck scales all the way north stopping at the dock.
 - Section 3 continue East to West watering the entire drive way along the dock side of the 100 building and continuing the same between the 200 building, 300 building, 400 building and north side of building D.
 - Section 4 continue West to East watering the roadway South of building D until you run back into the main drive watering the area in front of the processor.
 - Section 5 water the pavement to the North of building F, and North to South along both sides of building F, finishing at the South area of building G.
 - Section 6 work the road ways between all the Pig Pads and the Front (North side) of Building E.
 - Last make sure the Dock is watered down completely, note that the dock might have to be watered down anytime in-between the sequence listed above based on barge traffic.



Customer First Safety Always

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TERMINALS O&M PROCEDURE

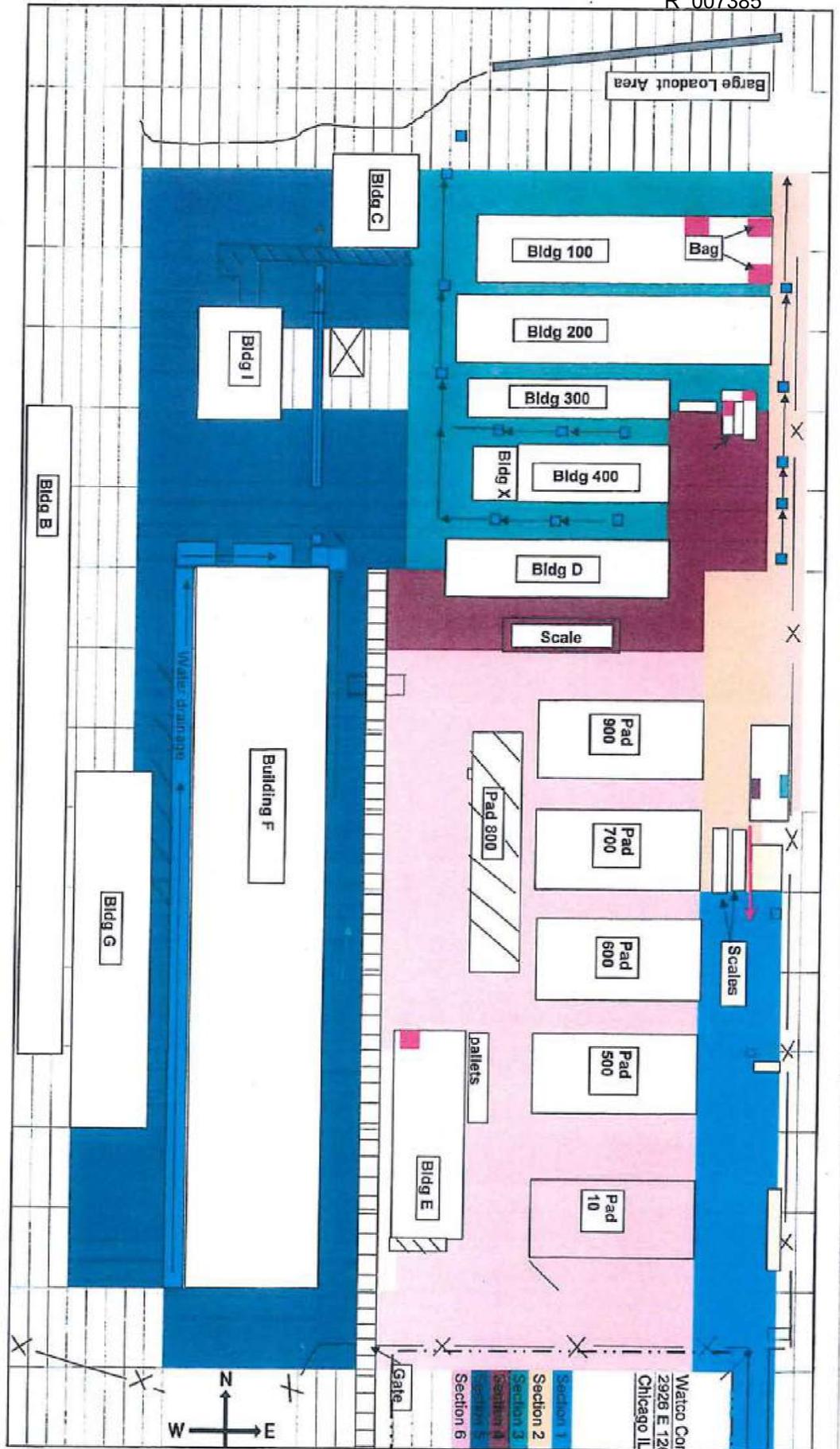
Street Sweeper procedures

1. Enter cab and ensure its free of all debris.
2. Adjust seat position as necessary, fasten seat belt.
3. Start machine up and ensure all gauges and controls operate properly.
4. Fill machine with water to max capacity.
 - Section 1 start with the front entrance, sweeping the pavement completely up to truck scales.
 - Section 2 start with main drive area just North of the truck scales and all the way north stopping at the dock.
 - Section 3 continue East to West sweeping the entire drive way along the dock side of the 100 building and continuing the same between the 200building, 300building, 400 building and north side of building D.
 - Section 4 continue West to East sweeping the roadway South of building D until you run back into the main drive sweeping the area infront of the processor.
 - Section 5 sweep the pavement to the North of building F, and North to South along side of building F all the way up to the South area of building G.
 - Section 6 work the road ways between all the Pig Pads and the Front (North side) of Building E.
 - Last make sure the Dock is swept down completely, note that the dock might have to be swept down anytime in-between the sequence listed above based on barge traffic.

Training

All Team members who will perform such task shall be trained, and shall be able to satisfactorily demonstrate their understanding, through an assessment of this and the Site-Specific Operating Procedures by a competent person or subject matter expert. Retraining and testing shall be conducted following unsatisfactory/unsafe performance of job assignments. Operators shall be trained on this procedure at least once every three years, not to exceed 36 months, or when operational changes warrant.

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July 31, 2017

Julie Morita, M.D.
Commissioner, Department of Public Health & Environment
333 South State St., 2nd Floor
Chicago, IL 60604

Re: Watco Transloading LLC – Chicago Arrow Terminal, 2926 E. 126th Street
Request for Variance from Section 3.0(4) of the Rules and Regulations for Control of
Emissions from the Handling and Storage of Bulk Solid Materials

Dear Commissioner Morita:

Pursuant to Section 8.0 of Article II, Part E of the City of Chicago Department of Public Health's (the "Department") Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials (the "Bulk Solid Materials Rules" or "Rules"), Watco Transloading LLC, ("Watco") submits this request for variance for its facility located in Chicago, Illinois, formerly owned by Kinder Morgan (the "Watco Facility"). This request is separate from, but related to, the variances requested by Kinder Morgan/Chicago Arrow Terminal ("Kinder Morgan") on June 11, 2014.¹ Kinder Morgan's variance request sought variances from five sections of the Rules.² The Department conditionally granted two of those variance requests and denied the other three on May 3, 2017. (Ruling on Kinder Morgan Variance Request, dated May 3, 2017, hereinafter "Variance Ruling," attached as Appendix A)

Watco's variance request is concerned primarily with Section 3.0(4) of the Bulk Solid Materials Rules, requiring the installation of permanent, continuous Federal Equivalent Method (FEM) real-time PM-10 monitors ("PM-10 monitors") but also requests that the Department remove the condition requiring the installation of these PM-10 monitors from its conditional approval of the Kinder Morgan variance request. Further, although this request relates to the same facility as Kinder Morgan's June 2014 request, Watco's new request includes extensive additional measures implemented at the Watco Facility that have further reduced fugitive dust, including significant investments in capital improvements and equipment. In addition to the new evidence that supports granting this variance request, Watco also presents a detailed review of

¹ The Department maintains a website containing documents related to the Bulk Solid Materials Rules, including Kinder Morgan's variance request: https://www.cityofchicago.org/city/en/depts/cdph/supp_info/inspections---permitting/doe_ordinances_rulesandregulationsandsupportingdocuments.html. When citing to a document that is available on this site (the "Department Website"), Watco will make note of this. This will reduce the paperwork associated with this filing, as it is generally unnecessary to attach these documents as exhibits if they are already available to the Department and also available online.

² The first variance request filing sought a sixth variance, but this request was withdrawn in June 2015.

the EPA air-monitoring study of manganese levels in particulate matter emissions, referenced in the Department's May 2017 decision, that shows the EPA study results, along with long-term PM-10 monitoring results in the same area, support the requested variance.

I. Introduction

Watco purchased this site from Kinder Morgan on February 2nd, 2017. Even prior to this purchase, Kinder Morgan invested significant amounts of time and effort into preventing fugitive dust emissions. Kinder Morgan described many of these efforts in its 2014 variance request. In the years following that request, many additional steps have been taken, at significant cost, to reduce and control the generation of fugitive dust and thus, to prevent the likelihood of fugitive dust leaving the site. Watco's efforts to minimize the potential for fugitive dust are continuing. Additional projects, described in this request, are either planned or undergoing evaluation to determine both their feasibility and effectiveness.

In denying Kinder Morgan's request for a variance from the PM-10 monitoring requirement, the Department relied heavily on the statements concerning the Kinder Morgan facility contained in a study conducted by the United States Environmental Protection Agency ("EPA") on manganese emissions in the general area where the Facility is located (the "EPA Metals Study"). Because this Study was provided to the Department after Kinder Morgan had already made its arguments in support of the variance request and after the public comment period on that request had closed, Kinder Morgan's variance request did not address it. Therefore, upon learning of the EPA Metals Study in the Department's decision to deny Kinder Morgan's variance request, Watco retained Trinity Consultants, a respected national environmental consulting firm, to review the EPA study. As presented in this request, Trinity's evaluation concluded that the air monitoring data gathered by EPA shows that the detected emissions do not pose a risk to public health. Trinity's evaluation further found that the EPA data does not support a finding that the Watco Facility is the main source of manganese emissions.

The Department's decision on the Kinder Morgan variance request also relied on a December 2016 inspection report conducted by the City. Watco has reviewed the report and believes the City inspector's concerns stem primarily from a misunderstanding of operating procedures at the facility. Other issues identified by the inspector, such as the need for a 30-foot measuring post and additional waterway protections, have been addressed by Watco. Further, the inspector's observations of dust present on the internal Facility roads is not evidence that fugitive dust emissions are leaving the Facility at levels that pose either a nuisance or adversely impact the surrounding area. There is nothing in the City's inspector's report indicating that any fugitive dust emissions were observed to be emanating from the Facility's property boundary.

This variance request will demonstrate that Watco conducts operations in a manner minimizes and mitigates the risk of producing fugitive dust emissions, including manganese

emissions. All manganese-containing bulk solids are stored indoors. Although these solids are transferred in outdoor areas on occasion, Watco has clear Best Management Practices (BMPs) that limit the potential for these materials to become airborne, and has a parallel financial interest in not allowing these valuable materials to be lost to windborne dispersion. With these safeguards in place, human health is and will continue to be adequately protected, as demonstrated through the use of EPA-approved air quality monitoring methods. These alternative monitoring methods will impose a more reasonable financial and human-resources burden on Watco.

II. The Regulation or Requirement from which the Variance is Requested (§ 8.0(2)(a))

Watco seeks relief from the real-time PM-10 monitoring requirement established in Section 3.0(4) of the Rules. The Rules specifically anticipate that this requirement may be unreasonable as applied to facilities that do not pose a significant likelihood of creating fugitive dust emissions and invites these facilities to seek variances under Section 8.0(3). As an alternative method of compliance, Watco requests to conduct (1) visible emissions testing at the boundaries of the facility in accordance with EPA Method 22, 40 C.F.R. Part 60, Appendix A, and 35 Ill. Adm. Code 212.107, and (2) opacity testing within the interior of the facility in accordance with EPA Method 9, 40 C.F.R. Part 60, Appendix A, and 35 Ill. Adm. Code 212.109.

III. Description of facility, its operations, and the quality and types of materials used in the process and Activities for Which the Variance is requested. (§ 8.0(2)(b)-(c))

A. Watco Facility and Operations (§ 8.0(2)(b))

Watco's Facility is located at 2926 E. 126th Street in Chicago, Illinois. A map of the facility is provided in Appendix B. The facility is bordered by the Calumet River to its north, a commercial warehouse to the east, an open lot used for employee parking by Ford Motor Company to the west, and East 126th Street to the south. The closest known dwelling is 150 yards to the south of the main entrance gate. The closest residential area is approximately 200 yards south-southwest. The Watco Facility is located in the 60633 Zip code area. It has a population of 12,927 according to the 2010 census resulting in a population density of 1,259 people per square mile. By comparison, the 2010 Census found a density of 11,841 people per square mile for the Chicago area. The 60633 Zip code contains 4,746 occupied housing units and 436 unoccupied housing units.

The Facility engages in a limited amount of processing, and possesses air permits and/or registration related to crushing, screening, and packaging operations, all of which occur indoors. The Facility predominantly engages in transfer and transport operations. The Facility has a dock area used for unloading, and on rare occasions loading, barges. A majority of the materials handled at the Facility arrive by barge. A relatively small quantity of material arrives or departs by train. Trucks and front-end loaders at the site are used for internal transfers, and covered trucks play a significant role in the delivery of materials to and from the site. Each of these

activities are subject to BMPs that minimize the potential for fugitive dust emissions and are discussed in more detail below.

B. Quality and Types of Materials Used in the Process or Activity (§ 8.0(2)(c))

The Facility does not handle coal or petcoke and is not subject to Article II's regulations specific to those materials. On average, the facility handles 650,000 net tons of steel, alloy, and associated materials yearly. Although a complete inventory cannot be provided here, only approximately 29% of the materials handled at the site contain manganese.³ In comparison, the S.H. Bell facility has disclosed that, typically 90% of the materials stored at its facility contain manganese.⁴ Thus, manganese-containing materials do not constitute a significant component of the materials handling at the site, particularly when it is considered that they are all stored inside. The Facility has both indoor and outdoor storage capacity, with the indoor storage spread across several buildings.

1. Indoor Storage

The majority of bulk solids materials at the Watco Facility are kept indoors, segregated within storage bins that are enclosed on three sides (image 1). This indoor storage is critical to the Watco Facility's commercial viability. These materials lose value if they become wet. Among other problems, wetted steel alloys could create adverse or unintended reactions when used. Wetted materials also have inconsistent weights, and this creates significant problems for Watco from a billing and accounting standpoint. For these reasons, in addition to preventing fugitive dust emissions, Watco has over 351,600 square feet of indoor storage capacity (capable of holding about 885,509 tons), spread across thirteen buildings. (See aerial photo, image 2)

³ Providing the Department with a comprehensive list of the names and tonnages of all materials stored or transferred at the facility would risk the release of confidential trade secrets to parties outside of the Department. Watco is therefore exempted from providing a detailed inventory by Chi. Municipal Code 11-4-310. If the Department believes that this information is necessary to determine if the requested variance would cause a nuisance or adversely affect the surrounding community, Watco is willing to discuss methods for providing this information while protecting its confidentiality. *See id.* 11-4-310(b)(2).

⁴ Department Determination on Variance Request from S.H. Bell Company, dated October 17, 2016, exhibit B, Department Website.



Image 1 - Building F with individual 3-sided storage bins to prevent loss or cross-contamination of products



Image 2 - Aerial Photo of Facility

Importantly, and as noted above, although the Facility does handle bulk materials that contain manganese, all manganese-containing materials are stored indoors. When manganese-containing materials are loaded from an indoor storage bin to a truck for transport to customers, the transfer occurs indoors. And, as discussed in more detail below, this indoor truck loading process occurs beneath a new large dust collector which collects indoor emissions during the loading process. During normal operations, approximately 248,144 tons of bulk material are stored indoors.

2. Outdoor Storage

Watco only stores two types of bulk solids in outdoor storage bins: Pig iron and aggregates. Neither of these contain manganese. Because most of the materials handled by

Watco are moisture sensitive, it has significantly less outdoor than indoor storage space: 111,000 square feet (capable of holding about 161,731 tons), which is less than a third of the Watco Facility’s indoor storage capacity.⁵ (See Appendix C.) Both the pig iron and aggregates have natural densities that minimize their potential to become airborne. In addition, they are kept in three-sided, walled bins which help minimize wind exposure (image 3). In these bins, the typical material height is well below the Rules’ 30-foot height restriction and generally only about 3-4 feet above that height of the bin’s walls (necessary to contain and segregate the products,) thus further minimizing the volume of material exposed to wind. Additional measures, described below, limit the potential for these materials to produce fugitive dust.

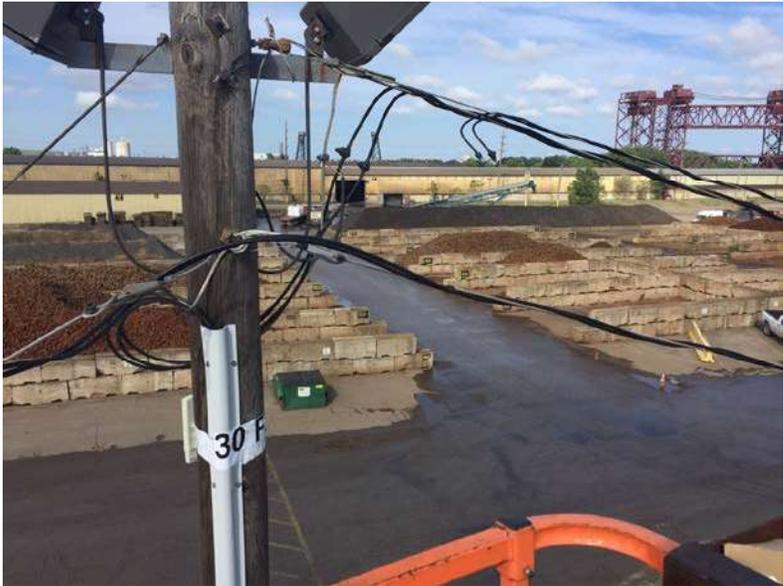


Image 3 - Outdoors enclosures (note 30-foot height marker pole in foreground)

3. Packaged Materials

Approximately 15% of the materials handled at the Facility are delivered and stored in packaging called “Super Sacks” (image 4). These sacks are made of water-resistant synthetic materials that eliminate the generation of fugitive dust during transport into and out of the Watco Facility, as well as during transfers within the facility. All packaged material is stored inside.

⁵ By comparison, S.H. Bell, which handles similar materials has significantly more outdoor storage than indoor storage: 116,250 square feet of outdoor storage area versus 83,000 square feet of indoor storage. S.H. Bell has not disclosed what portion of the 90% of its manganese-containing materials it stores outdoors. The Department recently criticized S.H. Bell for failing to specify where these materials are stored in the company’s most recent fugitive dust plan. (Department Response to S.H. Bell Fugitive Dust Plan, dated March 3, 2017, p. 3, available on Department Website.)



Image 4 - "Super Sacks" in barge. The materials are highly dense, and so material piles do not exceed the side walls of the barges' holds, because the barges cannot carry that much weight. This picture likely shows a barge at full capacity for these dense alloys.

IV. The Department's Decision on the Kinder Morgan Variance Request.

The Kinder Morgan variance request sought a variance from the Section 3.0(4) requirement to install PM-10 monitors at the Facility, as well as other requirements of the Rules. The Department denied the PM-10 monitors variance request because it lacked certain supporting information and based on statements contained in the EPA Metals Study and a December 2016 Department inspection. Watco is submitting this new request for a PM-10 monitoring variance because there is additional information not previously presented to or considered by the Department which supports granting it.

Subject to certain conditions, the Department granted Kinder Morgan's request for a variance from Sections 3.0(7) and 5.05(5) of the Rules relating to the application of dust suppressants during freezing conditions. In granting this portion of the variance request, the Department noted that PM-10 monitoring would indicate whether the variance conditions were effective. Watco requests that the Department maintain the variance from Sections 3.0(7) and 5.05(5) without requiring Watco to install the PM-10 monitors.

Kinder Morgan also requested relief from certain high wind and weather station requirements set forth in Sections 3.0(5) and 5.0(4), which the Department denied. Watco is not requesting that the Department reconsider this portion of its variance decision.

A more detailed review of the relevant portions of the Department's decision is presented below to show there are several reasons why the Department should re-consider the findings it relied upon in denying Kinder Morgan's request.

A. Fugitive Dust Monitoring

For owner/operators that have not obtained a variance, Section 3.0(4) of the Rules requires that they install, operate, and maintain permanent, continuous Federal Equivalent Method (FEM) real-time PM-10 monitors at the perimeter of their facilities. Kinder Morgan sought a narrowly-tailored variance from this requirement, asking that fugitive dust emissions be monitored using (1) visible emissions testing at the boundaries of the facility in accordance with EPA Method 22, and (2) opacity testing within the interior of the facility in accordance with EPA Method 9. These methods, while not providing the 24-hour per day monitoring of a continuous system, provide a similar level of protection for the Watco Facility once site-specific conditions are taken into account. Those conditions include the fact that only dense materials (pig iron and aggregates) are stored outdoors, and the significant commitments of money and effort towards reducing the potential of those materials to become airborne. These efforts have included the use of dust suppression equipment at transfer stations, the wetting of outdoor materials during times of low humidity and high wind, and the use of BMPs during transfer operations.

After Kinder Morgan filed its variance request, the Department received a comment letter signed jointly by the Natural Resources Defense Council and the Southeast Environmental Task Force. The letter (dated March 10, 2017) attached a 2015 air-monitoring study prepared by the EPA (the “EPA Metals Study.”)⁶ The Study looked at the presence of lead and toxic metals, including manganese, in Southeast Chicago. The Study did not find elevated concentrations of lead, but did find elevated levels of manganese. The levels, however, were below the ATSDR Minimal Risk Level of 300 ng/m³. EPA flagged Kinder Morgan as a possible source of the manganese emissions, based on generalities like the Facility’s proximity and the presence of manganese-bearing materials at the facility. However, the Study did not examine whether there was any correlation between the higher manganese levels EPA recorded and activity occurring at the Facility during those times. Trinity did perform that examination, as further discussed below, and it does not support the conclusion that the Facility is a potential source. Nor did EPA’s report address the data showing that prevailing wind conditions were not consistent with the Facility being an emissions source of the measured manganese levels. EPA also seemed to be unaware of Kinder Morgan’s practice of storing all manganese-bearing materials in indoor enclosures. Finally, and perhaps most critically, EPA failed to discover or acknowledge several alternative sources of manganese in the area.⁷

Less than two months after receiving the EPA Metals Study, and without the benefit of any third-party review of the Study’s conclusions, the Department issued its decision denying Kinder Morgan’s request for a variance from the PM-10 monitoring requirement, citing the EPA

⁶ Xact Metals Study: Southeast Chicago, Region 5 Air and Radiation Division, December 12, 2014 – July 23, 2015. (Attached as Appendix D.)

⁷ The problems with the Study are discussed further in Section V.C.

Metals Study as a key basis for its decision. The Department specifically noted the EPA's unsupported and speculative conclusion that Kinder Morgan was "the main [manganese]-contributing facility" to elevated manganese concentrations in Southeast Chicago. (Variance Ruling p. 11) The Department's other reasons for denying the Kinder Morgan variance request included (1) that Kinder Morgan had not provided enough information about the "aggregates" stored outdoors to determine whether these materials tended to produce dust, (2) that Kinder Morgan routinely conducted some transfers of magnesium-containing alloys outdoors and, (3) that Kinder Morgan's dust suppression efforts for its pig iron was actually evidence that the pig iron was producing dust and posed risks that barred the granting of a variance.

The Department also cited a December 2016 inspection report of the facility, another piece of evidence received long after Kinder Morgan's last opportunity to comment. (Variance Ruling at p. 11) The inspector stated that he did not observe a sweeper or water truck in operation during his visit, and concluded from his review of the logs kept for those trucks found that the water truck was not being used. In actual fact, as discussed in more detail below, the inspector misread the logs which recorded both the use of the sweeper truck and the water truck but did not differentiate between the two. The Department also highlighted the inspector's observation of "very dry and dusty" access roads, but did not note any observations of dust emissions either within the facility or at its boundaries. The access roads observations had not been noted in prior City inspections.

B. Transfer Points - Section 3.0(7) & Dust Suppressant System - Section 5.0(5)

Section 3.0(7) of the Rules requires that owner/operators regulate all transfer points at their sites. Unless the material transferred is naturally moist, each transfer point must either be indoors or be subject to a water-spray system during operations. Kinder Morgan sought only a very limited variance: Many of its transfers already occurred indoors, and the materials it stores outdoors were (as one might expect) not moisture-sensitive and so could be sprayed during transfer. However, there were some outdoor transfers of moisture-sensitive materials that could not be moved indoors, such as barge-to-truck transfers. The moisture-sensitive materials could not be practically subjected to conventional water spray, which would impair the value of those commodities. As an alternative compliance measure, Kinder Morgan proposed that it could be required to continue conducting the outside transfers of these materials following a defined set of BMPs specific to the different transfer points at the site (e.g., barge-to-truck, conveyor-to-rail car, etc.)

For similar reasons, Kinder Morgan asked for a variance specific to portions of Section 5.0(5)'s dust-suppression requirements. Section 5.0(5) requires the use of either chemical stabilizers, water-spray bars, a misting system, or water trucks to wet down or otherwise stabilize uncovered bulk storage piles. Section 5.0(5)(b) requires that the system be designed to provide water even when temperatures fall below 32°F, and so the system must be able to heat and distribute water during freezing conditions.

Again, Kinder Morgan requested a narrowly tailored variance—asking that it be exempted only from the requirement that the Facility have the ability to apply dust suppressants during freezing conditions. The use of non-freezing chemical stabilizers would damage the bulk solids, and the use of heated water would require major changes to the site’s infrastructure and building a boiler room in order to heat the water pipes, and applying for new permits.

The Department conditionally granted both of these variances subject to certain conditions. In the case of the Section 3.0(7) variance, Kinder Morgan was required to (1) always load moisture-sensitive alloys indoors, (2) ensure that a water source is always available for outdoor loading and unloading of non-moisture-sensitive materials during non-freezing conditions, and (3) ensure that staff conducting transfer operations adhere to the facility’s Fugitive Dust Plan. The Section 5.05(b) variance—applicable from November 1st to March 31st of each year—was conditioned on Kinder Morgan (1) assigning personnel to monitor for visible dust at all transfer points during freezing operations and (2) immediately shutting down such operations that are causing the visible dust. The Department noted that both variances were being granted in light of its decision to deny a variance for PM-10 monitoring which would provide an indication of whether the dust-suppression variances were allowing fugitive dust to leave the site.⁸ Watco is requesting that the Department clarify that based on the additional evidence presented in this variance request regarding both the nature of the Facility’s operations and the improvements which have been subsequently implemented, along with the proposed increase in the frequency of conducting Method 9 and 22 monitoring, the variance from Section 5.05(b) subject to the two conditions regarding operational activities but without the requirement to operate PM-10 monitors remains in effect.

C. Wind Monitoring - Section 3.0(5) & High Wind Events - Section 5.0(4)

Kinder Morgan sought a variance for two sections related to high-wind events. Section 5.0(4) of the Rules requires suspending the disturbance of outdoor piles when wind speeds exceed 15 miles per hour (mph), and Section 3.0(5) requires the installation, operation, and maintenance of a weather station to assess whether this wind speed is reached (in addition to recording a log of wind speeds at the facility.) Kinder Morgan asked for approval to use a wind sock designed to indicate whether wind speeds have exceeded 15-knots (17.4 mph) and so asked that the high-wind provisions of Section 5.0(4) be adjusted to trigger at 17.4 mph. The Department denied these variance requests. (Variance Ruling, p. 15)

⁸ Compliance with the PM-10 monitoring requirements is not specifically cited as a condition of either variance. Therefore, the Department could grant a variance from the PM-10 monitoring requirements without having to modify the conditional variances for Sections 3.0(7) and 5.0(5)(b). But to minimize ambiguity, Watco is requesting a variance that explicitly states that the variances from Sections 3.0(7) and 5.0(5)(b) are not conditioned on the performance of PM-10 monitoring.

Watco is not renewing Kinder Morgan's request for a variance from Sections 3.0(5) and 5.0(4). As discussed below, Watco has already purchased a weather station that meets the requirements set forth in the Rules and is awaiting its shortly expected delivery and installation.

V. Granting Watco a Variance from the PM-10 Monitoring Requirement in Section 3.0(4) Will Not Cause a Nuisance or Adversely Affect the Surrounding Community (§ 8.0(2)(d)).

A. Watco is Continuing the Dust Suppression Procedures that the Department Found Sufficient to Justify the Variances under Sections 3.0(5) & 5.0(4) of the Rules.

1. Barge Loading and Unloading

Watco's barge unloading procedures follow the BMPs specific to those types of transfers. Before barges arrive at the site, Watco arranges for them to be covered with stackable fiberglass lids, stackable metal lids, or sliding metal lids, which both minimizes fugitive dust emissions from arriving barges and, for moisture-sensitive materials, also protects them from exposure to damaging moisture (image 5). The need to use covers to protect the moisture-sensitive materials should provide assurance to the Department that these procedures are consistently followed.



Image 5 - Aerial photo of covered barge

The lids on the barges remain in place except when lids are removed to allow excavators to unload the material from that portion of the barge (image 6). Additionally, when elevated wind levels are detected, a limit is placed on the number of lids that can remain open at the same time. When unloading material from the barge, the excavator operator minimizes the amount of product handled per scoop or bucket, ensuring that it is never overfilled (image 7). When depositing material into a dump truck for transport, the excavator operator lowers the excavator bucket into the dump box well within the sidewalls, and then slowly curls the bucket outward when placing material into the dump trucks. This procedure minimizes the "drop height"

(i.e., how far the material falls when being deposited) and the degree of disturbance of the material during the transfer operation, thus minimizing the potential for fugitive dust.



Image 6 - Excavator unloading barge with bucket attachment



Image 7 - Excavator loading truck (note minimized "drop height")

2. Rail Car Bulk Loading and Unloading

Rail car loading and unloading operations account for a relatively small volume of annual on-site material transfers. In 2016, the facility handled only 65 rail cars over the course of the year, and 27% of those rail cars were enclosed box cars that contained products (finished steel and Super Sacks) with no meaningful potential to create fugitive dust.

Bulk rail cars are unloaded by positioning them over a rail pit and releasing the material into the pit below. The pit is below ground level, accessible by a ramp, and walled off on the three other sides, which significantly shields the unloading operation from the wind. Front-end loaders access the material through the ramp, then move the material either to the appropriate on-site storage bin or directly to a truck. (See truck loading procedures below.) No material is stored

in the rail pit and, for quality control and material loss-control reasons, the rail pit is swept clean after each transfer operation.⁹

As for loading operations, there are two kinds of rail cars loaded on-site: (1) Open-top rail cars and (2) covered hopper-top rail cars. Open-top rail cars (image 8) are loaded with a front-end loader. All materials are watered prior to being loaded into the open-top rail car. Covered-hopper-top rail cars (image 9) are typically loaded using conveyors. A chute is installed at the end of the conveyor to minimize the potential for fugitive dust by shielding descending material from the wind. Because the covered-hopper top cars are partially covered, it is more difficult for dust to escape.



Image 8 - Loading an open gondola car with pig iron. Note the front-end loader is operating on a concrete pad and no fugitive dust is present. The pig iron was sprayed with water prior to handling.

⁹ Watco is evaluating the feasibility of wetting down railcar materials prior to their being deposited into the pit.



Image 9 - Loading proppants sand into a covered hopper rail car - no visible emissions noted

3. Truck Loading and Unloading

With one exception, all truck unloading is conducted indoors at the Watco Facility. The exception is a particular class of tractor-trailer that tips its container back to discharge its cargo. The storage buildings at the Watco Facility lack the vertical clearance necessary to allow this type of truck to unload indoors. In these cases the product is offloaded onto a concrete transfer pad outdoors (image 10), and then immediately transferred either into a smaller truck or into a front-end loader that delivers the material to the appropriate storage bin. To minimize the amount of material lost—Watco’s handling contracts typically tolerate no more than one-half of one percent (0.5%) losses in mass—the transfer pad is cleaned utilizing a combination of a skid steer, shovels, and brooms to recover even the smallest material particles (image 11).



Image 10 – Transfer Pad Operations



Image 11 - Transfer Pad Operations

All bulk materials stored indoors (which would include all manganese-containing materials) are also loaded into trucks indoors. (See images 12 & 13) This includes the loading of the larger tractor-trailers mentioned above, because their vertical clearance requirements for unloading do not prevent indoor loading operations which do not necessitate tilting the trailer portion of the vehicle.



Image 12 - Truck being loaded under dust collector



Image 13 - Truck being loaded under dust collector

Under normal conditions, non-water-sensitive materials stored outdoors will be loaded into trucks outdoors. However, during periods of low humidity, high temperatures, and/or wind speeds greater than 15 mph, Watco uses a water truck to wet down the surface of the outdoor materials before transfer operations begin. When trucks are loaded, the bucket or clamshell

depositing the material will be lowered as far into the truck bed as possible to reduce fall height and thus minimize fugitive dust.

4. Other BMPs

In addition to the above-described transfer point procedures, the following BMPs employed at the Watco Facility also contribute to the prevention and minimization of fugitive dust:

- All vehicular travel is required to adhere to an 8 mile-per-hour posted speed limit within the terminal.
- When loading pig iron into trucks, rail cars, or barges, the material is sprayed with water (unless the material is already wetted by precipitation.)
- Material spillage of any kind is cleaned immediately because of the value and weight of the product. The cleaning is accomplished using a combination of equipment and hand tools (i.e., shovels and brooms).
- All transport vehicles, including those not driven by Watco employees, must agree to not leave the Facility without covering or enclosing bulk material. Watco inspects all trucks prior to loading to verify that the truck does not track dust-producing material into the Facility and that the truck is capable of covering/enclosing the material it receives at the site.
- The roads and transfer areas at the Facility are routinely swept by a sweeper truck and washed by water-spray truck. The trucks follow specific routes focusing on areas most frequented by truck and front-end loader traffic. (See Appendix E)

B. Additional Evidence Not Presented to the Department in Kinder Morgan's Variance Request Supports Granting Watco's Variance Request.

1. Information on Materials Stored Outdoors

In denying Kinder Morgan's variance request, the Department explained that it could not assess the fugitive-dust potential of aggregates stored outside at the Facility based on the information provided. Watco is attaching a MSDS for the aggregates handled and stored at the Facility (see Appendix F). Importantly, the MSDS information makes clear that these aggregates, like the pig iron, contain no manganese. These materials do not contribute to any manganese-containing fugitive dust, and are typically sized between 0.25 and 1.5 inches. Although the density of aggregate is less than that of pig iron (ranging from 2.6 g/cm³ to 3.0 g/cm³), it is still significantly more dense than the various forms of pet coke that the Rules are built around (ranging from 1.2 g/cm³ to 2.16 g/cm³).

Watco is also attaching a photograph of the aggregate material, which was not included in the Kinder Morgan request (image 14). As shown in the image, the aggregate is roughly pebble-sized or larger—particle sizes too large to become airborne given the density of

aggregate. In fact, the aggregate is normally too dense for the wind to even move it laterally across the ground.



Image 14 - Aggregate Pile - Pebble sizes range from 0.25 to 1.5 inches

The Department also criticized Kinder Morgan for claiming that the pig iron stored at the facility produces “almost no dust” (Variance Ruling, at p. 10). The Department did acknowledge that Kinder Morgan has practices to suppress dust during transfer operations. In the event the Department may have a concern about the potential for the pig iron to produce dust even when not being transferred, Watco can address that concern. Physical disruption during the transfer process does tend to scrape off iron particles from the larger ingots. However, this shearing force is not present during inactive periods, and the wind alone is not sufficient to break off these particles in meaningful quantities. Also, when the pile is wetted as part of the transfer process, the water tends to wash down any powdery material, knocking it down to lower parts of the pile where the shielding effect of the enclosure bins is greatest.

There have been no other changes in the nature of the materials handled at the facility since Kinder Morgan described those materials in 2014. None of the bulk alloys kept at the site come in the form of a powder. The pig iron stored outside (see image 15) tends to be formed in large, cobble-sized, ingots. Typical bulk alloys at the Watco Facility are in sizes ranging from 4” to ¼” inches (image 16). The Department has previously noted that “if a facility establishes that the material it handles is uniquely dust resistant when handled properly, or that the dust emissions are effectively contained, captured, or controlled, then a variance might be appropriate.” (Variance Ruling, p. 12). This additional information confirms that the materials handled at the Watco Facility are, in fact, uniquely dust resistant, and that Watco undertakes measures to capture and suppress any dust that might be generated during transfer operations.



Image 15 - Outdoor pig iron storage

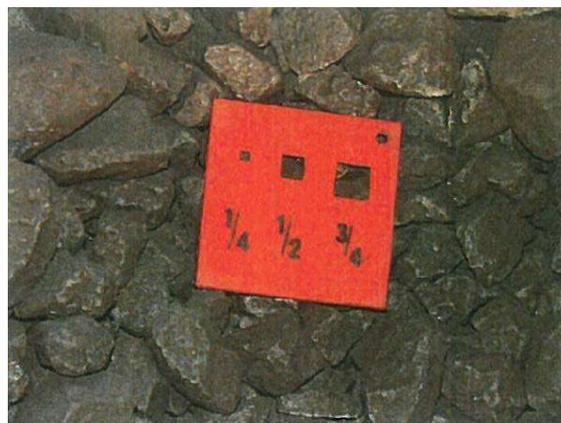


Image 16 - Silicon Manganese, stored indoors

2. Recent Opacity Testing During High Wind Events Produced Compliant Results.

Watco also has is providing additional, pertinent opacity test results that support a decision to grant this variance. The results of EPA Method 9 testing that was conducted during transfer operations at the Watco Facility on May 5th, 2017 are attached. (See Appendix G.) This testing was conducted during high-wind events (*i.e.*, 20 mph or more), where one would expect well above-average levels of fugitive dust. Even so, these high-wind operations did not generate non-compliant dust levels. After monitoring barge-unloading operations for 30 minutes, Watco's observer (who is properly trained and certified in Method 9) found an average opacity of only 6.8%. A second round of sampling found average levels of 17.75%, which is still below the applicable emission standard of 20%. See 35 Ill. Adm. Code 212.316.

3. Additional Compliance Measures and Equipment

Kinder Morgan made substantial efforts to reduce the potential for fugitive dust at the Facility, some of which occurred even before the City enacted the Bulk Solid Materials Rules. Kinder Morgan invested over \$6.5 million dollars in infrastructure upgrades. This included paving most outdoor surfaces, increasing indoor storage capacity by 100,000 square feet, installing dust collectors in four buildings (total cost, \$747,541.47), resurfacing the dock area with concrete (\$191,056), and purchasing both a water truck and a street sweeper (\$87,000). These measures were described in Kinder Morgan's variance request. But there are now additional, significant dust controls in place, as described in detail below, which provide the necessary additional evidence to demonstrate that granting Watco's PM-10 monitors variance request will not create a nuisance or adversely impact the surrounding area.

i. New dust collector

In June 2015, a new, substantial dust collector (the fifth added to the facility since 2010) was installed inside the truck-loading building at a total cost of approximately \$682,000 (see image 12, above.) The collector is designed to collect and filter air at a rate of 60,000 CFM. Since this new dust collector was installed, trucks are loaded beneath the collector, and the collector captures emissions from this indoor transfer operation. It is reasonable to assume that to the extent that manganese-containing dust emissions might have been escaping from the building before June 2015, they are now being essentially captured and hence, significantly further reduced since this dust collector began operations. Moreover, any such reduction would not have been monitored by the EPA Metals Study which was completed at about the same time as this dust collector began operating. However, there are continuing Illinois EPA PM-10 monitoring results for the period post-June 2015 that, as discussed below, showing significant decreasing trends in recent years.

ii. Installation of weather monitoring station

Watco is not renewing Kinder Morgan's request for a variance from the Rule's wind monitoring requirements. As of the date of this filing, it has purchased and expects to receive very shortly a new weather monitoring station.¹⁰ The estimated cost to purchase and install this equipment is \$6,474.

Watco agrees with the Department's previous observation that the collection of detailed wind monitoring data would play an important role in helping conclusively establish that the Watco Facility does not meaningfully contribute to fugitive dust emissions in Southeast Chicago, particularly in assessing whether increased dust levels are observed, including by Method 9 and 22 testing, on days when the Watco Facility is downwind from other facilities that handle manganese-bearing materials.

The weather monitoring station will also play a key role in Watco's BMP for high-wind conditions by accurately gauging whether the 15 mph threshold for "high wind" events is reached and ensuring that Facility personnel are alerted to take the incremental actions (alternate measures) required under the BMP. Employee operations binders contain a decision-tree (a copy of which is attached as Appendix H) which simplifies and standardizes the decision-making process for dust suppression, to aid consistent compliance. The weather station will also create a detailed record of wind conditions at the facility, which Department inspectors can cross-check against the roadway cleaning log, the water spraying log, and the suspended activity log, to confirm that these operations are being conducted in accordance with the BMPs and applicable requirements of the Bulk Solid Material Rules.

¹⁰ Shortly before filing this variance request, Watco was notified by its vendor that delivery before the August 1st deadline to install the system would not be possible. On July 27, 2017, Watco requested a one-month extension of the deadline to install the system.

iii. Installation of 30-foot height pole

The Department's December 2016 inspection report for the Kinder Morgan Facility observed that the height of the Facility's taller material piles could not be determined due to the absence of a 30-foot measuring post on site.¹¹ (Appendix I, p. 1.) Watco disputes this observation given that the walls of the outdoor storage bins are well below a height of 30 feet and the outdoor storage bins do not exceed these walls by more than a few additional feet. Also, former Kinder Morgan personnel (who have continued to work at the facility since Watco became the owner/operator earlier this year) confirm that the height of the outdoor piles has consistently remained below 30 feet. However, in recognition of the Rules' specification that a 30-foot high visible marker be installed, Watco has installed the required measuring post near its outdoor storage piles (image 3).

iv. Barge unloading area resurfacing and new berm

The Department's December 2016 inspection report also references the lack of a berm at the barge unloading area adjacent to the river. Watco questions the basis for this observation—at the time it purchased the facility there was concrete curbing along the barge unloading area's boundary with the river. The inspection report does not acknowledge the existence of this curbing, or explain why it was insufficient to stop material from falling into the river during unloading (or loading) operations. In any event, this matter has been resolved by Watco's ongoing project to completely resurface the barge unloading area. The resurfacing project is close to completion, and has cost over \$400,000.

The main purpose of the barge unloading area re-surfacing work was to further improve the collection of residual materials and dust in this area. The former surface had cracked and eroded over time, creating subsurface spaces where materials and dust could collect, avoid collection by the sweeper and water trucks that clean the loading area after transfer operations, and then potentially be released during dry, windy, conditions. The elimination of these cracks and eroded surfaces now greatly improves the efficiency of the Facility's sweeper and water trucks, thus reducing the potential for the creation of fugitive dust (image 17).

¹¹ Watco disputes the inspector's guesstimate that the pile he observed was close to 30-feet high. Staff personnel report that the material piles rarely exceed the range of 18 to 20 feet. The installation of the marker pole should help all parties reliably assess the heights of these piles in the future.



Image 17 - Resurfaced and curbed dock area

v. Pilot Testing of “dry fog” system for dust suppression

Watco has been working on identifying a system for additional control of potential fugitive dust in the barge unloading area for moisture-sensitive materials. It has recently completed testing of a misting system, but the system tended to create ice hazards and adversely affect moisture-sensitive materials. Watco recently commenced a testing period of a different system (called a Dry Fog™ system) that avoids the misting system’s icing and contamination problems by minimizing the volume of water used. The Dry Fog™ system has the potential to provide dust suppression even for the moisture-sensitive materials transferred in this area. (see Appendix J for more detailed information and manufacturer’s photos of the Dry Fog™ system.) The Dry Fog™ system generates ultrafine water droplets (1 to 10 microns in diameter) that are especially suited to attaching to and smothering airborne dust particles smaller than 10 microns (PM-10 particles). The system is designed for this specific application, while other misting systems tend to produce excessively large droplets, which allow smaller dust particles to pass through the “slipstreams” between droplets.

If successful, the Dry Fog™ system (expected to cost approximately \$50,000 to purchase and install) will add an extra level of protection to barge loading and unloading operations at the Facility. This is important because Watco stores all manganese-containing materials indoors, and so barge transfer processes (already subject to other suppression procedures) are the only plausible vector for manganese dust emissions.

Initially, the Dry Fog™ system will be used only for barge loading and unloading procedures. Because the barges are a major hub of transfer operations at the Facility, this will have an immediate positive impact.

vi. Purchase of clamshell excavator attachment

Currently, the Watco Facility uses an excavator with a bucket attachment to remove bulk solids from barges. Although BMPs require the excavator operator to remove the material in small enough scoops that spillage is unlikely, Watco is taking additional action to minimize these losses. Watco is in the final stages of purchasing a clamshell bucket which will reduce the surface area of the material exposed during the unload process (the clamshell encloses more product) and also allow the material to be loaded into trucks from a lower drop height, virtually eliminating fugitive dust emissions from this transfer process (image 18). This clamshell attachment, estimated to cost \$95,000, will be used in all barge loading and unloading operations moving forward.



Image 18 - Clamshell excavator attachment

In summary, Watco has made, or is in the process of making additional improvements to its facility that were not part of the evidence presented in support of the Kinder Morgan variance request. These additional improvements clearly further reduce the potential for fugitive dust emissions from the Watco Facility and thus demonstrate that the Facility will not cause a nuisance or adversely impact the surrounding area.

C. The EPA Metals Study Supports Granting the Watco Variance

The EPA's Xact Metals Study included in Exhibit B on the Department's May 3, 2017 variance denial letter to Kinder Morgan (the "EPA Metals Study") was submitted to the Department on March 10, 2017, well after the public comment period on Kinder Morgan's variance request closed on September 2, 2014. This is Watco's first opportunity to address the EPA Metals Study. A careful evaluation of the air monitoring data presented in the EPA Study reveals that it supports the conclusion that Watco's facility is not creating a public nuisance or adversely impacting the surrounding area. First, the manganese concentrations measured are all below the current human health standard. Second, a comparison of the Facility operations on days where the higher of the manganese levels measured shows that the Watco facility is not a

likely source of the manganese. Finally, the available data concerning potential sources of manganese emissions in the study area shows that there are several other potential sources of manganese that could have contributed to the manganese emissions and have not been investigated.

1. The EPA Metals Study Shows that Ambient Manganese Concentrations are not Adversely Impacting the Surrounding Area.

i. The EPA Metals Study evaluated the air data using an old and unreliable reference standard.

The EPA Metals Study cites and relies upon an old Reference Concentration (RfC) of manganese of 50 nanograms per cubic meter (ng/m³),¹² which the EPA originally published over twenty years ago in 1993. An RfC is “an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive target groups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.”¹³ An RfC is an “estimate” which takes into consideration uncertainty factors (UFs) which are applied based on the reference value derivation.

What the EPA Metals Study does not disclose is that the manganese RfC was derived principally from a 1992 study which had an assigned uncertainty factor (UF) of 1000.¹⁴ The manganese RfC UF of 1000 reflects factors of 10 for individual variability, a factor of 10 to convert the lowest observed adverse effect level of the 1992 study to a “no observed adverse effect” level, and a factor of 10 for database uncertainty.¹⁵ Per our review of UFs for EPA’s RfCs, an uncertainty factor of 1000 or more is abnormally high. Of the applicable chemicals in the EPA’s IRIS database, 68% of chemicals with a RfC had UFs less than 1000.¹⁶ This indicates that the manganese RfC uncertainty, already characterized as high, is also unlike the uncertainty assigned to the derivation of most other RfCs.

In addition to adopting an uncommonly conservative standard for manganese exposure, the RfC for manganese simply does not reflect the most recent knowledge in this area. The 50 ng/m³ standard is still based on the 1992 study, and has not been revised since 1993. Perhaps if there were no more recent standards to draw from, then the EPA Metals Study’s unexplained reliance on the 1992 RfC would be justifiable. But, as explained below, there is a more recent, and more reliable, standard that the Study did not acknowledge or explore.

¹² EPA Metals Study, page 13 of 13, Summary, item 6.

¹³ U.S. EPA, December 2002, Section 4.2 U.S. EPA Risk Assessment Forum, *A Review of the Reference Dose and Reference Concentration Processes*, December 2002, Section 4.2.

¹⁴ U.S. EPA, *Inhalation Health Effect Reference Values for Manganese*, EPA/600/R-12/047F5, Table 1 (Dec. 2012). The 1992 data was from Roels, H.A., P. Ghyselen, J.P. Buchet, E. Ceulemans, and R.R. Lauwerys. 1992. *Assessment of the permissible exposure level to manganese in workers exposed to manganese dioxide dust*.

¹⁵ *Id.*

¹⁶ <https://cfpub.epa.gov/ncea/iris/search/index.cfm?>

ii. Applying the appropriate health risk standard, manganese levels in the vicinity of the Watco Facility did not reach levels that would risk adversely affecting the local community.

The EPA Metals Study results show no measured manganese concentrations above 300 ng/m³. 300 ng/m³ is the current Minimal Risk Level (MRL) of manganese, and the MRL system is the appropriate comparative value to use in evaluating the Study's monitoring results, not the RfC system.

MRLs reflect the generation of risk assessment science that came after the more uncertain estimates used for RfCs. The Agency for Toxic Substances and Disease Registry's (ATSDR's) methodology for developing MRLs arose out of an agency-wide ATSDR workgroup, aided by observers from the EPA and the National Institute of Environmental Health Sciences, which was subjected to an expert panel of peer reviewers.¹⁷ It is important to recognize that the MRL is an estimate "of daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse noncancer health effects over a specified route and duration of exposure."¹⁸ The MRL is intended to be a screening exposure level to identify hazardous substances that may be of concern, and measured concentrations below these levels are not likely to cause harmful health effects.

In 2012, the ATSDR used the same 1992 EPA study data which was the basis for EPA's manganese RfC, but put that study data through the ATSDR's updated risk assessment methodology for deriving MRLs.¹⁹ Using the MRL methodology, the ATSDR developed the current manganese MRL of 300 ng/m³ and assigned it a significantly lower (by an order of magnitude) uncertainty factor (UF) of 100,²⁰ reflecting factors of 10 for individual variability and a factor of 10 for database uncertainty.²¹ Based on a review of UFs for ATSDR's for hazardous substances with similar chronic duration (or greater than one year) inhalation MRL (like manganese), an uncertainty factor of 100 or less is quite common. Of the hazardous substances in the ATSDR's database with an applicable MRL, 79% of those substances had UFs of 100 or

¹⁷ C.H. Selene et al., *Minimal Risk Levels (MRLs) for Hazardous Substances* (1998)

¹⁸ U.S. EPA Risk Assessment Forum, *A Review of the Reference Dose and Reference Concentration Processes*, December 2002, Section 2.1.5.

¹⁹ Creating accurate assessments of the risks created by different quantities of toxic substances is the core competency of the ATSDR. Congress created the ATSDR in 1980 "to implement the health-related sections of laws that protect the public from hazardous wastes and environmental spills of hazardous substances." As the federal public health agency of the U.S. Department of Health and Human Services, the ATSDR protects communities from harmful health effects related to exposure to natural and man-made hazardous substances. It performs this work under both the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Under CERCLA, the ATSDR is charged, in part, with expanding "the knowledge base about health effects from exposure to hazardous substances." Under RCRA, ATSDR is "authorized to assist EPA in determining which substances should be regulated and the levels at which substances may pose a threat to human health."

²⁰ U.S. EPA, *Inhalation Health Effect Reference Values for Manganese*, EPA/600/R-12/047F5, Table 1 (Dec. 2012).

²¹ *Id.*

less.²² This indicates that the manganese MRL uncertainty is comparable to the uncertainty assigned to the derivation of most other applicable MRLs.

Thus, the EPA Metals Study found that manganese levels in the vicinity of the Watco Facility are at levels “likely to be without appreciable risk of adverse noncancer health effects.” But rather than announcing this fact, the Study confuses the issue by using simultaneous references to the old manganese RfC value. The problem was compounded by the fact that Kinder Morgan was not given an opportunity to address and correct these ambiguities before the Department’s variance decision. This understandably caused the Department to misconstrue the underlying data presented in the EPA Metals Study in its denial of the Kinder Morgan variance request.

When assessing the data gathered by the EPA Study, the Department should look to the toxicology standards devised by the ATSDR, the public health agency that Congress authorized to protect communities from harmful health effects due to exposure to hazardous substances. When ATSDR’s standard, the MRL, is used as the appropriate reference concentration, the Study data from December 2014 – July 2015, measuring a concentration of 108 ng/m³, shows levels well below the MRL screening threshold of 300 ng/m³. Therefore, the EPA Metals Study measured manganese concentrations do not indicate there is any adverse impact on the surrounding area.²³

2. The EPA Metals Study Results and Other Monitoring Show Decreasing Manganese Levels Since the Implementation of Fugitive Dust Controls Under the Bulk Solid Materials Regulations.

The Illinois Environmental Protection Agency (Illinois EPA) has long maintained a metals monitor at Washington High School (Washington HS), approximately 1.4 miles northeast of Watco.²⁴ As shown in Figure 1, annual manganese concentrations have been recorded for many years at this location, which is adjacent and just north of the temporary (late 2014 through mid-2015) EPA Metals Study monitoring location in Rowan Park (northeast of the intersection of East 116th Street and Avenue O).

²² <https://cfpub.epa.gov/ncea/iris/search/index.cfm?>

²³ Watco is aware of two other recent monitoring studies that measured manganese concentrations, both showing no harmful health impacts. One is detailed in the previously cited ATSDR Health Consultation a report REVIEW OF ANALYSIS OF PARTICULATE MATTER AND METAL EXPOSURES IN AIR – KCBX – CHICAGO, COOK COUNTY, ILLINOIS (Aug. 22, 2016). Tables 6 and 7 of that report show average manganese concentrations monitored over the period of February 2014 through January 2015 at the KCBX North Terminal and at the KCBX South Terminal both having average manganese concentrations below the 300 ng/m³ comparative value (an average of 128 ng/m³ at the North Terminal, and an average of 87 ng/m³ at the South Terminal.) A second, on-going, effort at S.H. Bell commenced in March 2017 and shows an average manganese concentration, considering two months’ worth of data, of 220 ng/m³.

²⁴ The monitor is located at 3535 E 114th Street (southeast of the intersection of E 114th Street and Avenue O), and is identified as Illinois EPA Monitor Id 17-031-0022.

Figure 1 - Annual Mean Manganese Concentration - Washington H.S. Monitor

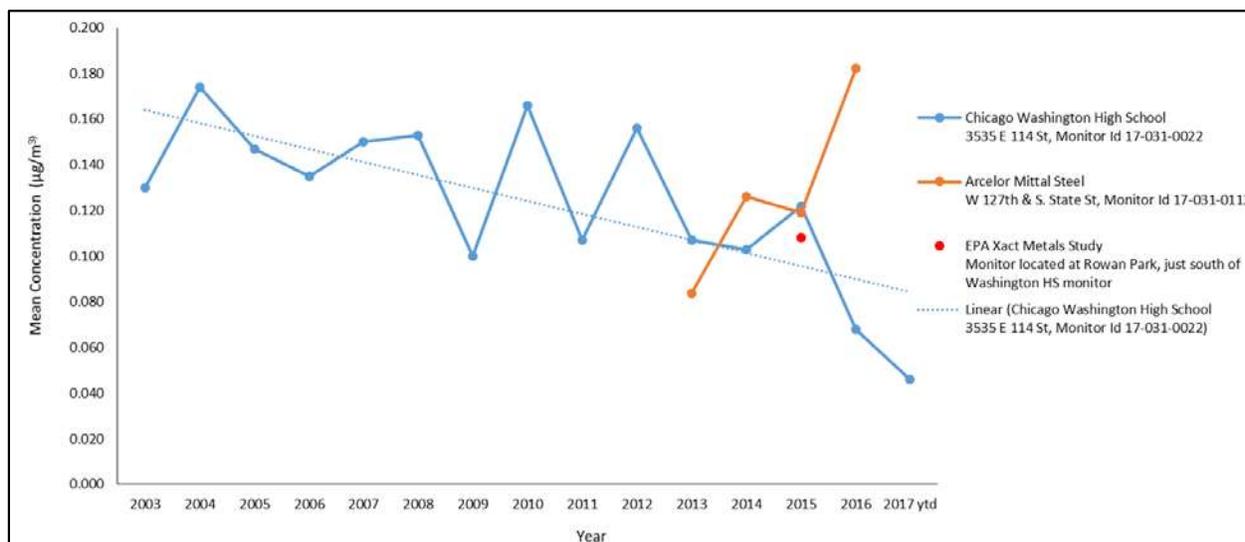


Figure 1 shows a downward trend of annual manganese concentrations at the Illinois EPA Washington HS monitor location, particularly in recent years and since the EPA Metals Study concluded.²⁵ Because the EPA Metals Study monitor location was located immediately south of the Illinois EPA monitor location, it reasonably can be inferred that if the EPA had continued its study past mid-2015, the concentrations it detected at the EPA Metals Study location would also have decreased by a similar amount.

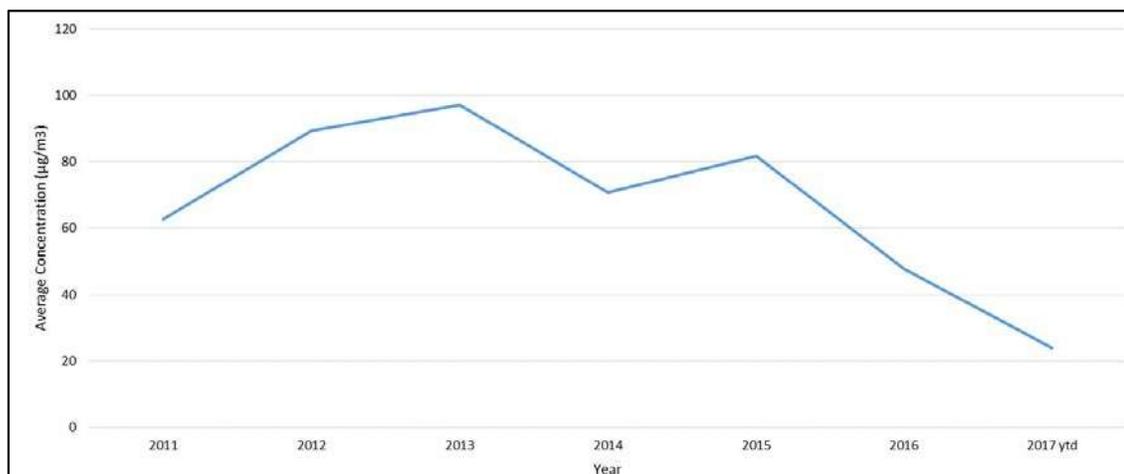
The downward trend is also evident when reviewing the Illinois EPA highest recorded manganese concentrations each year,²⁶ as shown in Figure 2, with the lowest maximum readings being recorded again in recent years. Watco believes the downward trend in measured manganese concentrations identified at the Illinois EPA Washington HS monitoring location is, in part, influenced by measures to minimize fugitive dust as required by the 2014 Bulk Material Solids Rules, both at the Watco Facility and at other regulated facilities. As suggested by the EPA Metals Study, the location of the study's monitor, and the Illinois EPA's longstanding Washington HS metals monitor, could be considered downwind of "various industries along the Calumet River."²⁷

²⁵ Per Figure 1, higher manganese concentrations have been recorded at the Illinois EPA monitor (called the ArcelorSteel monitor) located approximately 3.5 miles west southwest of Watco, when that monitor was operated from 2014-2016.

²⁶ Per Illinois EPA metals monitoring procedures, a manganese concentration is measured across each six-day period, unlike the EPA Metals Study procedures, which measured a manganese concentration each hour. Maximum hourly concentrations from the EPA Metals Study will therefore show more variability than measured six-day concentrations per the Illinois EPA monitor. This is all relative based on the fact that the comparative screening level concentration for manganese is an annual value to reflect the chronic impacts of manganese.

²⁷ EPA Metals Study, page 4 of 13, describing the quality assurance procedures for sample collection and monitor placement.

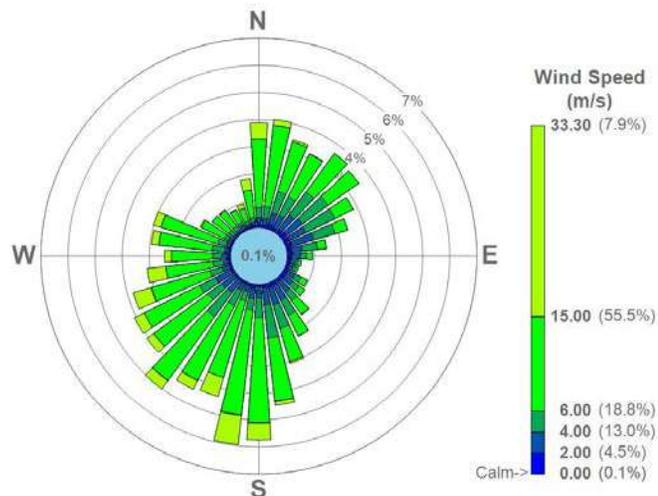
Figure 2 - Washington H.S. PM10 Monitor Top 8 24-Hour High Concentrations – Averaged Per Year



To confirm the prevailing wind direction (*i.e.*, to determine what is “upwind”) and wind speeds in the vicinity of the EPA Metals Study monitor, the Illinois EPA Washington HS monitor, and the lower Calumet River basin area in general, Watco’s consultant, Trinity Consultants, analyzed meteorological data collected at a nearby location.²⁸ As shown in Figure 3, nearby wind data would indicate that the prevailing average wind direction in the lower Calumet River basin area is from a south - south southwest – southwest direction. Based on this prevailing south-south southwest – southwest wind direction, there are few, if any, residences downwind between the Watco Facility and the EPA and Illinois EPA Washington HS monitor locations. The exception to this is a few residences located immediately south of the EPA and Illinois EPA’s Washington HS monitor locations, between East 115th and 116th Streets. The Illinois EPA data and the EPA Metals Study data (Figures 1 and 2) prove that there are no measured manganese concentrations of concern near these locations (based on the measured concentrations of manganese being well below the manganese MRL), and the downward trend in measured manganese concentrations further lend support to the conclusion that ongoing fugitive dust mitigation measures in this area are effective.

²⁸ The EPA Metals Study, while collecting wind speed and wind direction data at the monitor location, only collected data over the period of December 12, 2014 until July 23, 2015, as depicted in Figure 2 on page 4 of 13 of the EPA Metals Study Report.

Figure 3 - Combined 2015-2016 Windrose Derived from Meteorological Data collected at KCBX South Terminal (10730 Burley Ave.)



3. The EPA Metals Study Lacks Persuasive Evidence That the Manganese Dust Measured Was From the Kinder Morgan Facility.

The Department’s May 3, 2017 variance denial letter to Kinder Morgan states that: “[T]he EPA metals study, referenced below, found evidence of manganese containing dust coming from Kinder Morgan’s facility.” Later, the Department states that: “Based on an analysis of wind direction and wind speed, the report specifically identified Kinder Morgan as ‘the main [manganese]-contributing facility.’” (Variance Ruling, p. 11.) But, a closer review shows that both of the cited EPA Metals Study statements are wrong and mislead the Department’s review of the Kinder Morgan variance request. First, the EPA Metals Study did not provide evidence that the manganese containing dust came from the Kinder Morgan facility. Second, the EPA’s identification of Kinder Morgan as “the main [manganese]-contributing facility” is not supported by the data presented in its report. In truth it is impossible, using the EPA Metals Study data, to predict the source of the manganese emissions the EPA measured. Second, a comparison of the relevant conditions, both wind direction and the Facility’s operations (or lack thereof) at the time of the monitoring, refute this conclusion. Moreover, the concentrations are below the manganese MRL that is intended to protect against adverse health effects.

The EPA Metals Study does not follow a clear methodology, but the presentation of its data in Figure 6 suggests that the Study adopted an approach that will not produce consistent results.²⁹ To our understanding, the depiction in EPA Metals Study Figure 6 is arrived at in the following manner: (1) Hourly concentrations measured at the EPA monitor location are plotted on a map at a location upwind of the monitor, based upon the hourly wind direction at the time of the concentration measurement, and at a distance from the monitor based on the hourly wind

²⁹ EPA Metals Study, page 9 of 13.

speed at the time of the concentration measurement; and (2) The highest frequency of such plotting of all hourly concentrations results in the reddish shaded locations as shown in the EPA Metals Study Figure 6.

EPA describes these areas as “the area of most significant and consistent emissions,” and describes the area around the Kinder Morgan facility as a “hot spot.” But it is not possible, using the EPA Metals Study data, to predict the quantity or the location of where the manganese emissions resulting in the concentration plot “hot spots” came from. The data is insufficient to identify whether emissions were from sources upwind of Kinder Morgan, or from Kinder Morgan, or from sources downwind of Kinder Morgan, or from some combination of all of these sources.³⁰

Data from EPA, including the Toxic Release Inventory (TRI)³¹ and Enforcement and Compliance History Online (ECHO)³² databases, show over a dozen nearby sources of reported manganese emissions (see Appendix K, fig. 1).³³ Given that many sources have no statutory EPA obligation to report manganese emissions, reported sources of particulate matter (reported as PM-10) emissions were also reviewed. A plot of these sources located within a 5-mile radius of the EPA Metals Study and Illinois EPA Washington HS monitoring locations is shown in Appendix K, fig. 2.³⁴ There are nearly 75 known PM-10 emitting stationary sources in this 5-mile radius. Watco is also aware that other possible sources of manganese emissions, and PM-10 emissions, within this 5-mile radius, have still not been captured in the TRI and ECHO database analyses. For example, the Defense Logistics Agency (DLA), located at 3200 Sheffield Avenue in Hammond, Indiana (shown on Appendix K, fig. 3) is known to have outside storage piles of manganese compounds but is not included in the TRI and ECHO databases.³⁵ The DLA facility

³⁰ Documentation on EPA’s website, archiving its recent investigations of facilities on Chicago’s southeast side, is also inadequate in identifying possible sources of manganese. The EPA Metals Study notes that “various recyclers at Reserve Marine Terminal (RMT) were all recently inspected by EPA air enforcement engineers” but includes no details of those operations, this despite EPA website having limited details of other inspections of similar operations located further north of the EPA Metals Study monitoring location. See <https://www.epa.gov/il/elg-metals-inc>; <https://www.epa.gov/il/cronimet-usa>.

³¹ TRI Database located at: https://iaspub.epa.gov/triexplorer/tri_release.chemical.

The TRI Program tracks the releases of defined toxic chemicals that may pose a threat to human health and the environment. Facilities in certain industry sectors report annually the releases of such toxic chemicals.

³² ECHO Database located at: <https://echo.epa.gov/>. The ECHO database can be used to search for facilities in a given area to assess their compliance with environmental regulations, and includes reported annual air emissions, if applicable.

³³ Watco believes that some possible sources of possible manganese emissions are not included in these EPA databases since many facilities, often small in relative size (number of employees, or geographic footprint, or processing operations) have no state or federal obligations to report such emissions under any reporting program, and hence they are not included in the TRI or ECHO databases. Also, no mobile or naturally occurring sources of manganese emissions are included in these databases.

³⁴ Manganese, being a metal species, would also be considered particulate matter, and inhalable quantities of manganese would also be reported as PM-10.

³⁵ See <http://www.dla.mil/Portals/104/Documents/StrategicMaterials/IATK/1%20DLA-SM%20Hammond%20SWPPP%20r9.pdf> and specifically page 3-11, Table 3.2 identifying open storage piles of ferromanganese at this location.

is only approximately 2 miles from the EPA Metals Study and Illinois EPA Washington HS monitor locations.

Watco is also aware that other possible sources of manganese emissions, and PM-10 emissions, within this five-mile radius, have still not been captured in the TRI and ECHO database analyses. For example, the Defense Logistics Agency (DLA), located at 3200 Sheffield Avenue in Hammond, Indiana (shown on Appendix K, fig.3) is known to have outside storage piles of manganese compounds but is not included in the TRI and ECHO databases. The DLA facility is only approximately two miles from the EPA Metals Study and Illinois EPA Washington HS monitor locations.

Finally, the EPA Metals Study is silent on what might be the typical manganese concentration in an urban area, regardless of the proximity of possible manganese emissions. This “background” concentration may not be trivial, based on previously published information.³⁶

Thus, the EPA Metals Study does not provide evidence that manganese-containing dust came exclusively or in part from the Kinder Morgan facility. The presumption that Kinder Morgan must be the responsible party is unsound: There are too many other stationary sources in the lower Calumet River basin that do or may emit manganese and whose emissions would have been monitored by the EPA Metals Study’s monitor location. In its study, the EPA did not follow-through with the necessary steps to determine a specific source or sources of the measured manganese. And, considering the considerable amounts of money and effort that Kinder Morgan (and now Watco), have invested into dust suppression at the Facility and the indoor storage of manganese-containing materials, it is frustrating that the Study leveled accusations at the Facility without any analysis of those improvements.

What’s more, Watco can refute the EPA Metals Study’s allegation that its Facility is “the main [manganese]-contributing facility.” Observed manganese levels have a negative correlation with activity at the Facility. The EPA Metals Study includes a Table 3 which depicts “the 34 hours when manganese was more than ten times the average concentration, *i.e.* the top 1% of the data.”³⁷ Several of these highest hourly data points occur when there were no operations underway at the Kinder Morgan facility. For example, Table 3 of the EPA Metals Study includes hourly manganese concentrations on Thursday, March 5, 2015 at 6pm and 9pm, but the Kinder Morgan facility was not operating during this time period.³⁸ (See Affidavit of Steven J. Caudle, attached as Appendix L.) Similarly, Table 3 also includes an hourly manganese concentration on Sunday, March 15, 2015 at 8 pm, but again the Kinder Morgan facility was not operating that

³⁶ Per the EPA, the average concentration of manganese in urban air is approximately 40 ng/m³. U.S. EPA, *Inhalation Health Effect Reference Values for Manganese*, EPA/600/R-12/047F5, Table 1 (Dec. 2012).

³⁷ EPA Metals Study, page 11 of 13. Table 3. Details of Peak Manganese Periods (ng/m³).

³⁸ EPA Metals Study, Table 3, identifying hourly concentration of manganese of 1373 ng/m³ and 2247 ng/m³.

day.³⁹ There are also many hourly manganese concentrations in Table 3 where the wind direction at the time of the hourly manganese concentration is inconsistent with the Kinder Morgan facility being the source.⁴⁰

Thus, even if the manganese levels monitored by the EPA were at levels which indicated an unacceptable risk, the EPA Metals Study does not provide reliable or persuasive evidence that manganese containing dust came either exclusively or in part from the Facility. Clearly, there are numerous potential sources of manganese within the area surrounding the EPA's monitor location. EPA did not provide any explanation for why these other sources were not significant or contributing sources. Further, the fact that several of the highest manganese readings occurred during evening or weekend hours when the Kinder Morgan Facility was not operating and that a significant portion of the measured manganese levels occur at times when the wind direction would not be consistent with the Facility being a source refute the EPA's biased and speculative accusation against the Facility.

4. Regardless of the EPA Metals Study, Declining PM-10 Concentrations in the Area Are Evidence that Fugitive Dust Mitigation Measures Are Being Effective.

The EPA Metals Study covers a relatively small amount of time. And so, it gives little insight into whether the changes required by the Bulk Solid Materials Rules have had an impact on fugitive dust emissions. Like other industrial operations in the area, the Facility has made significant operational changes in response to these new regulations. From the long-term Illinois EPA PM-10 monitoring results, a reasonable inference can be drawn that steps taken previously by Kinder Morgan and additional steps more recently taken by Watco at the Facility have reduced the fugitive dust emissions to a level that supports granting this variance request.

The Illinois EPA has maintained longstanding PM-10 monitor at Washington HS, approximately 1.4 miles to the northeast of Watco (at the same location of its metals monitor, measuring manganese concentrations). Concentrations of PM-10 clearly have been trending downward, particularly in recent years, both on an annual average basis (Figure 1, above) and when considering the average of the 8 highest 24-hour average concentrations (Figure 2, above). Annual mean concentrations per Figure 4 have fallen 30% from 2015 to 2016, a trend which has continued in 2017 (per 2017 year-to-date monitoring data). Figure 5, below, shows that PM-10 concentrations at the Illinois EPA Washington HS monitoring location, downwind of Watco, are the cleanest of the three monitored locations in the City of Chicago.

³⁹ EPA Metals Study, Table 3, identifying hourly concentration of manganese of 1151 ng/m³.

⁴⁰ EPA Metals Study, Table 3, of just the top 1% of all the manganese concentrations measured during the hourly periods during the EPA Study period, 20% are from a wind direction other than in the direction of the Kinder Morgan facility.

Figure 4 - Washington H.S. PM-10 Monitor - Annual Mean

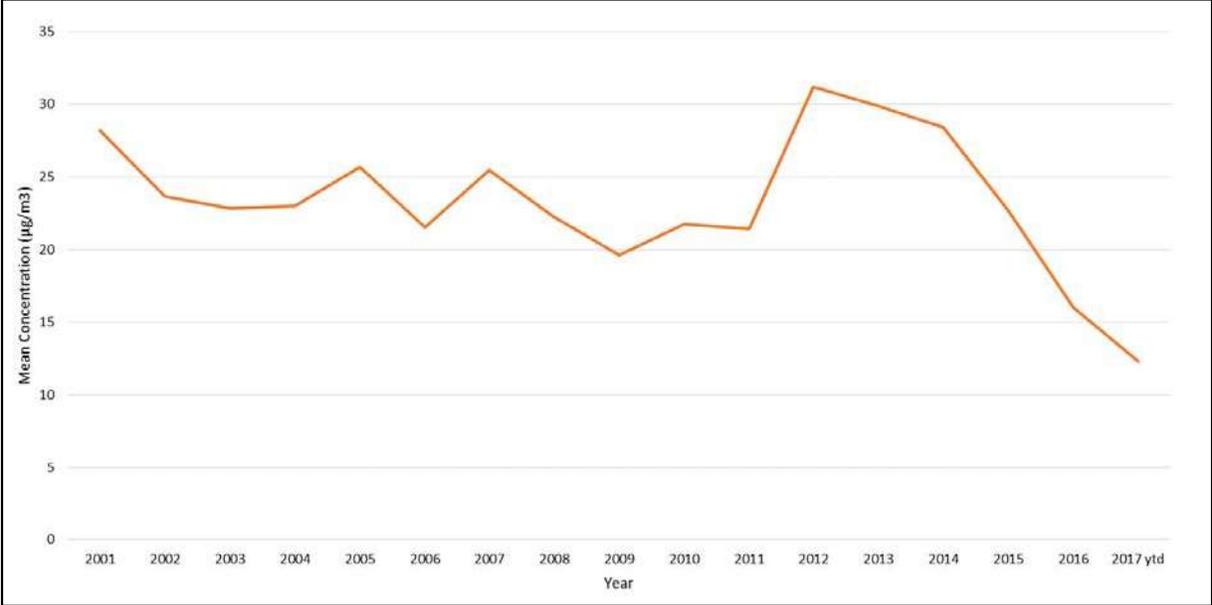
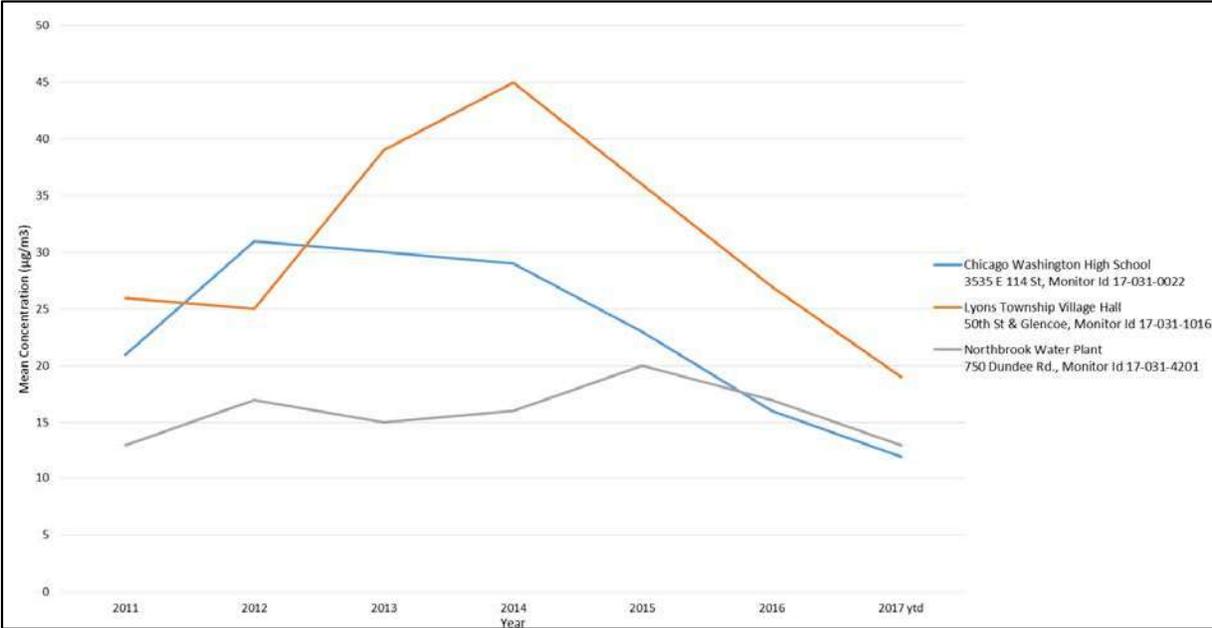


Figure 5 - Chicago Monitored PM10 Concentrations: 2011-2017



Watco submits that the EPA Metals Study data shows that manganese levels in fugitive dust in the area surrounding the Watco Facility do not adversely impact the community. The measured levels were consistently below the manganese MRL that was established by the ATSDR to protect human health. The fact that several of the higher manganese levels measured occurred when the facility was not operating is additional evidence that the Watco facility is not a significant source of manganese emissions. The significant declines documented in the long

term manganese and PM-10 monitoring data collected by the Illinois EPA further show that fugitive dust emissions have significantly declined in recent years—another line of evidence demonstrating that the Watco facility is not causing adverse impacts or nuisance conditions. Finally, as discussed in this variance request, further significant fugitive dust emissions controls have been put in place at the Watco facility since the conclusion of EPA Metals Study. It stands to reason that if the EPA measured manganese at levels consistently below the MRL before these additional controls were put in place, the case for Watco’s requested variance is stronger today.

C. Watco has Addressed the Department’s December 2016 Inspection Report’s Findings.

As discussed above, Watco has made changes to address both the 30-foot high marker and barge area berm issues raised in the Department’s December 2016 Inspection Report of the then Kinder Morgan Facility. However, the Department’s December 2016 Inspection Report’s remaining finding that the Facility does not conduct water truck operations is not correct. It appears to have arisen from a misinterpretation of the Facility’s operations log. In fairness, the inspector’s confusion is understandable: The forms used at the Facility at the time of the inspection did not differentiate between the operations of the sweeper and water trucks. Entries on these forms simply recorded that one of the two trucks was operated to clean Facility roads and other internal areas, without differentiating whether it was the sweeper truck or the water truck. Hence, on first impression, it appears that the inspector assumed (albeit incorrectly) that only the sweeper truck was being used. Watco has since modified the forms to make the distinction clear. There are now separate log forms for recording the operations of the sweeper truck and for the water truck so that it is clear which truck has been operated (Appendix M).

The Facility has had both sweeper and water trucks in operation since at least 2014. In fact, a Department inspector actually saw the water truck in operation in August 2016, and documented it in a contemporaneous inspection report.

But, more importantly, the December 2016 Inspection Report should not be viewed as representative of facility operations. It is an outlier that is not consistent with prior inspections of the Facility. For instance, in August 2016, a different inspector observed a truck being loaded at Building F, observed the operation of a watering truck, and was shown the street sweeper. During the visit, he told Facility employees that he was pleased by the pollution-prevention efforts he observed.⁴¹ Similarly, a July 8, 2015 site visit by the EPA found “no cause for concern” after viewing the operations.⁴² (See Appendix N, Watco’s internal notes on EPA site

⁴¹ More remotely, but still relevant, in 2012 Kinder Morgan successfully defended itself against a citation claiming that it had allowed dust to collect around dust collector pads at the facility.

⁴² The EPA does not treat these inspections as perfunctory. In 2014, following an inspection that found significant fugitive dust emissions, the EPA issued a Notice of Violation to S.H. Bell’s nearby materials handling facility. It soon followed that up with a civil action against S.H. Bell, which ultimately settled in the government’s favor, with S.H. Bell agreeing to install PM-10 monitors. *See United States v. S.H. Bell Company*, Case No. 16-7955 (N.D. Ill.).

visit.) These two inspections (occurring when the Facility was staffed and operated in substantially the same way as it did in December 2016), should give the Department pause in evaluating the appropriate weight to be given to the most recent report's reference to "very dusty" conditions. It is important to note that the inspection report did not observe any noncompliant fugitive dust emissions at the Facility. Nevertheless, Watco has taken the inspector's assessment seriously and has worked hard to carry out improvements. This outlier comment is not a sufficient basis for denying Watco's variance request, especially not when other inspections did not find noteworthy levels of dust.

D. Given that the Available Data Shows that Manganese Emissions are Declining, Continuing Method 9 and 22 Monitoring is Sufficient to Ensure Compliance.

The evidence presented above shows that currently the Watco Facility has no significant potential to create fugitive manganese dust that would create a nuisance or adversely impact the surrounding area. Even if one sets that evidence aside and operates on the assumption that the Facility does contribute to the local dust emissions, the alternative opacity monitoring that would be conducted under the requested variance (under Methods 9 and 22) would be likely to detect that contribution. In addition, the continued Illinois EPA local PM-10 monitoring provides a safeguard to address any concern by the Department that those alternative monitoring methods are inadequate.

This approach is particularly appropriate because the empirical monitoring data collected by the Illinois EPA show that PM-10 and manganese concentrations in the area are steadily declining. Assuming for the sake of argument that the Facility previously contributed to area PM-10 emissions, it would be unfair not to connect the decreases in those emissions to the significant resources and effort that the Facility's owners have put into dust suppression efforts. And as noted above, Watco is still implementing additional, expensive, control measures that (again, in this worst-case scenario) would bring further reductions in emissions.⁴³ In sum, granting this variance is supported by sufficient evidence to satisfy Watco's burden of proof and includes robust safeguards to allow the City to monitor that Watco's operations are compliant with applicable fugitive dust emissions standards going forward.

VI. Granting Watco a Variance from the PM-10 Monitors Deadline in Section 6.0(6) will not Cause a Nuisance or Adversely Affect the Surrounding Community (§ 8.0(2)(d)).

A. Materials Transfers at the Facility are Subject to Best Management Practices that Minimize the Potential for Fugitive Dust Emissions

⁴³ And, even before these levels were reduced, the manganese levels did not exceed the ATSDR Minimal Risk Level of 300 ng/m³

1. Proposed Methods to Achieve Compliance with the Regulations (§ 8.0(2)(f))

Kinder Morgan's variance request contained relatively little information on the alternative opacity detection methods proposed. These proposed measures—Method 9 and Method 22—are widely-used procedures that are used for exactly this situation. In developing Method 9, the EPA “conducted extensive field studies on the accuracy and reliability” of this method. EPA, *Visible Emissions Field Manual—Methods 9 and 22*, EPA 340/1-92-004 (Dec. 1993). In fact, when the EPA performs site inspections, it uses Method 9 to determine the presence of fugitive dust emissions. (See S.H. Bell Notice of Violation, Appendix O.)

The Bulk Solid Materials Rules accept Methods 9 and 22 as an appropriate methods for testing the outcomes of granted variances to ensure that they protect the public and the environment. Even owner/operators that have obtained a variance from Section 3.0(4) are required by Section 3.0(2) to conduct opacity testing under EPA Method 9 on “at least” a quarterly basis. Thus, Watco proposes that it be required to follow the alternative-compliance approach proposed by the Rules. Watco is willing to conform to a conditional variance requiring that Methods 9 and 22 testing be conducted monthly. These opacity measurements will be conducted by a trained/certified employee or contractor. The findings will be documented in an Opacity Monitoring Log, which will be available for inspection by the Department upon request.

Also, while PM-10 monitors (assuming they are properly maintained and calibrated, which is challenging with the current generation of monitors) can be more accurate than Methods 9 and 22 in gauging opacity, they are not suitable for all environments. Watco's Facility is on a relatively compact footprint, and some of its boundaries lack obvious sites where the PM-10 monitors could be installed without having their results distorted by nearby on-property and off-property buildings. Neither Watco, nor the Department, nor the community will be served by PM-10 monitoring that can only be installed in locations where it will produce erratic and unreliable results.

In addition to being unnecessary and possibly inefficient, the cost of requiring the installation, operation, and maintenance of PM-10 monitors is unreasonable in light of the hypothetical benefits envisioned by the Department. See Rules Section 8.0(2)(e)(i). Watco has contacted vendors and has been told that it would cost between \$100,000 and \$200,000 to purchase and install the PM-10 monitors required by Section 3.0(4). This estimate does not include the cost of supplying power to the monitors. Because the Facility has already committed large sums of time and money to ensuring that the dust emissions do not adversely affect the surrounding community, requiring additional expenses for work that can be done reliably with EPA-approved alternatives already in use at the Facility would impose an arbitrary and unreasonable hardship on Watco. (Rules Section 8.0(e)(i)).

VII. Statement Regarding the Person's Current Status as Related to the Subject Matter of the Variance Request (§ 8.0(2)(h))

Watco believes that it has provided the requested statement concerning its current status of compliance related to the subject matter of this variance request. The above information provides the City with Watco's current status regarding the requirements of the City's Rules from which it is seeking a variance.

VIII. Conclusion

Watco appreciates the cooperation which your Department has shown during the process of submitting this variance request. Watco has worked to submit this request as quickly as possible following the Department's ruling on Kinder Morgan's variance request. This required Watco to obtain expert opinions regarding the EPA Metals Study relied on by the Department, and to explore additional dust-reduction measures that could be proposed in this filing.

Watco respectfully submits that it has satisfied the requirements for a variance in Section 8.0 of the Rules and requests that the Commissioner grant the requested variance for the reasons described above. The decision to ask the Department to revisit a variance request that it denied only a few months ago was not made reflexively. That denial was based on two major pieces of evidence (the EPA Metals Study and the December 2016 inspection report) that were received shortly before the Department's decision and without benefit of either third-party expert review, as in the case of the EPA Metals Study, or rebuttal by Kinder Morgan or Watco to show the inaccuracies attendant to their findings. The truth is that the EPA Metals Study, for no clear purpose, methodically exaggerates the severity of manganese levels in Southeast Chicago. It also arbitrarily selects the Watco Facility to stand as the scapegoat for this biased presentation of monitoring results, even though the facts on the ground simply do not support this theory. All manganese-containing materials at the Facility are stored indoors. The recorded spikes in manganese levels do not correlate well with Facility operations, or occur at places and times where the wind was not blowing from the direction of the Facility. Yet, even though this data strongly suggests that manganese (which, again, is not present at harmful levels) originates from a different site in the area, and even though there are scores of other industrial operations in the vicinity, the Study invests no time in evaluating these facts which contradict its speculative findings. The Study's flawed findings and conclusions are not reliable evidence and do not support a denial of this variance request.

The December 2016 inspection report also needs to be placed in its proper context. The misconstruction of the Facility's sweeper and water truck logs has been corrected by Watco to show that water trucks were regularly operating—something that had not been questioned in prior inspections that found no such alleged noncompliance. The inspector appears to have thought that he was being misled by Kinder Morgan, which had claimed to be conducting wash-truck operations, yet had no record of this in its operational logs. He was correct, but not in

the way he thought—the Facility’s log books documented the washing operations in a confusing manner. (Watco has since revised its procedures to address this.) Watco has provided substantial evidence, including an August 2016 inspection report, showing that the water truck is used routinely at the Facility. The December 2016 report should not be viewed as representative of the Facility’s dust control practices, particularly when it stands in stark contrast with clean bills of health that the Facility had received earlier from a different Department inspector and the EPA. And finally, there were no observations of fugitive dust emissions emanating from the Facility during this inspection. The inspection report is simply not a sufficient basis for requiring the use of expensive particulate monitoring systems that will do little, if anything, to protect public health and the environment. To the extent the Department may have any lingering concerns associated with the December 2016 report, as a new owner of the Facility, Watco submits that its extensive efforts to further improve control of fugitive dust emissions demonstrate that further changes to the Facility’s operation just since the beginning of this year warrant a different decision on this new variance request.

The Facility’s owners have behaved as good corporate citizens during the recent regulatory upheaval for bulk solids. The Facility has made millions of dollars in capital improvements with the goal of ensuring that its community is not put at risk by materials-handling operations.

The Rules were written, in part, with facilities like the Watco Facility in mind. The drafters understood that PM-10 monitoring is expensive, and in many cases the public will be fully protected through alternative compliance measures. That is why the PM-10 monitoring requirement in Section 3.0(4) is one of the few requirements to cross-reference the variance procedures in Section 8.0. The monitoring rule is not for everyone. Watco submits it has shown that it should not be applied to its Facility because the credible evidence presented here shows that no nuisance will be created nor any adverse impact caused to the surrounding area by granting this variance request. Should the Department believe that it needs more time to confirm the accuracy of this demonstration, then Watco submits that it should be given the opportunity to continue its operations, as well as its plans for further dust control improvements, to demonstrate that the monitoring rule is an unnecessary and unduly burdensome requirement. Watco is open to discussing with the Department a time-limited variance which suspends the PM-10 monitors requirement to allow these additional improvements to be completed and subject to Watco’s submission of a final report to the Department showing the additional improvements implemented. Assuming the completed, additional improvements provide further support for the variance request, the time-limited variance would then become a final variance decision. In the interim, Watco would continue to demonstrate compliance with the PM-10 emissions standards under the Bulk Solid Materials Rules, as it currently does, by conducting the periodic monitoring required by those rules.

The Facility's owners have worked aggressively and at great cost to pursue the goal of dust suppression at this site. This was done both out of obligation to the community and in the knowledge that the Bulk Solid Materials Rules are not blind to this kind of cooperation from owners and operators. The Department benefits from creating these kinds of incentives for its regulated companies—but if the incentives are not applied consistently, and if a lot of good work can be made worthless by unfounded allegations by outside parties, the Department will see this tool's effectiveness rapidly diminish. The Watco Facility deserves the opportunity to prove the success of its extensive dust-suppression efforts using EPA Methods 9 and 22 and should be granted a variance from the PM-10 monitoring rule.

Respectfully submitted,



Steven Caudle
Terminal Manager
Watco Transloading LLC – Chicago Arrow Terminal

Guidance for the Identification and Control of Safety and Health Hazards in Metal Scrap Recycling





Employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

This publication provides a general overview of a particular standards-related topic. This publication does not alter or determine compliance responsibilities which are set forth in OSHA standards, and the *Occupational Safety and Health Act*. Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.

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Assistant Secretary of Labor for
Occupational Safety and Health

Guidance for the Identification and Control of Safety and Health Hazards in Metal Scrap Recycling

**Occupational Safety and Health Administration
U.S. Department of Labor**

**OSHA 3348-05
2008**

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Introduction

The Audience for This Guide

Anyone who works in the metal scrap recycling industry—employers, employees, safety professionals, and industrial hygienists—should read this publication. This guide can help you identify and manage the hazards associated with exposure to various metals and processing chemicals and with related processes and equipment used in metal scrap recycling operations.

Why This Guide Is Important

Metal scrap recycling, also called secondary metal processing, is a large industry that processes, in the U.S. alone, 56 million tons of scrap iron and steel (including 10 million tons of scrap automobiles), 1.5 million tons of scrap copper, 2.5 million tons of scrap aluminum, 1.3 million tons of scrap lead, 300,000 tons of scrap zinc and 800,000 tons of scrap stainless steel, and smaller quantities of other metals, on a yearly basis. (ISRI NDa)

Scrap metals, in general, are divided into two basic categories: ferrous and nonferrous. Ferrous scrap is metal that contains iron, while nonferrous metals are metals that do not contain iron. These two basic categories of metals are described in further detail in the section, “Types of Metals Most Commonly Recycled” in the “Commonly Recycled Metals and Their Sources” chapter of this guide.

Many employees are employed by scrap metal recycling industries. Private, nonferrous recycling industries in the U.S. employed approximately 16,000 employees in 2001.¹ (Figures were not available for ferrous recycling industries.) In 2001, those nonferrous recycling industries reported approximately 3,000 injuries and illnesses. The most common causes of illness were poisoning (e.g., lead or cadmium poisoning), disorders associated with repeated trauma, skin diseases or disorders, and respiratory conditions due to inhalation of, or other contact with, toxic agents. Of those injuries and illnesses, 701 cases involved days away from work. The most common events or exposures leading to these cases were contact with an object or piece of equipment; overextension; and exposure to a harmful substance. The most common types of these in-

¹After 2001, the data for private nonferrous recycling industries were no longer available due to a change in industry codes. However, the nonfatal injury incident rates in 2005 for codes that encompass the nonferrous recycling industry range from 7.8 to 11.2 per 100 employees (BLS, 2005).

juries were sprains and strains; heat burns; and cuts, lacerations, and punctures. (BLS, 2003)

How This Guide Can Help

As an employer, this guide will help you protect your employees by helping you and your employees recognize, manage, and control the potential hazards associated with common metal scrap recycling processes. This guide will also assist safety professionals and industrial hygienists in their efforts to identify, evaluate, and develop appropriate controls for hazards related to metal scrap recycling processes.

What This Guide Covers

This document will assist employers and employees in recognizing and controlling typical health and safety hazards associated with various metal scrap recycling operations and in selecting appropriate control methods. This document does not provide an in-depth evaluation of every recycled material, or of every associated process-related hazard; rather it gives an overview of processes and related hazards common to a wide range of metal scrap recycling operations.

Employers must evaluate their own operations, processes, and equipment to ensure that all hazards in their operations are identified and appropriately controlled. There are many relevant guidance documents and standards related to exposure to hazardous substances (including metals), working in industrial environments, and working with specific types of material handling and processing equipment that may be associated with recycling processes. This guidance document includes references to these documents throughout the text, along with short summaries where appropriate.

Specific Standards and Requirements Addressing Chemical and Physical Hazards in Metal Recycling Operations

Although this guide recommends work practices and engineering controls to decrease hazards to employees, there are legal requirements in OSHA standards that you need to know about and comply with. These include, for example, OSHA General Industry Standards, *Title 29 of the Code of Federal Regulations (CFR), Part 1910* and the Construction Industry Standards in *29 CFR 1926*. Consult these standards directly to ensure full compliance with the provisions. States with OSHA-approved plans have standards which are at least as effective as, but may differ from, the Federal OSHA standards. These and

other OSHA standards and documents are available online at www.osha.gov.

Other federal agencies, including the Department of Transportation (DOT), the Mine Safety and Health Administration (MSHA) within the Department of Labor, the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), and the Department of Energy (DOE) may each have applicable standards regulating specific types of scrap metals or specific aspects of related recycling processes. Employers should refer to these agencies for specific information regarding standards that may affect their recycling operations.

Other Relevant Guidelines

The American National Standards Institute (ANSI) publishes voluntary consensus standards on the safe care and use of specific machinery. ANSI standards also may give you guidance on complying

with OSHA performance-based standards, such as 29 CFR 1910.212, *General Requirements for All Machines*. ANSI standards are sometimes incorporated into OSHA regulations, and in these cases, employers are accountable for complying with the specific versions of the ANSI standard referenced. OSHA generally recommends, however, that employers use the most recent versions of ANSI standards.

Types of Hazards in Metal Scrap Recycling

Employees in facilities that recycle metal scrap are exposed to a range of safety hazards associated with material handling methods, hazards associated with the metals themselves (as dust or fumes), and with the hazardous substances used to process or recover these metals. These hazards, the processes and operations that present the hazards and the related control measures are covered in this guide.

Commonly Recycled Metals and Their Sources

Types of Metals Most Commonly Recycled

The scrap metal recycling industry encompasses a wide range of metals. Some of the most commonly recycled metals (by volume) are iron and scrap steel (ISS), copper, aluminum, lead, zinc, and stainless steel. (ISRI NDa)

Scrap metals, in general, are divided into two basic categories: ferrous and nonferrous. Ferrous scrap is metal that contains iron. Iron and steel (which contains iron) can be processed and remelted repeatedly to form new objects. (ISRI NDb)

Common nonferrous metals are copper, brass, aluminum, zinc, magnesium, tin, nickel, and lead. Nonferrous metals also include precious and exotic metals. Precious metals are metals with a high market value in any form, such as gold, silver, and platinum. Exotic metals contain rare elements such as cobalt, mercury, titanium, tungsten, arsenic, beryllium, bismuth, cerium, cadmium, niobium, indium, gallium, germanium, lithium, selenium, tantalum, tellurium, vanadium, and zirconium.

Some types of metals are radioactive. These may be “naturally-occurring” or may be formed as by-products of nuclear reactions. Metals that have been exposed to radioactive sources may also become radioactive in settings such as medical environments, research laboratories, or nuclear power plants.

Common Sources of Recycled Metals

Ferrous scrap comes from sources such as:

- Mill scrap (from primary processing).
- Used construction beams, plates, pipes, tubes, wiring, and shot.
- Old automobiles and other automotive scraps.
- Boat scrap, railroad scrap, and railcar scrap.
- Miscellaneous scrap metal.

Ferrous metals are magnetic and are often collected in scrap yards by a large electromagnet attached to a crane, sweeping across piles of scrap to grab magnetic objects.

Aluminum is the most widely-recycled nonferrous metal. (ISRI NDc) The major sources of nonferrous scrap are industrial or new scrap, and obsolete scrap. Industrial or new scrap may include:

- Aluminum left over when can lids are punched out of sheets.

- Brass from lock manufacturing.
- Copper from tubing manufacturing.

Obsolete scrap, the other major source, may include:

- Copper cables.
- Copper household products.
- Copper and zinc pipes and radiators.
- Zinc from die-cast alloys in cars.
- Aluminum from used beverage cans.
- Aluminum from building siding.
- Platinum from automobile catalytic converters.
- Gold from electronic applications.
- Silver from used photographic film.
- Nickel from stainless steel.
- Lead from battery plates. (ISRI NDc; OECD 1995)

Nonferrous metals can also be recycled from captured particle emissions from metal primary or secondary production facilities.

Other exotic and precious metals come from a variety of sources, such as:

- Gallium from gallium arsenide (GaAs) used in electronics.
- Gold from precious metals manufacturing plants and from discarded electronics and jewelry.
- Platinum-group metals from catalysts (including catalytic converters, which automobile recyclers systematically collect).
- Used catalysts from industrial processes (mostly from the chemical and pharmaceutical industries).
- Old electronics equipment.
- Other jewelry. (USGS 2001)

Radioactive metal scrap may come from military applications (such as depleted uranium), discarded medical equipment, building or storage material from nuclear power plants (particularly nickel scrap) or trace amounts found elsewhere, such as Americium (Am-241), found in smoke detectors.

Additional information on sources of various metals is provided in the “What You Need to Know about Exposure to Other Metals” section at page 24.

What You Need to Know about Scrap Quality and Contaminants

The worldwide scrap metal recycling industry has developed sets of specifications and grading systems to ensure consistent quality of source scrap material for a given grade of metal scrap. The three most widely-used specifications are the Scrap Spec-

ifications Circular (U.S. Institute of Scrap Recycling Industries, Inc.), the European Classification for Non-Ferrous Scrap Metals, and the Standard Classification for Non-Ferrous Scrap Metals (U.S. National Association of Secondary Materials Industries, Inc.). These specifications generally set minimum and maximum content of certain metal impurities, and restrict levels of certain hazardous metals and other hazardous substances.

Employers should be aware that these criteria are designed to protect the end-user, or are for product quality purposes, and are not designed to protect employees performing metal scrap recycling processes. As a result, concentrations of certain metals that are below these quality specification requirements, either as incoming raw scrap or as processed scrap (to be sent elsewhere), may still pose hazards to employees handling metal scrap.

Employers should be aware of the potential impurities in their source scrap, and should be prepared to monitor for hazardous levels of those metals and other chemicals in their work environments (OECD 1995). Employers should also ensure that they receive their scrap supply from reliable sources that follow the established guidelines and should obtain material data safety sheets (MSDSs) and labels for the scrap materials where available. If an MSDS is not provided, the employer must request one from their supplier. See the discussion on “What You Need to Know about Hazard Communication” at page 32 in the “Recognizing and Controlling Hazards” section of this guide for more information on employer obligations to obtain MSDSs and labels for scrap materials.

Common Recycling Processes, Hazards and Related Controls

Processes Commonly Used to Recycle Metal Scrap and Their Hazards

Metal scrap recycling is a large and complex industry. The variety of metals involved and the wide range of sources of metal scrap require many processing techniques. These processing techniques pose a range of safety and health hazards to employees in the industry. This section discusses a selection of those processes, the types of hazards that these processes may pose to employees, and control measures employers and operators can implement to control or eliminate these hazards. This document does not go into detail on every process or every hazard associated with every process, but rather it discusses the most common processes and provides examples of hazards related to those processes.

Recycling is a multi-step process, starting with collection and transport of raw scrap, pretreatment, melting, refining, forming and finishing. The recycling processes discussed in this document fall into these basic categories:

- Loading and unloading.
- Breaking and separating.
- Gas torch cutting.
- Non-gas torch cutting and other cutting.
- Baling, compacting, and shredding.
- Melting and baking in furnaces and ovens.
- Applying chemical processes to recycle metals.

Each category is an individual component of the recycling process and may pose a wide range of safety hazards that are common to many industrial and material handling processes. Such hazards may include flying pieces of material, exposed moving parts, fire hazards, and noise hazards.

Hazardous chemical exposures to employees are most likely to result from hot processes that produce fumes (such as torching and welding or melting in furnaces) or processes that produce dust (such as breaking, shredding, and cutting). Each of these processes is discussed in detail on the following pages.

Applicable Standards

29 CFR 1910 General Industry - many standards for occupational safety and health may apply to

metal scrap recycling, including (but not limited to) the following standards

- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*
- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*

Sources of Additional Information

- OSHA 3170, *Safeguarding Equipment and Protecting Employees from Amputations*
- OSHA 2254, *Training Requirements in OSHA Standards and Training Guidelines*
- OSHA Health and Safety Topics: Machine Guarding, <http://www.osha.gov/SLTC/machine-guarding/index.html>
- OSHA Lockout/Tagout eTool <http://www.osha.gov/dts/osta/loto-training/index.htm>
- National Electrical Code 250-112

Loading and Unloading

The first step in any metal scrap recycling operation is getting the metal scrap to the recycling operation and collecting or sorting materials to be processed in groups. This may involve light or heavy trucks, stationary or mobile cranes, conveyor belts, and other large and potentially hazardous equipment. Working with this equipment poses hazards typical for material handling equipment.

Employers must ensure that employees use the appropriate combination of personal protective equipment (PPE) such as hard hats, sturdy boots, gloves, thick clothing, and respirators (if the operation generates hazardous dust) to be adequately protected from safety and health hazards.

OSHA's Personal Protective Equipment standards (29 CFR 1910 Subpart I) establish requirements for employers to evaluate the workplace and identify PPE needs based on actual workplace hazards (29 CFR 1910.132). These standards also establish criteria for proper selection and use of specific types of PPE such as foot, eye, or head protection. See the "Applicable Standards" box on the next page for a list of OSHA PPE standards (not necessarily all-inclusive) that may apply to recycling operations.

Forklift and crane operators must be properly trained in the use of such equipment. Operators must conduct pre- or post-shift vehicle inspections depending on vehicle use. Employers must consider equipping vehicles with guarding to protect any vulnerable brake lines from incidental damage during operation (NIOSH FACE; 29 CFR 1910.178). Of course, any alterations/additions to powered industrial trucks would require written approval from the manufacturer.

Case History #1

A 46-year-old laborer died from injuries sustained when his left arm became caught between the belt and pulley of a conveyor system at a Massachusetts scrapyards and recycling plant. The victim was working alone removing fallen debris from the conveyor frame at the time of the incident. (NIOSH FACE, 94MA021)

Preventive/corrective measures: Material handling equipment must be equipped with proper machine guards to prevent employees from coming in contact with moving parts. Emergency stop devices should be provided within easy reach of all conveyor operator stations to allow operators to immediately stop conveyors in the event of an emergency. Machines must be locked or tagged out during cleaning, servicing or maintenance. Employees must be properly trained in all safety devices.

Case History #2

A 41-year-old tow truck operator was run over by his tow truck while unloading a car at a scrapyards. The tow truck operator jerked the truck back and forth to release a car, and backed over the victim, who was working behind the truck. He then ran over him again as he moved forward, with the truck coming to rest with the victim pinned under the rear wheel. Scrapyards employees tried to rescue the victim by lifting the truck with a grapple crane but the grapple slipped and the truck fell back on him. (NIOSH FACE, 99NJ09101)

Preventive/corrective measures: Operators should disengage the transmission of the towing vehicle when hooking or unhooking vehicles from a tow. In addition, employees should never work behind the towed vehicle or between the vehicle and the tow truck during this process.

Case History #3

A 31-year-old male recycling plant foreman died when he was run over and crushed by a front-end loader. The victim was struck by the loader when its brakes failed as it backed down an incline after depositing cans into a hopper for processing. (NIOSH FACE, 95MA026)

Preventive/corrective measures: Operators must examine all powered material handling equipment at the beginning of each shift. All failing equipment must be tagged out of service and not used until repaired.

Case History #4

A 24-year-old forklift truck operator died after the lift truck he was operating overturned. The victim was operating the equipment in the storage yard of a wire mill. A length of wire became wrapped around the front drive trans-axle, severing the hydraulic brake line. As he was returning to the plant with two empty wire spools, the brakes failed on the truck. He was traveling down an incline and turned abruptly to avoid striking stored material. The sharp turn caused the truck to overturn. The victim tried to jump free but was struck by the Roll Over Protective Structure (ROPS) of the truck. (NIOSH FACE, 96MO054)

Preventive/corrective measures: Employers must keep aisles and passages used by material handling vehicles clear of obstructions. Operators must inspect all powered material handling equipment at the beginning of each shift. All failing equipment must be tagged out of service and not used until repaired. Operators of sit-down trucks need to be trained to remain in the operator's position in a tipover accident and to lean away from the direction of fall to minimize the potential for injury. When seat belts are installed on forklifts, employees are required to wear them.

Applicable Standards

- 29 CFR 1910.132, *General requirements*
- 29 CFR 1910.132(h), *Employer Payment for Personal Protective Equipment*
- 29 CFR 1910.133, *Eye and face protection*
- 29 CFR 1910.134, *Respiratory protection*

- 29 CFR 1910.135, *Head protection*
- 29 CFR 1910.136, *Occupational foot protection*
- 29 CFR 1910.137, *Electrical protective devices*
- 29 CFR 1910.138, *Hand protection*
- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.176, *Handling materials - general*
- 29 CFR 1910.178, *Powered industrial trucks*
- 29 CFR 1910.179, *Overhead and gantry cranes*
- 29 CFR 1910.180, *Crawler locomotive and truck cranes*
- 29 CFR 1910.181, *Derricks*
- 29 CFR 1910.184, *Slings*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*

Breaking and Separating Processes

Size-reduction of metal scrap is a necessary component of some operations. Basic metal breaking processes often involve heavy manual labor to break up large or complex assemblies of scrap metal, or to cut or break the pieces into sizes that can be fed into a furnace. Employees involved in activities of this type may be exposed to metal fumes, smoke, hot environments, and hot material when working near furnaces, and may come in contact with metals that present hazards through both skin contact and inhalation.

Some recycling industries use drop-ball breaking (or ‘tapping’) to break apart the largest solid pieces of scrap metal, or to initiate breaking up large assemblies. This process may create flying object hazards as the material breaks apart from the impact of the ball. Employers must ensure that employees are protected from these hazards by either performing the task remotely; placing a barrier or protective shield around the task; or using PPE such as face and body protection. Breaking may also create a noise hazard, requiring the employer to implement feasible engineering or administrative controls. If these controls do not sufficiently reduce the noise hazard, employers must provide appropriate hearing protection such as earplugs, canal plugs, earmuffs, or other protective devices as required by OSHA’s Occupational Noise Exposure standard, 29 CFR 1910.95.

Sorting of scrap is now commonly done by automated processes, though some metals must still be

sorted by hand. When sorting metal scrap by hand, employees must wear personal protective equipment such as gloves if there is a possibility of encountering any metal or other substance for which skin contact could result in adverse health effects.

Even for metals that do not irritate the skin, handling sharp or pointed pieces of scrap metal poses cut or abrasion hazards to hands or bodies. Employers are required to ensure that employees wear proper personal protective equipment such as gloves and durable clothing to guard against cuts and scrapes. Employees also need to be aware of the proper first aid, medical, and reporting procedures if they receive a cut or scrape. Similar concerns apply to other scenarios where employees work with scrap by hand.

Once an employee has started feeding material into a furnace, there is a risk of hazardous fumes from certain metals. Where exposures exceed OSHA Permissible Exposure Limits (PELs), employers are required to implement feasible engineering controls (e.g., furnace feeding operations can be set-up with local exhaust which can circulate and vent the air near the furnaces to remove toxic fumes from the workplace). If the exposures still exceed the PELs, employees will need to wear respiratory protection to prevent inhalation of toxic fumes and dusts. Refer to the section on Personal Protective Equipment in the “Recognizing and Controlling Hazards” section of this guide for further information on this topic.

Applicable Standards

- 29 CFR 1910.95, *Occupational Noise Exposure*
- 29 CFR 1910.132, *General requirements*
- 29 CFR 1910.133, *Eye and face protection*
- 29 CFR 1910.134, *Respiratory protection*
- 29 CFR 1910.135, *Head protection*
- 29 CFR 1910.136, *Occupational foot protection*
- 29 CFR 1910.137, *Electrical protective devices*
- 29 CFR 1910.138, *Hand protection*
- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*
- 29 CFR 1910.1000, *Air Contaminants*

Gas Torch Cutting

One of the most common tools used to break apart large metal pieces is the gas cutting torch, often

used for cutting steel scrap. Classic cutting torches use gas, while other torches use plasma or powder, or even water (although water torches are rarely used for metal scrap). Thermal (gas) torches expose employees to sprays of sparks and metal dust particles, to high temperatures, to bright light that could damage eyes (light both inside and outside of the visible spectrum), and to various gases. Old cutting torches used pure hydrogen and oxygen, while newer torches often use acetylene, propane, carbide, gasoline-oxygen or other mixtures. (Nijkerk 2001)

Compressed gases may be flammable and/or explosive or may present toxic or asphyxiant hazards if leaks occur. Compressed gas cylinders can also present explosion or missile hazards if exposed to excessive heat or physical damage. OSHA standards at 29 CFR 1910, Subpart H establish general and selected substance-specific requirements for proper storage, handling, and use of compressed gasses. Additional requirements for compressed gasses used in certain types of welding and cutting operations are provided in 29 CFR 1910, Subpart Q.

The use of torches presents an obvious fire hazard. This hazard is of particular concern when working on materials that have combustible or explosive components such as motor vehicles with plastics and fuel tanks, or objects with wooden interiors (Nijkerk 2001). Disc-cutting is sometimes used to cut scrap metal objects, particularly where the heat and high temperatures of a gas torch would pose increased fire safety hazards.

Gas torches also involve storage of flammable and explosive gases on site. Employers must store these gases in safe locations and ensure that all equipment is in good working condition (i.e., detached or punctured hoses can create a safety hazard for nearby employees) (Nijkerk 2001). Employers must ensure that gas tanks are inspected, tested, and appropriately labeled while in storage and prior to movement and use. (NIOSH FACE; 29 CFR 1910.253)

Employers must ensure that employees use appropriate eye and face protection such as a welder's helmet and heatproof and or aluminum lined clothing to protect their bodies from the output of these cutting operations, which have similar hazards to welding.

OSHA has established PELs for many hazardous substances. OSHA requires employers to provide engineering controls or work practices to the extent feasible when employee exposure exceeds these PELs for any metal or other hazardous substances. Appropriate engineering controls such as ventilation may include a local exhaust hood or booth or portable local exhaust, such as a "snorkel" exhaust system. Where ventilation or other engineering solutions are not completely effective or are not feasible, employees must wear PPE (e.g., respiratory protection) to reduce their exposures to below the PEL.

Eye protection, such as safety goggles or a welder's mask with appropriate shaded lenses must also be worn by employees that perform welding or cutting activities (see 29 CFR 1910.133 for a list of appropriate shade numbers for welding and cutting tasks). Employers should ensure that a competent person inspects all work areas where hot work will be done and should also ensure that employees are capable of recognizing and avoiding hazardous situations. Note, a competent person is an individual who through training or experience is capable of recognizing hazards in the surroundings or working conditions and of identifying appropriate controls.

Case History #5

A 29-year-old scrap metal cutter died from injuries sustained in an explosion. At the time of the incident, the victim had been cutting a vehicle frame for salvage with a torch. He was working 8-to-10 feet from a 1,500-gallon storage tank. Escaping vapors from the tank were ignited by spatter from the cutting activities, causing the tank to explode. The victim was engulfed in flames, igniting his clothing and causing burns over 45% of his body. The coworker extinguished the victim's burning clothing and helped him walk to the company's shop building. (NIOSH FACE, 98AK021)

Preventive/corrective measures: A competent person should inspect all work areas where hot work will be performed prior to the start of the operations. All flammable and combustible materials should be removed from the area. If flammable or combustible materials cannot be removed from the area, employers must ensure that proper steps are taken to isolate the flammable or combustible material from the heat generated by the torch.

Applicable Standards

- 29 CFR 1910.106, *Flammable and combustible liquids*
- 29 CFR 1910.132, *General requirements*
- 29 CFR 1910.133, *Eye and face protection*
- 29 CFR 1910.134, *Respiratory protection*
- 29 CFR 1910.135, *Head protection*
- 29 CFR 1910.136, *Occupational foot protection*
- 29 CFR 1910.137, *Electrical protective devices*
- 29 CFR 1910.138, *Hand protection*
- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*
- 29 CFR 1910.242, *Hand and portable powered tools and equipment (general)*
- 29 CFR 1910.243, *Guarding of portable powered tools*
- 29 CFR 1910.244, *Other portable tools and equipment*
- 29 CFR 1910.252, *General requirements (Welding, Cutting, and Brazing)*
- 29 CFR 1910.253, *Oxygen-fuel gas welding and cutting*
- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.1018, *Arsenic*
- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.1026, *Hexavalent Chromium*
- 29 CFR 1910.1027, *Cadmium*

Sources of Additional Information

- OSHA Safety and Health Topics: Welding, Cutting, and Brazing, <http://www.osha.gov/SLTC/weldingcuttingbrazing/index.html>
- OSHA Construction Safety and Health Outreach Program: Safety and Welding, <http://www.osha.gov/doc/outreachtraining/htmlfiles/welding.html>

Non-Gas Torch and Other Cutting

Materials that require higher temperatures to cut, such as pig iron and heat-resistant alloyed scrap, or materials that conduct heat too well to be cut with thermal torches, such as copper and bronze, may be cut with non-thermal methods such as plasma torches or powder cutting torches. These tools may also be used where a gas torch could pose a safety hazard, as discussed in the previous section. Plasma

torches are often used for superconductors of heat or heat-resistant metals, such as alloy steels containing nickel and/or chromium (Nijkerk 2001). Plasma torches generate a large amount of smoke and noise, as well as ultraviolet (UV) and infrared (IR) light. Depending on the metal, this smoke could contain toxic fumes or dusts. A discussion on the potential chemical hazards and controls to reduce exposures to these hazards can be found in the “Recognizing and Controlling Hazards” chapter at page 16. However, where exposures exceed OSHA PELs, employers must install feasible engineering controls or work practices to reduce employee exposures such as providing well-ventilated areas for such operations. In addition, the employer should place appropriate barriers around the process to protect other nearby employees from exposure to the UV and IR light. Employees performing these tasks must use appropriate PPE such as respirators, goggles or face shields with appropriate shaded lenses, and hearing protection, to prevent exposure to smoke, fumes, light, and noise. See 29 CFR 1910.134 for OSHA’s standard on Respiratory Protection, 29 CFR 1910.95 for OSHA’s standard on Occupational Noise Exposure, and 29 CFR 1910.133 for OSHA’s standard on Eye and Face Protection. Note, a list of appropriate lens shade numbers for welding and cutting tasks is also provided in 29 CFR 1910.133.

Employees using torches often spend long periods of time in awkward or hunched postures, which may increase the risk of bodily injuries such as strains and sprains. Other hazards common to cutting operations (as well as to welding and brazing) include burns, fires, explosions, electric shock, and heat stress. Even chemicals that are generally not flammable may burn readily when vaporized. Larger scrap metal objects are often broken apart using stationary shears, such as alligator shears used to cut apart short steel for foundries or to cut nonferrous metals. These machines can send small pieces of metal flying. Such flying object hazards may be controlled through the use of shields set up around the machines to protect employees. Eye protection and other body protection such as metal lined abrasion-resistant protective clothing may also be needed in some cases.

A larger concern than flying objects, however, is that the operator often works quite close to the machine and is subject to amputation or crushing hazards. In the early days of using shears, it was not uncommon for an employee to lose a finger or a hand to

the shears, or to have a hand trapped between pieces of scrap that were fed into the shears. (Nijkerk 2001)

Hydraulic shears can be stopped instantly to prevent damage to the machine or operator, whereas mechanical shears transmit force from a flywheel to the shears and cannot be stopped quickly in an emergency. Hydraulic shears are, therefore, safer for the operator. Both types of shears, however, are still used in a variety of operations.

Modern alligator shears are often operated by a foot pedal that stops the shear immediately if released (Nijkerk 2001). Employers can also use controls such as wrist straps (attached to cables) to keep employees' limbs a safe distance from moving parts. One way to distance shears from the operator is to attach the shears to a crane. In this setup, the operator sits inside the cab of the crane and demolishes objects or cuts pieces of scrap metal from a safe location. If the metal scrap is being cut from a building or other object high off the ground, remote operation also eliminates the safety hazards associated with working at heights.

Hydraulic guillotine shears work similarly to alligator shears and pose similar hazards: employees must remain at a safe distance from the point of operation so that no limbs or other body parts could contact the cutting mechanism. Employers must install shields around stationary cutting areas to protect employees from flying objects.

When a tough or complex piece of scrap damages a machine, that machine may be more likely to malfunction and to pose a hazard to the operator and to other nearby employees. As a result, machines should have periodic inspections and should be maintained in proper working order. For all types of shears, employees must follow the company's established procedures for de-energizing energy sources and for lockout/tagout when performing servicing or maintenance tasks (see the OSHA Lockout/Tagout standard at 29 CFR 1910.147).

Case History #6

A 52-year-old welder was crushed to death by a hydraulic door on a scrap metal shredder. The victim was attempting to remove a jammed piece of metal from the hydraulic door when the incident occurred. Prior to removing the jam the victim did not lockout or de-energize the system. When the piece of metal was cut away, the hydraulic door,

which was still under pressure, closed upward on the victim. (NIOSH FACE, 02CA004)

Preventive/corrective measures: Employees must follow lockout/tagout procedures to de-energize all equipment prior to cleaning or performing maintenance.

Applicable Standards

- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.218, *Forging*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*
- 29 CFR 1910.242, *Hand and portable powered tools and equipment (general)*
- 29 CFR 1910.243, *Guarding of portable powered tools*
- 29 CFR 1910.244, *Other portable tools and equipment*
- 29 CFR 1910.252, *General requirements (Welding, Cutting, and Brazing)*
- 29 CFR 1910.1000, *Air Contaminants*

Sources of Additional Information

- OSHA Safety and Health Topics: Welding, Cutting, and Brazing, <http://www.osha.gov/SLTC/weldingcuttingbrazing/index.html>
- OSHA Construction Safety and Health Outreach Program: Safety and Welding, <http://www.osha.gov/doc/outreachtraining/htmlfiles/welding.html>
- OSHA 3170, *Safeguarding Equipment and Protecting Employees from Amputations*

Baling, Compacting and Shredding

Scrap metal is often compacted using balers to promote efficient melting by allowing more metal into a furnace than would be possible for a random assortment of sheeting and other scrap objects. Balers use powerful hydraulic systems to compact scrap metal. Moving parts of balers must be shielded to prevent body parts from coming in contact with the machine. Car flatteners work on many of the same principles as balers and present similar hazards.

Balers are typically automated machines. This allows operators to stay a safe distance from the ma-

chinery, however, employees must still exercise caution when feeding raw material into a baler using a hopper or conveyor belt. Again, some sort of physical restraint such as railings may be appropriate to keep employees from falling onto these machines.

Some paper balers and shredders have sensors or heat detectors installed that react to human body heat and automatically stop all machine operations. For others, employees may wear magnetic or other devices on their belts that are linked to a safety interlock system (Nijkerk 2001). Systems such as these could be applied to some metal balers and shredders to provide additional protection to employees (both from metal and from contaminants in the scrap). Employees must be trained to understand the functioning and safety procedures of their equipment, and must follow procedures for adequate control of hazardous energy, particularly when performing maintenance procedures on equipment. (NIOSH FACE; 29 CFR 1910.147)

Case History #7

A 34-year-old laborer died after falling into an operating paper baler. The victim and a coworker were loading scrap paper into an automatically operated paper baler via a belt conveyor. The victim ascended to a platform located between the conveyor discharge and the feed chute of the paper baler to clear jammed material. Before ascending, the victim had asked the coworker to shut down the conveyor so that he could clear the jam. After shutting down the conveyor, the coworker turned away to get more paper. The victim fell into the baling chamber and the baler ram automatically activated. (NIOSH FACE, 9715)

Preventive/corrective measures: Employees must follow lockout/tagout procedures to de-energize all equipment prior to cleaning or performing maintenance. Employers must install guards on machinery to prevent any employees from contacting moving parts. Where access to process machinery is necessary, employers should consider installing standard railings using gates interlocked with the machine's control system. When the gates are opened, the machine will shut down.

For all equipment where pieces of scrap metal are fed into a machine directly, or using a hopper, or even via conveyor belt, employees must be trained in the proper use of the equipment. In addition, ap-

propriate guards must be installed to prevent employees from coming into contact with hazardous moving parts of the machinery. This applies to the alligator and guillotine shears discussed above, and also to other similar machines such as rotary shears and rotary shredders. For such equipment, employees need to stay a safe distance away from working machinery and take adequate safety precautions to minimize risks. Employers must install shields to block stray pieces of metal scraps from flying out from these machines and employees must be trained to know what materials can or cannot be fed into the machine to prevent malfunctioning.

In addition to the physical hazards associated with baling, compacting and shredding, these processes also produce significant amounts of dusts. These dusts, if not controlled, can present both explosion hazards and inhalation hazards. Some ways to control these hazards include:

- Installing proper air cleaning systems on shredding machines.
- Installing explosion sensors where appropriate to inject water to suppress explosions.
- Operating machinery at lower speeds to reduce dust generation.
- Introducing an inert gas to rotary shears to reduce the risk of explosion. (Nijkerk 2001)
- Providing supplemental ventilation where needed and perhaps respiratory protection to protect employees from exposure to hazardous dusts.
- Using wet or semi-wet shredding processes.

Some scrap materials such as scrap vehicles or refrigerators may contain fuels or other materials that introduce additional hazards to the process. Operators must be sure to remove these materials before introducing the scrap to process machinery. For example, gasoline must be removed from the gas tank of scrap automobiles before compacting or shredding the automobile. In addition, chloroflourocarbons (CFCs) and ammonia must be removed from air conditioning systems to prevent employee exposure to these irritants and to prevent the release of these gases to the atmosphere. Removal of CFCs also applies to shredding of refrigerators.

Many of the processes above use large amounts of electricity to operate. Employees must be aware of the hazards of working in high-voltage environments and should take appropriate precautions. All equipment power systems must be covered with

non-conducting covers that require a tool to remove. High-voltage areas must be protected to prevent access to unauthorized individuals. Employers must create a lockout/tagout program and train employees on proper implementation of these procedures.

Applicable Standards

- 29 CFR 1910.147, The control of hazardous energy (lockout/tagout)
- 29 CFR 1910.212, General requirements for all machines
- 29 CFR 1910.219, Mechanical power-transmission apparatus
- 29 CFR 1910.1000, Air Contaminants

Melting and Baking in Furnaces and Ovens

Many scrap metal recycling operations heat scrap pieces to high temperatures to separate different metal components, increase the purity of scrap, bake out non-metal substances, burn off contaminants, remove insulation from wire, or otherwise process the metal scrap (EPA 2001). This may be done using furnaces or ovens that use fuel or electrical heating sources.

Employees near operational furnaces are exposed to hazards even if they do not work directly with the furnace. Heating scrap will generate metal fumes if the furnace temperature is above the melting point of any of the metals in the furnace. In addition, hot pieces of metal could jump from the furnace, creating fire or burn hazards to nearby locations or people.

Similar to many of the processes already discussed, electrical furnaces use large amounts of electricity at high voltages to melt the metal scrap. Employees near these furnaces could face an electrocution hazard if they come into contact with a furnace in an unsafe manner. Employers must ensure that furnace refractories are kept in good condition and that employees follow electrical safety guidelines. Employers should ensure that there is sufficient room for employees to work safely in the vicinity of energized furnaces. For example, an employer may establish a maximum scrap metal size and weight for each type (and size) of furnace that they operate. (NIOSH FACE)

Furnaces generate smoke, dust, and metal fumes, depending on temperature and content. Combustion by-products may include sulfur and nitrogen

oxides, and carbon monoxide and carbon dioxide. Organic compounds may be emitted as heating vaporizes oil and grease on scraps (EPA 2001). In addition, heating or burning of certain plastics (such as plastic-coated wiring) may release phosgene or other hazardous substances. Emissions from fluxing typically include chlorides and fluorides. The highest concentrations of ‘fugitive’ emissions (i.e., gases and vapors that escape from equipment) occur when the lids and doors of a furnace are opened during charging, alloying, and other operations (EPA 2001). Employers should ensure that workplaces are well-ventilated, consider the use of local exhaust ventilation during these operations, and that emissions from furnaces are filtered before the air is released outside the facility.

Afterburners can be used to control organic compounds, carbon monoxide, chlorides, fluorides, and hydrochloric acid; fabric filters can be used to control metal oxide dust, chlorides, fluorides, and hydrochloric acid; wet scrubbers can be used to control metal oxide dust, sulfur oxides and sulfuric acid mist; and electrostatic precipitators or fabric filters can be used to control particulate or other matter. These are used in different setups depending on the specific recycling industry. EPA (2001) discusses control methods for some recycling industries. For a full listing of hazardous air pollutants associated with some metal recycling processes, such as aluminum production, lead smelting, iron foundries and steel foundries, see EPA’s Emission Inventory Improvement Program (EIIP), Vol. II, Table 9.2-1. (EPA 2001)

For information on ventilation, refer to the “Examples of Engineering and Work Practice Control Techniques to Reduce Emissions” section at page 29.

Case History #8

A 22-year-old male foundry laborer was electrocuted when a piece of scrap metal he was loading into a damaged electric induction furnace became energized. The refractory had developed an unusual degree of cracking, and molten metal seeped out of the refractory and solidified. This material was in contact with the frame, but not the coil. Two employees lowered the scrap into the furnace, which already contained molten steel. The victim was resting his thighs on the top edge of the frame. The furnace was jarred, and presumably more molten metal was released through the cracks, completing the circuit be-

tween the coil and the contents of the refractory. Current passed through the piece of scrap, the victim's body, and to ground through the frame. (NIOSH FACE, 89OH43)

Preventive/corrective measures: Employers should institute a regular inspection and maintenance program for all of their equipment. When problems with equipment arise, the equipment should be tagged and removed from service until it is repaired.

Applicable Standards

- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*
- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.1018, *Inorganic Arsenic*
- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.1026, *Hexavalent Chromium*
- 29 CFR 1910.1027, *Cadmium*

Sources of Additional Information

- OSHA Construction Safety and Health Outreach Program: Safety and Welding, <http://www.osha.gov/doc/outreachtraining/htmlfiles/welding.html>
- EPA (2001) Emission Inventory Improvement Program (EIIP), Vol. II, Table 9.2-1.

Applying Chemical Processes to Recycle Metals

Chemical processes are also used in a wide range of metal scrap recycling industries as a means to separate scrap into its component metals, to clean scrap metal prior to using physical processes, to remove contaminants (such as paint) from scrap material, or to extract selected metals from a batch of scrap containing many metal types. Chemical processes may include high-temperature chlorination, electrorefining, plating, leaching, chemical separation, dissolution, reduction, or galvanizing. Each of these processes may present specific safety and health hazards associated with how the process is carried out, as well as specific material hazards associated with:

- The starting reagents for the process.

- The resulting forms of these materials following any reaction.
- By-products.
- Special cleaning agents.
- The equipment used for the process.

As with every hazardous chemical introduced into the workplace, all employees who are potentially exposed must be trained in the hazards associated with that chemical category. This requirement and other provisions of OSHA's Hazard Communication standard (29 CFR 1910.1200) are discussed in the "What You Need to Know about Hazard Communication" section of the "Recognizing and Controlling Hazards" chapter of this guide.

The most probable emissions from these processes include metal fumes and vapors, organic vapors, and acid gases. Other potential hazards may include high amounts of heat, splashing of caustic or otherwise hazardous chemicals, or combustion hazards. Employers should be knowledgeable about the processes that are used in their recycling operations and should refer to MSDSs to obtain specific information regarding potential exposure to any other substances used in recycling processes. Employers must comply with OSHA PELs. They may also want to consider other recommended exposure limits (such as National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs)) for the chemicals used or produced in these processes.

One common process involves the use of aqua regia solution to remove gold from gold-plated objects. Aqua regia is a mixture of two corrosive acids. This process emits acid fumes that are dangerous to inhale. Employers using aqua regia or similar solutions (cyanide may also be used) must implement feasible engineering controls, such as a fume hood to remove fumes from the workspace. Employers must also ensure that employees wear gloves and an apron to prevent skin or eye contact with the aqua regia solution. Not all glove and apron materials protect from all corrosive substances, so employers need to pay special attention to the capabilities of the PPE used. For additional information on PPE, refer to the "Personal Protective Equipment" section in the "Recognizing and Controlling Hazards" chapter of this guide.

After smelting or separation, metal may be refined in an electrolytic process in which anodes from the

smelting process are placed in an electrolytic cell that contains a cathode and an electrolyte such as sulfuric acid; the metal is deposited on the cathode. In such operations, employees must be aware not only of the hazards posed by the acid used as the electrolyte and the metal involved but also of the hazards posed by the electrical system.

Applicable Standards

- 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.212, *General requirements for all machines*
- 29 CFR 1910.219, *Mechanical power-transmission apparatus*
- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.1200, *Hazard Communication*

Recognizing and Controlling Hazards

How to Determine the Hazard Levels of Various Processes

Metal scrap recycling operations present a wide variety of hazards, including health hazards associated with chemical exposures and safety hazards associated with material processing operations and the equipment used in these tasks. This section discusses the metals that may present hazards to employees in recycling operations, the exposure routes through which employees may be exposed to that metal and the potential health effects from that exposure. This section also addresses other chemical hazards of special note (e.g., metalworking fluids and radioactive material), and discusses ways that employers and employees can identify and control these hazards. Finally, the section discusses some ways that employers and employees can decrease the risks of employee exposure to these hazards. There is little data available to describe the level of air contaminants associated with specific metal scrap recycling operations. Employers and managers need to analyze the levels of various hazardous substances directly, using personal and area monitoring devices to assess employee exposures. After doing this, employers must comply with all OSHA standards. Employers may also want to consider recommendations by NIOSH (i.e., RELs) to determine the need for additional controls (e.g., engineering controls, PPE).

Sources of Additional Information

- OSHA Safety and Health Topics: Sampling and Analysis, http://www.osha.gov/SLTC/sampling_analysis/index.html
- EPA Emission Inventory Improvement Program, Volume II, Chapter 9: Preferred and Alternative Methods for Estimating Air Emissions from Secondary Metal Processing. (EPA 2001)

Metals that OSHA Regulates

OSHA regulates the workplace exposure to many toxic metals and their oxides. These metals are listed in 29 CFR 1910.1000 along with employee exposure limits and include the following:

Table 1. OSHA-Regulated Toxic Metals

Aluminum	Hafnium	Silver
Antimony	Iron	Tantalum
Arsenic	Lead	Tellurium
Barium	Magnesium	Thallium
Beryllium	Manganese	Tin
Bismuth	Mercury	Titanium
Boron	Molybdenum	Uranium
Cadmium	Nickel	Vanadium
Calcium	Osmium	Yttrium
Chromium	Platinum	Zinc
Cobalt	Rhodium	Zirconium
Copper	Selenium	

OSHA also has comprehensive substance-specific standards for hexavalent chromium (29 CFR 1910.1026), arsenic (29 CFR 1910.1018), cadmium (29 CFR 1910.1027), and lead (29 CFR 1910.1025). Each of these standards establishes workplace PELs as well as specific requirements for personal monitoring, medical surveillance, engineering controls, respiratory protection, and training.

Many of these metals do not pose any hazard to people who handle objects containing the metal in everyday use. In fact, low levels of many of these elements are needed for the human body to function. However, hazards exist when these metals are ground, blasted, roasted, or melted and fumes or metal dusts are produced and distributed in the air. Each of these metals may create health hazards to employees recycling scrap that contains even trace amounts of that metal.

Employers can typically determine the level at which a metal (or other hazardous chemical) poses a haz-

ard to employees by referring to the OSHA PELs listed in 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances. Employers can obtain additional information on chemical hazards by referring to the NIOSH RELs listed in the NIOSH Pocket Guide to Chemical Hazards. Information on exposures associated with specific health effects of the OSHA-regulated toxic metals can be found in the references cited in this guidance document.

In cases where employees could be exposed to multiple hazardous metals or other hazardous substances at the same time or during the same workday, employers must consider the combined effects of the exposure in determining safe exposure levels. In such cases, employers must consult OSHA's standard, 29 CFR 1910.1000(d)(2), to determine how to apply exposure limits to exposure situations involving multiple hazardous substances.

Chemicals evaluated and found to be a suspected, anticipated, or known human carcinogen by authoritative scientific organizations, such as the National Toxicology Program (NTP) or the International Agency for Research on Cancer (IARC) may warrant special consideration at any level of exposure.

Employers must also rely on chemical manufacturers' data (such as MSDSs) when determining the hazards of workplace chemicals.

The remainder of this section discusses the health effects of selected commonly recycled metals that may be encountered during recycling operations. It also discusses where employees may encounter these metals. This discussion begins with a detailed description of six metals for which OSHA has provided comprehensive standards and/or guidance.

Applicable Standards

- 29 CFR 1910.19, *Special provisions for air contaminants*
- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.1018, *Inorganic Arsenic*
- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.1026, *Hexavalent Chromium*
- 29 CFR 1910.1027, *Cadmium*
- 29 CFR 1910.1200, *Hazard Communication*

Sources of Additional Information

- OSHA Safety and Health Topics: Toxic Metals, <http://www.osha.gov/SLTC/metalsheavy>

- OSHA Hazard Communication Web Page <http://www.osha.gov/SLTC/hazardcommunications/index.html>

What You Need to Know about Arsenic Exposure

The United States has not produced primary arsenic since 1985. All arsenic for domestic needs is imported, primarily from China (arsenic trioxide and arsenic metal) and Japan (arsenic metal). Historically, approximately 90% of the domestic use of arsenic was for chromated copper arsenate (CCA), a wood preservative that is now being phased out for residential uses due to concerns over toxicity. Some coal is rich in arsenic and arsenic is sometimes found in coal pollution. Arsenic compounds and arsenic metal are also used in electronics, pigments, and metal alloys, and are sometimes used in glass-making. There is also limited demand for arsenic metal to be alloyed with lead and antimony for ammunition, solders, and other applications. (USGS 2001)

Arsenic may be found in contaminated workplace air resulting from smelting operations, in recycling facilities that deal with various nonferrous metal alloys, or with electronic semiconductors. Arsenic exposure can occur in the workplace through inhalation, ingestion, or dermal contact.

Exposure to high concentrations of arsenic can cause sore throats or irritated lungs. Breathing inorganic arsenic over long periods of time can cause damage to blood vessels and nerves in the hands and feet. Redness or swelling may result from skin contact with inorganic arsenic (ATSDR 2000a). Occupational studies have found increased risk of lung cancer among employees exposed to inorganic arsenic for many years. IARC and NTP classify inorganic arsenic as a known human carcinogen. (IARC 2006a; NTP 2004)

OSHA has a substance-specific standard regarding exposure to inorganic arsenic in general industry, 29 CFR 1910.1018. This standard sets a PEL of 10 $\mu\text{g}/\text{m}^3$ and outlines workplace requirements for the protection of employees from arsenic exposure including provisions for exposure monitoring, preferred methods for exposure control, written exposure control program, respiratory protection, protective work clothing and equipment, medical surveillance, and employee information and training.

Applicable Standards

- 29 CFR 1910.19, *Special provisions for air contaminants*
- 29 CFR 1910.1018, *Inorganic Arsenic*

Sources of Additional Information

- OSHA Safety and Health Topics: Toxic Metals, <http://www.osha.gov/SLTC/metalsheavy/index.html>
- ATSDR Toxicology Frequently Asked Questions (ToxFAQs), <http://www.atsdr.cdc.gov/toxfaq.html>

What You Need to Know about Beryllium Exposure

Beryllium is used in alloy forms, as a metal, and as beryllium oxide. Beryllium is mined from two minerals, beryl and bertrandite. The United States is one of three countries that process beryllium ores. Most of the beryllium is sold to the domestic market, in sectors such as communications and computers, automotive electronics, industrial components, and optical media. (USGS 2001)

The most likely place for employees to encounter beryllium is the processing of alloy metals containing beryllium (<http://www.osha.gov/SLTC/metalsheavy>; <http://www.osha.gov/SLTC/beryllium/index.html>). Beryllium is often used as a metal in aerospace and defense applications, or as beryllium oxide in high-density electronics circuits (USGS 2001). Both of these sources may be recycled at some recycling plants. Beryllium is also used in copper and aluminum alloys and in sporting equipment such as golf clubs. Beryllium copper (a type of scrap metal that may contain high levels of beryllium) is processed by melting it in a furnace. Employees located near those furnaces may be exposed to beryllium fumes. Beryllium copper scrap is sometimes processed by other methods, such as chemical and electrolytic separation; thermal reduction and burning; melting and pyro-metallurgical separation; and milling (IPMI 2001). The melting process used for some other scrap metals may also generate fumes that can contain beryllium. (IPMI 2001)

Employees who breathe relatively low levels of beryllium dust and fumes may develop the lung ailment, chronic beryllium disease (CBD). CBD can develop over a few months or can take many years to develop. The disease occurs as a result of a person's immune system attacking beryllium present in the

lung. These immune system cells attack the beryllium particles, leading to damage that can result in scar tissue in the lungs. This prevents the affected portion of the lung from functioning properly (Hathaway, Proctor, et al. 1991). There is no known cure for CBD (OSHA 1999b). Symptoms of CBD include persistent coughing, difficulty breathing upon physical exertion, fatigue, chest and joint pain, weight loss, and fevers. CBD only develops in employees sensitized to beryllium. A sensitized employee is an employee who has developed an allergic reaction to beryllium. Exposure to beryllium, possibly even below OSHA's PEL, may sensitize an employee to beryllium, placing that employee at elevated risk of CBD. (Bechtel 2001)

Many years ago, employees who breathed very high levels ($>100 \mu\text{g}/\text{m}^3$) of beryllium dust and fumes, even for a short period of time, developed acute beryllium disease (ABD). This disease rarely occurs in modern industry due to improved industrial protective measures designed to reduce exposure levels. ABD is caused directly by inflammation of the respiratory tract from irritation due to tissue exposure to beryllium itself. Symptoms associated with ABD include difficulty breathing, cough, and chest pain and occur much more rapidly than CBD symptoms. (Lang 1994) ABD may lead to death or respiratory illness similar to pneumonia.

Beryllium has been classified as a known human carcinogen by NTP and IARC (NTP 2004; IARC 2006a). Occupational studies reported excess lung cancer mortality among employees engaged in beryllium production and processing during the 1930s to 1960s. Exposure to large amounts of beryllium metal and beryllium compounds in the lungs of experimental animals has led to increased lung cancer. (ATSDR 2002)

As noted in the 1999 OSHA Hazard Information Bulletin, the current eight-hour time-weighted average (TWA) permissible exposure limit (PEL) of $2 \mu\text{g}/\text{m}^3$ may not adequately prevent CBD among exposed employees (OSHA 1999c). Control of dusts or fumes is the main preventative measure. Industries that work with beryllium should consider their ventilation systems, employee PPE, and workplace monitoring for hazardous levels of beryllium. For additional control information, refer to the "How to Control Hazards" section of this guide.

Beryllium sensitization can be detected through the use of a blood test called the BeLPT, which stands

for beryllium lymphocyte proliferation test. This test measures how specific white blood cells called lymphocytes react to beryllium. A confirmed positive test result means that an employee is sensitized (OSHA 1999c). While it is not known whether everyone who is sensitized will develop CBD, many exposed employees who were confirmed positive with the BeLPT already had CBD or were diagnosed with the disease at a later time.

All employees who could potentially be exposed to beryllium in the workplace should be taught to recognize the following symptoms as possible signs of CBD: unexplained cough; shortness of breath; fatigue; weight loss or loss of appetite; fevers; and/or skin rash. These employees should also be encouraged to talk to their doctor or other health professional about CBD and getting a BeLPT blood test regardless of symptoms. (OSHA 1999c)

Applicable Standards

- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.134, *Respiratory Protection*

Sources of Additional Information

- OSHA Safety and Health Topics: Toxic Metals: Beryllium <http://www.osha.gov/SLTC/beryllium/index.html>
- 10 CFR Part 850, Chronic Beryllium Disease Prevention Program, Final Rule. (Department of Energy, 9 Feb. 2006)
- OSHA. Preventing Adverse Health Effects from Exposure to Beryllium, http://www.osha.gov/dts/hib/hib_data/hib19990902.html.
- IARC 1997, Beryllium and beryllium compounds, <http://www.inchem.org/documents/iarc/vol58/mono58-1.html>
- EPA 1998, Beryllium and compounds, <http://www.epa.gov/iris/subst/0012.htm>

What You Need to Know about Cadmium Exposure

The worldwide production of cadmium was approximately 19,400 tons/year in 2005. In the U.S., only three companies produced cadmium in 2006: one produced cadmium as a by-product of the smelting and refining of zinc while the other produced cadmium from scrap, primarily nickel-cadmium (NiCd) batteries. (USGS 2007)

Cadmium is a toxic metal commonly found in smelting operations. Cadmium hazards exist for recycling employees cutting apart pieces of metal scrap with gas torches, and employees near furnaces that melt such alloys. Overexposure to cadmium may occur even in situations where only trace quantities of cadmium are found in the raw material or in smelter dust or fumes.

Nickel-cadmium (NiCad) batteries are one of the main sources of scrap cadmium (USGS 2003). Recycling of large NiCad batteries, usually weighing over 2 kg, typically involves emptying the electrolytes from the battery and dismantling the battery (cutting off the tops). The cadmium plates are detached, washed, dried and then sent to a recycling facility where the cadmium would be loaded into the furnace. Cadmium in smaller batteries is typically recovered by burning off the castings and separators in a furnace. Exposures to cadmium in NiCad recycling operations typically are associated with work near the recycling furnaces.

Historically, cadmium was also used as a pigment in industrial paints and may present a hazard to employees when welding, cutting, or shredding scrap coated with cadmium-containing paints.

Cadmium emits a characteristic brown fume (CdO) upon heating, which is relatively non-irritating. Several deaths from acute exposure occurred in welders who welded on cadmium-containing alloys or worked with silver solder.

Short-term exposure to high concentrations of airborne cadmium may lead to metal fume fever with flu-like symptoms such as weakness, fever, headache, chills, sweating and muscle pain. Acute pulmonary edema (excess fluid in the lungs) usually develops within 24 hours, reaching a maximum in three days: if death due to asphyxiation does not occur, then symptoms may resolve within a week (<http://www.osha.gov/SLTC/metalsheavy>; <http://www.osha.gov/SLTC/cadmium/index.html>).

Longer-term exposure to lower levels of cadmium may cause lung or prostate cancer, kidney damage, and hypertension. Cadmium is also believed to cause pulmonary emphysema, bone disease, and possibly anemia, teeth discoloration and loss of smell (<http://www.osha.gov/SLTC/metalsheavy>; ATSDR, 1999a). Cadmium is classified as a known human carcinogen by IARC and NTP (IARC 2006a;

NTP 2004). Additional information is available in Cadmium, OSHA Publication 3136.

OSHA has a substance-specific standard regarding exposure to cadmium in general industry, 29 CFR 1910.1027, that establishes a PEL of 5 µg/m³. This standard also contains additional requirements for the protection of employees from cadmium exposure such as provisions for exposure monitoring, preferred methods for exposure control (including the use of separate engineering control limits (or SECALS) in selected operations), written exposure control plans, respiratory protection, protective work clothing and equipment, medical surveillance, and employee information and training. OSHA Publication 3136 provides additional details on these requirements.

Case History #9

A 36-year-old man was poisoned with cadmium fumes after smelting lead. Cadmium exposures can occur during lead processing since lead concentrates contain small amounts of cadmium which exist naturally in the environment. The patient developed pulmonary edema and died on the fifth day after exposure. (PIM 1990)

Preventive/corrective measures: All employers who use cadmium must monitor employees for exposure. In cases where employees are exposed above the PEL, employers must implement a full cadmium compliance program including provisions for engineering controls, warning signs, emergency plans, and PPE, among others.

Case History #10

An employee used an oxyacetylene torch to perform demolition work on a bridge which spanned a creek. He was assigned to salvage guardrails on the bridge and to also salvage a gauge shelter which was mounted on a platform next to the bridge. While wearing no respiratory protection, he spent the morning cutting anchor posts and bolts to remove the bridge rails; these were later found to be cadmium-coated. After lunch, he worked to remove the gauge shelter which was anchored to the platform on both an exterior and interior flange. Wearing no respirator, the employee entered the shelter and cut the bolts with the torch; these were galvanized. The employee felt ill after coming out of the shelter.

His condition continued to worsen; he was hospitalized two days later and died three weeks later. (OSHA IMIS)

Preventive/corrective measures: Employers are required to monitor employees' exposure to cadmium in all situations where employees may be exposed. If the monitoring indicates exposure to cadmium above the PEL, employers must implement a full cadmium compliance program including provisions for engineering controls, warning signs, emergency plans, and PPE, among others.

For additional details on control measures, refer to the "How to Control Hazards" section of this guide, at page 28 or to the OSHA website section on Toxic Metals.

Applicable Standards

- 29 CFR 1910.1027, *Cadmium*
- 29 CFR 1910.19, *Special provisions for air contaminants*

Sources of Additional Information

- OSHA 3136, Cadmium <http://www.osha.gov/Publications/osh3136.pdf>
- OSHA Safety and Health Topics: Toxic Metals, <http://www.osha.gov/SLTC/metalsheavy/index.html>

What You Need to Know about Hexavalent Chromium Exposure

Chromium exists in several physical states; the most common states are chromium metal (Cr0), trivalent chromium (CrIII) and hexavalent chromium (CrVI). Chromium (in its various states) has a wide range of uses in metals, chemicals, and refractories. Chromium metal is principally used to produce stainless steel, alloy steels, and other nonferrous alloys to improve structural and anticorrosive properties. (USGS 2005)

Hexavalent chromium and trivalent chromium compounds are often used in electroplating of metals and plastic substrates to improve corrosion resistance. Chromates (CrVI) are also used as pigments in paints, plastics, dyes and inks to impart corrosion resistance, heat stability, color and other qualities. Other major industrial uses of hexavalent chromium

containing compounds are in catalysts, as a wood preservative, and as a chemical intermediate to produce chemicals for leather tanning. (OSHA 2006)

Employees in the metal recycling industry can be exposed to hexavalent chromium when chromium-containing materials are heated such as during melting or welding of chromium alloys such as stainless steel or a substrate with chromium protective coating.

The major illnesses associated with occupational exposure to hexavalent chromium are lung cancer, nasal septum ulcerations and perforations, asthma, skin ulcerations and allergic and irritant contact dermatitis (OSHA 2006). Hexavalent chromium is classified as a known human carcinogen by IARC and NTP. (IARC, 2006a; NTP 2004)

OSHA has a substance-specific standard regarding exposure to hexavalent chromium in general industry, 29 CFR 1910.1026, that establishes a PEL of 5 µg/m³. The standard also includes provisions for employee protection such as preferred methods for exposure control, respiratory protection, protective work clothing and equipment, housekeeping, medical surveillance and communication of hazards.

Applicable Standards

- 29 CFR 1910.1026, *Hexavalent Chromium*

Sources of Additional Information

- OSHA Safety and Health Topics: Hexavalent Chromium http://www.osha.gov/SLTC/hexavalent_chromium/index.html
- OSHA 3320, Small Entity Compliance Guide for the Hexavalent Chromium Standards http://www.osha.gov/Publications/OSHA_small_entity_comp.pdf
- ATSDR Toxicology Frequently Asked Questions (ToxFAQs), <http://www.atsdr.cdc.gov/toxfaq.html>

What You Need to Know about Lead Exposure

The United States is the world's third-largest primary producer of lead. Eighty percent of the lead ore mined domestically comes from Missouri. In 1993, the lead industry employed 600 employees in primary smelting and 1,700 employees in secondary smelting and refining.

Lead is used primarily in batteries. Other uses include ammunition, sheathing on electrical cables,

and for corrosion resistance and color characteristics (as pigments) in paints.

Lead is the most recycled metal, when compared to percentage output (ISRI NDc) with the U.S. as the world's largest recycler of lead scrap. Most recycled lead comes from batteries where the primary process involves breaking and smelting used batteries. (EPA 1995)

The lead in used batteries is often in the form of lead oxide, which easily forms inhalable particles. When working with old batteries, employees should also be aware of the corrosive acid contaminated with lead (Washington 2002). Lead-acid batteries are processed by:

- Draining the acid.
- Dismantling the battery using hammer mill and grinding.
- Washing and tumbling.
- Treating individual components by desulfurization.
- Feeding this to a blast furnace or electric reduction furnace to recover raw lead. (USGS 1999)

OSHA has developed the Secondary Lead Smelter eTool (http://www.osha.gov/SLTC/etools/lead_smelter) to describe ways to reduce lead exposure to employees in lead smelting plants, with sections that focus on Raw Materials Processing, Smelting, Refining and Casting, Environmental Controls, and Maintenance. Many of the discussions that this eTool provides on smelting and processing of lead should give insights into hazards that may be encountered by employees that deal with lead scrap recycling.

Secondary processing of lead battery scrap and other materials recycled with that scrap typically produce air emissions containing other hazards including sulfur dioxide and particulate matter containing lead and cadmium (EPA 1995). For further information on the potential hazards from exposure to cadmium, refer to the "What You Need to Know about Cadmium Exposure" section of this guide.

Recyclers may also encounter lead when working with scraps coated with paints containing lead (especially scraps originating from bridge dismantling and rehabilitation and shipyards). Lead dust can be created by grinding, cutting, drilling, sanding, scraping or blasting surfaces coated with lead paints. Lead fumes can be created by using heat guns or other heating techniques to remove paint from sur-

faces, or by using heated cutting tools to cut through painted metal. (NYSDOH 2001)

Lead is also recycled from solder, cable covering, building construction materials, and residues and drosses from smelter-refinery operations (USGS 2001). Employees may be exposed to lead during any of these processes.

Overexposure to lead is one of the most common-place overexposures in industry. OSHA has established the reduction of lead exposure as a high strategic priority. Lead is a systemic poison and overexposure to lead can damage blood-forming, nervous, urinary, cardiovascular and reproductive systems and may cause cancer (ATSDR 1999b, Navas-Acien 2007). Lead accumulates in the body over time and remains in the blood for a month, in organs for several months, and in bones for years (NYSDOH 2001). Lead affects:

- the brain and nervous systems
- reproductive capabilities
- kidneys
- cardiovascular system
- the digestive system
- the ability to make blood

Inorganic lead is classified as a reasonably anticipated human carcinogen by NTP and as a probable human carcinogen by IARC. (NTP 2004; IARC 2006b)

Early signs of lead poisoning include:

- tiredness
- headache
- metallic taste in the mouth
- poor appetite

Later signs include aches or pains in the stomach, constipation, muscle and joint pains, and memory problems. (NYSDOH 2001)

Employees who may have been exposed to lead should talk to a doctor or other health professional. Your doctor may order a blood lead test which will measure the body's lead levels.

OSHA has a substance-specific standard regarding exposure to lead in general industry, 29 CFR 1910.1025. This standard establishes a PEL of 50 $\mu\text{g}/\text{m}^3$ and includes additional employee protection provisions such as preferred methods of control, protective work clothing and equipment, house-keeping, hygiene facilities and practices, medical surveillance and employee training.

Lead poisoning is a topic of extreme concern in the medical community. Employees that encounter lead at work must take precautions so that they do not accidentally take lead dust into their homes through contaminated workplace shoes or clothes. For example, employees must not be allowed to leave the facility wearing the clothes that they wore during their work shift, which may be contaminated with lead dust.

Applicable Standards

- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.19, *Special provisions for air contaminants*

Sources of Additional Information

- OSHA, Lead: Secondary Smelter eTool, <http://www.osha.gov/SLTC/etools/leadsmelter/index.html>
- OSHA Safety and Health Topics: Toxic Metals, <http://www.osha.gov/SLTC/metalsheavy/index.html>

What You Need to Know about Mercury Exposure

The United States relies on recycled material and imports to meet its mercury needs; no U.S. mine has recovered mercury as its main product in over a decade. Some domestic companies recover mercury as a by-product of other metals. Several companies recover and refine mercury; the largest end uses for this mercury are the production of chlorine and of caustic soda. (USGS 2002)

Mercury is typically used in electrical applications such as thermometers and other gauges, valves, switches, batteries, and high-intensity discharge lights; it is used in amalgams for dentistry, in preservatives, in pigments, catalysts, and lubricating oils, and in heat transfer technology. The most common environments where exposure is likely to occur are during production and transportation of mercury, and mining and refining of gold and silver ores (<http://www.osha.gov/SLTC/metalsheavy/index.html>). Mercury and its compounds exist in three general forms; elemental (metallic) mercury, inorganic mercury, and organic mercury.

Mercury may be present in any industry that works with mercury or with materials that contain trace amounts of mercury. Recycling of mercury lamps is

one industry that is at risk for exposure to mercury. Emissions testing in 1999 showed that facilities that process steel scrap could be a large source of mercury emissions (Sastry et al. ND). Other sources include electronic devices such as rectifiers, switches, thermostats, relays; thermometers; dental amalgams; and catalysts used in the production of chlorine and caustic soda (USGS 2001). Employees may be exposed to mercury when smelting metals that contain trace levels of mercury, or when smelting involving processes that use mercury. Employees could also be exposed to mercury when collecting or otherwise processing gauges containing mercury.

Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Mercury's effects on brain functionality may result in changes in mood or personality (such as irritability or shyness), tremors, changes in vision or hearing, and memory problems. Short-term exposure to high levels of metallic mercury vapor may cause adverse effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation. (ATSDR 1999d)

In addition to the OSHA PEL for mercury (29 CFR 1910.1000, Table Z-2), OSHA has published guidelines in CPL 02-02-006, Inorganic Mercury and its Compounds, for protecting employees from occupational exposure to inorganic mercury. These guidelines provide suggestions for exposure monitoring, medical surveillance, training, PPE, housekeeping, and personal hygiene facilities and practices. (OSHA 1978, 1985)

Case History #11

A college chemistry professor spilled a few drops of dimethyl-mercury on the back of her gloved hand while the chemical was being transferred between containers. She promptly cleaned up and did not think any more about it. This was the only time the material was handled outside of a closed container.

The first symptoms did not occur until two months later, and they were ascribed to gastroenteritis. Neurological symptoms appeared after an additional two months, and she died five months later of organic mercury poisoning.

A lapse time between exposure and the appearance of symptoms is characteristic of alkyl mercury poisoning. The amount of the chemical that

was absorbed into the professor's body was estimated to be less than one-tenth of a milliliter (approximately 300 mg), or the equivalent of a single small droplet.

Dimethyl-mercury is absorbed through the skin and is potentially lethal in small doses. Exposure appeared to have occurred through the employee's gloves. This death by organic mercury poisoning was directly attributable to use of the wrong type of glove material for the chemical involved. (OSHA IMIS)

Preventive/corrective measures: Employees must be trained in proper selection and use of PPE (in this case, the correct type of gloves) and must be required to use this PPE when handling hazardous substances. Employees that believe they have been exposed to any level of hazardous materials should report the suspected exposure to their employer and seek medical attention promptly.

Case History #12

An employee was told to clean up some mercury that had spilled out of a device. Three days later he went to an emergency room for neurological problems. After two more days, he was moved to another medical facility for further treatment. (OSHA IMIS)

Preventive/corrective measures: Employees must be trained in proper spill cleanup procedures, including proper selection and use of PPE when handling hazardous substances. If regular employees are unable to effectively and safely manage potential spills, the employer must either evacuate the area or have an emergency response plan in place to manage uncontrolled spills or other releases. Employees who believe that they have been exposed to hazardous substances should inform their employer and promptly seek medical attention.

Applicable Standards

- 29 CFR 1910.132, *Personal Protective Equipment, General Requirements*
- 29 CFR 1910.134, *Respiratory Protection*
- 29 CFR 1910.1000, *Air Contaminants*

Sources of Additional Information

- OSHA Safety and Health Topics: Toxic Metals, <http://www.osha.gov/SLTC/metalsheavy/index.html>
- OSHA Safety and Health Topics: Emergency Preparedness and Response, <http://www.osha.gov/SLTC/emergency-preparedness/index.html>
- ATSDR Toxicology Frequently Asked Questions (ToxFAQs), <http://www.atsdr.cdc.gov/toxfaq.html>
- OSHA (1978) CPL 02-02-006 Inorganic Mercury and its Compounds
- OSHA (1985) CPL 02-02-006 CH-1 Removal of Obsolete Sections

What You Need to Know about Exposure to Other Metals

OSHA has published extensive information on arsenic, beryllium, cadmium, hexavalent chromium, lead, and mercury. In addition to these metals, employers should also limit employee exposure to all other hazardous metals handled or processed in metal scrap recycling operations. This section of the guide discusses additional metals for which OSHA and other agencies have collected health information. The section also notes some of the common processing techniques for those metals, where information was available.

The current PELs for each of the metals discussed in this section can be found in 29 CFR 1910.1000, Table Z-1 or Z-2. NIOSH has recommended exposure limits for a number of these metals. The NIOSH RELs can be found in the NIOSH Pocket Guide available online at <http://www.cdc.gov/niosh/npg/default.html>. These exposure limits are summarized in Appendix A of this guide.

Aluminum is one of the most commonly recycled metals and can be hazardous to employees in recycling operations. Scrap aluminum mostly comes from recycled used beverage cans (UBCs), which account for over half of the recycled aluminum supply. The other main source is diecasts, which are mostly from the automobile industry (USGS 2001). Employees who process aluminum scrap might be exposed to high levels of aluminum dust in workplace air during pre-processing steps that involve crushing and/or shredding and drying. Aluminum may cause respiratory problems, including coughing and possibly asthma from breathing dust, and it may also

cause skeletal problems in those with poor kidney function. High levels of aluminum were found in people with Alzheimer's disease, but it is not known whether the aluminum is a cause of this disease. (ATSDR 1999c)

Antimony is derived primarily from the recycling of lead-acid batteries (USGS 2002). It may be found in the air near industries that process or release it, including smelters, coal-fired power plants, and refuse incinerators. Occupational overexposure to antimony has been reported to result in eye and respiratory tract irritation, chronic lung disease, and possibly cardiovascular and gastrointestinal effects. (ATSDR 1992a)

Cobalt exposure may be a problem for employees who make or use grinding or cutting tools, or that refine or process cobalt metals, or that use cobalt or produce cobalt alloys. Cobalt is typically processed in an electric arc furnace operating under reducing conditions to adjust cobalt's chemical composition, or by roasting of spent catalysts, chlorination or leach milling, or by other chemical processes (USGS 1999; Jones 1998). Most recycled cobalt comes from used catalysts from the petroleum and chemical industries, cemented carbides used in cutting and wear-resistant applications, rechargeable batteries, superalloys, magnetic- and wear-resistant alloys, and tool steel (USGS 2001). Occupational overexposure to cobalt can result in respiratory irritation, chronic lung inflammation and pulmonary fibrosis. Possible cardiac and neurological effects have also been reported. Skin contact can cause an allergic contact dermatitis (ATSDR 2004a). IARC has classified metallic cobalt containing tungsten carbide as probably carcinogenic to humans and other cobalt compounds as possibly carcinogenic to humans. (IARC 2006c)

Copper may be present in dust in industries that grind or weld copper metal. Direct metal scrap (primarily alloy scrap) is the main source of copper scrap, with other copper scrap coming from copper smelters and refiners, brass mills, brass and bronze ingot makers, aluminum and steel alloy producers, foundries, and chemical plants (USGS 2001). Employees might breathe, or have skin contact with this dust. Occupational overexposure to copper dust can irritate the eyes, nose and lungs and possibly lead to gastrointestinal disturbance. (ATSDR 2004b)

Iron and steel are used in construction and industrial uses including vehicles, bridges, machinery, tools,

buildings, containers, highways, and appliances. The primary source of obsolete steel is automobiles (USGS 2001). Steel is often coated with aluminum, chromium, lead-tin alloy, tin, or zinc (refer to the sections on those metals for information on their hazards). Steel mills melt scrap in electric arc furnaces or basic oxygen furnaces, or in blast furnaces (USGS 1999). Iron oxide is a red-brown fume with a metallic taste that can affect the respiratory system and damage the lungs after breathing high concentrations over many years. (<http://www.osha.gov/SLTC/metalsheavy>). Exposure to iron pentacarbonyl is acutely toxic and can cause acute lung damage (http://www.osha.gov/dts/chemicalsampling/data/CH_247500.html), however, this form of iron may not be commonly encountered in recycling operations since it is used as a chemical intermediate or catalyst and, therefore, is not in the final products. (ISP, ND)

Manganese is ubiquitous throughout the various grades of steel (averaging 0.7% manganese), and can also be found as a component in certain aluminum alloys. The main material recycled for its manganese content is high-manganese (Hadfield) steel, otherwise manganese is mostly recycled incidentally when recycling steel and aluminum (USGS 2001). Manganese exposures can occur during operations at steel and aluminum recycling facilities which consist of segregating scrap by content and cutting up bulky pieces as well as the melt and refining processes (USGS 1999). Short-term exposure to high levels of manganese can result in respiratory tract irritation and inflammation of the lungs. Manganese exposure, at high levels over a longer period of time, can cause manganism, a set of Parkinson-like symptoms that include mental and emotional disturbances, difficulty walking, and slow and clumsy body movements. Long-term exposure to manganese at lower levels may cause deterioration of certain motor skills (such as holding hands steady or performing fast movements) and balance. (ATSDR 2000c)

Molybdenum is mostly recycled from catalysts. Molybdenum is also found in alloy iron and steel scrap, where it is recycled to produce steel products (USGS 2001). Employees can be exposed to molybdenum dust during the processing of scrap which involves cutting, cleaning, and baling, and possibly calcining, drying, leaching, precipitation, and separation. Roasting, crushing, and abrading may be used in preparation for melting (USGS 1999) (<http://www.osha.gov/SLTC/metalsheavy>).

Nickel may be present as fumes or as dust in industries that process nickel scrap. Nickel is used in stainless steel, copper-nickel alloys, aluminum alloys, and nickel-based alloy, and is used in electroplating and welding products. Employees may be exposed to nickel by breathing fumes, by ingesting dust, or via skin contact. Other sources include emission control dusts, swarf, grindings, mill waste, and waste from the stainless steel industry (USGS 2001). Skin exposure to nickel dust can cause an allergic contact dermatitis, often at the skin site where the contact occurred. Some occupational studies of employees exposed to nickel compounds have found increased risk of lung and nasal cancer among employees (ATSDR 2005a). Most nickel compounds are classified as known human carcinogens by IARC and NTP (IARC 2006a; NTP 2004). Employees who inhale large amounts of nickel may suffer from inflammation of the respiratory tract, chronic bronchitis or reduced lung function. (ATSDR 2005a)

Selenium may be present in the air at some metal processing facilities typically as elemental selenium or selenium dioxide. Selenium uses are: as a substitute for lead in plumbing when alloyed with bismuth and in electronics including rectifier and photoelectric applications (USGS 2001). Occupational overexposure to selenium may lead to eye, skin, respiratory tract irritation, bronchitis, and breathing difficulties. (ATSDR 2003)

Silver is used in solder, which may be found with many types of scrap metal. Silver is found in photographic plates and solutions, and in silver recovery cartridges (VADEQ 2001). Other large sources of scrap silver include jewelers' sweepings, catalysts, electronic scrap, and other metal materials (USGS 2001). Exposure to high levels of silver for a long period of time may result in argyria, which is a blue-gray discoloration of skin and other body tissue. Argyria is permanent but it does not have any known health effects. Lower levels of silver exposure can also cause silver deposition in areas of the body. A study found that 21% and 25% of silver reclamation employees exhibited conjunctival and corneal argyrosis, respectively, and that 74% of the subjects exhibited some degree of internal nasal-septal pigmentation. The route of exposure may have been direct absorption by the eyes. No association was observed between these depositions and decreased visual ability (ATSDR 1990). Exposure to high levels of silver can also cause breathing problems, lung and throat irritation, and stomach pain. In

some people, skin contact with silver can cause allergic reactions such as rashes, swelling, and inflammation.

Tin is recycled from can-making facilities, brass and bronze plants, and soldering operations (USGS 2001). De-tinning involves removal of tin from new or old tinplate scrap by immersion in a heated sodium hydroxide solution, a batch process that reverses the tin electroplating process (USGS 1999). Employees could potentially have airborne exposures from fumes and dermal exposures from material handling. Inorganic tin compounds typically enter and leave the body rapidly and they do not usually cause harmful effects. Overexposure to organic tin compounds can cause respiratory, eye, and skin irritation and interfere with the normal operation of the nervous, endocrine, and reproductive systems. (ATSDR 2005b)

Vanadium may be present as a vapor or particulate in air at facilities that work with scrap metal containing vanadium. Vanadium is primarily an alloying element generally less than 1%; the main supply of vanadium scrap for recycling comes from used catalysts (USGS 2001). Overexposure to vanadium can cause harmful health effects to the respiratory tract (such as lung irritation, inflammation, and bronchitis), and can irritate the eyes (ATSDR 1992b). Vanadium pentoxide is classified as a possible human carcinogen by IARC. (IARC 2006c)

Zinc is found as dust or fumes in air at manufacturing sites, and at recycling sites. The chief sources of zinc scrap are brass, die casting scrap, flue dust, zinc sheet, galvanizing residues, and zinc die casts (USGS 2001). Zinc is processed by boiling secondary zinc alloys and then capturing the purified zinc in a distillation column, or by casting galvanized residues into slabs, melting the slabs in furnaces and then condensing the zinc fumes. A more recent process involves dissolving the zinc coating from scrap in a hot caustic solution and then recovering the zinc from the solution using an electrolyte process (USGS 1999). Some zinc is needed for proper body function, but high levels may be hazardous. Breathing large amounts of zinc can cause metal fume fever, which is thought to be an immune response that affects the lungs and body temperature. (ATSDR 2005c)

Applicable Standards

- 29 CFR 1910.1000, *Air Contaminants*

Sources of Additional Information

- OSHA Safety and Health Topics: Toxic Metals, <http://www.osha.gov/SLTC/metalsheavy/index.html>
- ATSDR Toxicology Frequently Asked Questions (ToxFAQs), <http://www.atsdr.cdc.gov/toxfaq.html>

What You Need to Know about Radioactive Scrap

Scrap recycling industries may encounter radioactive metal scrap (Nijkerk 2001). This scrap could consist of scrap from decommissioned nuclear power plants (steel, galvanized iron, copper, Inconel, lead, bronze, aluminum, brass, nickel, precious metals), industrial and research irradiator activities, teletherapy, industrial radiography, medical equipment, gauges, logging, and pipes from the potash industry (Legare ND), or from other sources.

Radioactive materials may pose adverse health effects to employees, including cancer. Employees could be exposed to radioactive material or dust when contaminated materials are crushed or ground. If radioactive materials or objects are smelted, sealed sources of radioactivity may rupture and release their radioactive contents. Radioactive scrap in an uncontrolled setting in a processing facility may cause problems with the machinery, and require an extensive cleanup effort and possible temporary shutdown of the facility.

To detect radioactive material when it enters the recycling facility, employers can install a radiation monitoring system to detect gamma radiation emitting from source materials. These systems are expensive to purchase and expensive to calibrate and maintain. It is also possible to monitor incoming material with hand-held radiation detection devices which can monitor for alpha, beta, and gamma radiation, but these devices may be less sensitive and they require more operator skill. (Smith ND)

Fixed radiation-monitoring systems are generally installed at the loading area of a scrap facility, typically at the weigh bridge. Factors such as the type of radiation emitted, the distance from monitors, shielding, and background radiation may affect the ability of the monitoring systems to register all radioactivity. It may be necessary to install multiple fixed radiation-monitoring systems to monitor the same batch of scrap metal; common locations to install such sys-

tems are at the shredder or furnace entry, or at a conveyor or sorting station. (Legare ND)

Employers should work with their suppliers to ensure that no radioactive materials are delivered and should also install radiation detectors as appropriate. Working with radioactive materials can cause various types of cancer. There are no early warning signs for cancer. Exposure to large doses of radiation could also lead to acute radiation syndrome which includes nausea, vomiting, diarrhea, bleeding, coma, and even death. Employers must communicate the hazards of radioactive materials to employees and should set clear instructions on how to remove any radioactive materials that are discovered.

Applicable Standards

- 29 CFR 1910.1096, *Ionizing radiation*

What You Need to Know about Metalworking Fluids

Metalworking fluids (MWFs), or sometimes called machining fluids, are “fluids used during machining and grinding to prolong the life of the tool, carry away debris, and protect the surfaces of workpieces. These fluids reduce friction between the cutting tool and the work surface, reduce wear and galling, protect surface characteristics, reduce surface adhesion or welding and carry away generated heat.” (NIOSH 98-116). Employees are unlikely to encounter MWF in conjunction with the scrap metal they process, however, they may encounter MWF in the course of using various heavy machinery (such as hydraulic shears) to cut apart pieces of scrap metal. MWFs may contain toxic substances; skin exposure to MWF in liquid forms, or breathing in vapors/mists from MWF, can cause dermatitis, acute and chronic respiratory disease, skin cancer and other cancers (OSHA 1999a). Precautions for working with MWF include ventilation, PPE, and training for relevant procedures. Similar precautions apply to solvents used for cleaning metal scrap prior to processing.

Applicable Standards

- 29 CFR 1910.1000, *Air Contaminants*

Sources of Additional Information

- OSHA Safety and Health Topics: Metalworking Fluids, <http://www.osha.gov/SLTC/metalworkingfluids/>
- NIOSH 98-116, What You Need to Know About Occupational Exposure to Metalworking Fluids

What Other Hazards You Should Know About

In addition to the toxicological hazards discussed in the preceding sections, employees may face hazards from trace metals mixed into the scrap, or from materials and chemicals associated with the scrap such as gasoline in old cars, flammable and hazardous plastics surrounding cables, paint on used beverage cans, or from metalworking fluids used to process metals. Some metals are processed by oxidation/reduction or other chemical processes which may release harmful gases or harmful gaseous forms of the metal being processed.

The equipment used to process scrap metal may include physical processes that cut, slice, compact, shred, or perform other operations. These pose hazards to machine operators and those who work in close proximity to machine points of operation.

In addition, employers must also consider:

- Fire hazards from flammable metals or other substances.
- Explosion hazards from gas canisters, tanks, or cylinders, or from particles in the air.
- Injury from falling objects.
- Burns and scalding from hot air or hot materials.
- Other process-specific safety hazards such as amputation, acid burns, electrical hazards, confined spaces, etc.

Employers need to evaluate their metal scrap recycling operations to identify hazards present in their processes and to develop control measures. Employers should evaluate each piece of equipment to identify related hazards and to determine the best ways to control or eliminate hazards.

OSHA has guidance documents to assist you in considering many of these hazards.

Case History #13

An employee mixed sodium nitrate and aluminum out of sequence in a secondary lead smelter factory. As a result, the pot of lead exploded, burning and scalding 12 employees with molten lead. Five employees were hospitalized for more than one week. One employee died approximately 35 days after the accident as a result of the injuries he sustained. (OSHA IMIS)

Preventive/corrective measures: Employees should pay close attention to sequence when

mixing certain groups of chemicals. Employers should provide written procedures for conducting hazardous processes. Where possible, these processes should be conducted in isolated areas of the facility.

Applicable Standards

- 29 CFR Subpart L, *Fire protection*
- 29 CFR 1910.106, *Flammable and combustible liquids*

How to Control Hazards

There are many ways to reduce the hazards the metal scrap recycling industry poses to employees. Engineering controls (for example, adding machine guards or barriers or installing ventilation, etc.) or work practice controls (such as establishing standard operating procedures or requiring the use of PPE) can place a safer distance between an employee and a potentially dangerous material or process. Employees must be protected (using engineering and work practice controls) from potentially harmful materials, and from the dust and fumes generated by these materials and the recycling processes. Workplaces should be well ventilated to remove dust and fumes from the air employees breathe. Employers must fully communicate the hazards of their operations to employees in such a way as to reduce those hazards.

Additionally, employers may need to conduct medical testing or medical surveillance to determine whether the exposure levels of certain metals and other substances have placed employees at risk. Medical surveillance is an important hazard prevention tool that can help employers detect and eliminate hazardous exposures that may be affecting employee health. Periodic medical testing is also important to help ensure prompt diagnosis and treatment of employees suffering adverse health affects related to exposures (<http://www.osha.gov/SLTC/medicalsurance>). Further information on medical screening and medical surveillance is available in OSHA 3162, *Screening and Surveillance: A Guide to OSHA Standards*.

The following sections outline some safety recommendations that are specific to certain operations, but many recommendations are common to a range of physical operations. Employers should become familiar with available resources on safety standards and safe work practices.

In all cases, employers must ensure that operators are fully trained to use their industrial equipment or vehicle and use caution during operation. Employers must ensure that defective equipment is removed from service until it has been repaired. Only trained employees should operate industrial equipment and vehicles.

Employers may need to design, develop and implement a comprehensive safety plan that includes, but is not limited to, analysis and control of vehicle- and machine-related hazards through use of a daily checklist. Equipment must be de-energized when employees are attempting to clean out fallen or jammed material. Employers must make sure that all electrically powered equipment complies with applicable electrical standards (29 CFR 1910 Subpart S).

Applicable Standards

- 29 CFR 1910 Subpart S *Electrical*
- 29 CFR 1910.1000 *Air Contaminants*

Sources of Additional Information

- OSHA 3162, *Screening and Surveillance: A Guide to OSHA Standards*
- OSHA 3170, *Safeguarding Equipment and Protecting Employees from Amputations*
- OSHA 2254, *Training Requirements in OSHA Standards and Training Guidelines*
- OSHA Safety and Health Topics: Machine Guarding, <http://www.osha.gov/SLTC/machineguarding/index.html>
- OSHA Lockout/Tagout eTool, <http://www.osha.gov/dts/osta/lototraining/index.htm>

Engineering Controls and Work Practice Controls

Engineering controls and work practice controls are the primary means by which an employer can attempt to reduce employee exposure to the hazards of toxic metal scraps and the equipment used to process those scraps.

Examples of engineering and work practice controls include:

- Enclosing processes where employees do not constantly need direct access to the machinery.
- Using product substitution to eliminate harmful substances.
- Installing an exhaust system to capture the airborne hazardous metal at the source.

- Installing guard devices at nip points where employees could come into contact with moving parts of machinery.
- Equipping all machinery with prominently-displayed and properly-functioning stop buttons, or a stop cable running the length of a conveyor belt or other equipment.
- Using explosion-proof electrical systems to reduce hazards associated with flammable materials or other combustibles.

Employers should also consider the use of alternate processes as a way to reduce hazards. For example, in some situations, employees can use other methods to cut scrap such as shears or power saws that may lower employee exposure to some toxic metals (e.g., hexavalent chromium) when compared to torch cutting. However, alternative methods such as saws and shears can still produce dust and noise and create certain safety hazards.

Work practice controls involve changing employee procedures and practices to reduce exposure to some substances. For example, employers may not allow employees to eat, drink, smoke, chew tobacco or gum in areas where hazardous chemicals are used or present. Both the lead and cadmium standards forbid eating or storage of food, consumption of tobacco products and application of cosmetics in regulated areas or areas where exposures have been measured above the PEL.

In addition to engineering and work practice controls, employers can implement administrative controls. For example, to reduce the number of employees at risk during a hazardous operation, an employer may consider performing the hazardous task during times when fewer individuals are present in the work area.

OSHA substance-specific standards for arsenic, cadmium, hexavalent chromium and lead contain provisions for change rooms and hygiene facilities such as showers and handwashing and luncheon facilities. Employers must also follow other requirements regarding clean surfaces; cleanup of spills and releases; and cleaning methods that minimize the risk of dispersing hazardous dust into the air. Refer to the specific OSHA standards for these metals for further information on these topics. Employers can also apply these controls for recycling operations that involve other metals to help minimize the possibility of spreading contamination beyond work areas.

Examples of Engineering and Work Practice Control Techniques to Reduce Emissions

Some common engineering control techniques to reduce emissions to the atmosphere include:

- Wet scrubbers for dust (particulate matter) and acid gases. Scrubbers work by passing the material through a liquid that absorbs the dust. Liquids are selected based on their ability to maximize pollutant removal.
- Thermal and catalytic incineration for organic compounds. Incineration uses burners and chambers to ignite fuel and to allow oxidation to occur.
- Cyclones, electrostatic precipitators (ESPs), and fabric filters, for filterable dust (EPA 2001). Cyclones work like centrifuges, spiraling incoming gases to cause heavier particulate matter to drop out of the air to a surface to be collected. Electrostatic precipitators use electrical static forces to collect particles out of a gas stream and onto collection plates. Fabric filters (baghouses) pass a gas stream through a porous fabric: the particles form a layer of dust that can be removed.

Other examples of common engineering controls:

- Adding machine guards or barriers.
- Local exhaust ventilation, which includes both portable ventilation systems and stationary hoods, is generally the preferred method to control emissions in the workplace. For example, cutters with local exhaust ventilation.

Employers should ensure that employees avoid prolonged skin contact with hazardous metals and other hazardous substances either through controlling fugitive emissions or providing appropriate PPE. In most cases, employers must not use compressed air to clean working surfaces or body parts. Ventilation is one of the main engineering controls used to control exposure to chemical hazards in the workplace. There are two basic types of ventilation systems used for this purpose: general exhaust ventilation which provides ventilation for an entire room or area and local exhaust ventilation which provides local exhaust at a specific work area or process.

General exhaust ventilation (i.e., dilution, ventilation) allows materials to be released into the general atmosphere of the workplace and then introduces uncontaminated air to reduce concentrations of dust or vapor to acceptable levels. General exhaust ventilation may be appropriate where:

- The contaminants released into the air constitute a low hazard.
- The contaminants are unlikely to settle.
- Emission is widely dispersed or uniform.

Local exhaust ventilation is designed to capture and remove hazardous dusts, vapors, or fumes at their source before they can enter the general work space. Local exhaust ventilation (such as chemical hoods) may be appropriate where the materials released pose a high hazard or are highly localized; where air does not already circulate adequately to eliminate the hazard; or where employees work in close proximity to the emission source.

Applicable Standards

- 29 CFR 1910.94, *Ventilation*
- 29 CFR 1910.1000, *Air Contaminants*
- 29 CFR 1910.1018, *Arsenic*
- 29 CFR 1910.1026, *Hexavalent Chromium*
- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.1027, *Cadmium*

Sources of Additional Information

- OSHA Safety and Health Topics: Ventilation, <http://www.osha.gov/SLTC/ventilation/>

Personal Protective Equipment

While engineering controls and work practice controls are the primary means of reducing exposure to hazardous chemicals and processes, they are not always completely effective. In such cases, PPE may be used to reduce employee exposure. OSHA requires the use of PPE to reduce employees' exposures to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels (29 CFR 1910, Subpart I). PPE may include respirators, coveralls or other full-body clothing, gloves, head coverings, boots, face shields, earplugs and vented goggles.

Employers are required to determine all exposures to hazards in their workplace, and to determine if PPE should be used to protect employees. Employers must provide PPE for their employees if the work environment or processes present a hazard or are likely to present a hazard to any part of an employee's body; or if an employee might come into contact with hazardous chemicals, radiation, or mechanical irritants; and potential exposure to these

hazards cannot be eliminated through the use of engineering, work practice, or administrative controls.

A PPE program must identify and evaluate potential hazards in the workplace and indicate whether the use of PPE is an appropriate control measure. If PPE is required, the program must address selection, use, and maintenance procedures, as well as employee training and periodic reviews to evaluate its effectiveness in preventing employee injury or illness.

OSHA Publication 3151, *Personal Protective Equipment*, discusses PPE and the ways that employers and employees can identify hazards requiring PPE. For example, employees exposed to various safety hazards from operating heavy equipment may require adequate body protection including head and foot protection, gloves, durable clothing, hearing protection and safety glasses. Hazards from skin contact with materials can be addressed through the use of gloves and other protective clothing. A wide variety of chemical protective suits are available, and if such protection is needed employers must ensure that the suits used are appropriate for the materials of concern.

Some of the most significant hazards are associated with employee exposure to metal dust or fumes, so respiratory protection is a very important consideration. Respirators are required when exposures exceed the PEL and engineering and work practice controls are infeasible or insufficient. They may also be required in an emergency or in a designated regulated area.

Employers must provide respirators at no cost to employees, and ensure that respirators are used in compliance with applicable standards (29 CFR 1910.134). Respirators can be broken down into two general types, air purifying and supplied air. Air purifying respirators are typically tight fitting respirators that use replaceable filters to clean the air locally before the person breathes that air. They can have a facepiece that covers the whole face or one that just covers the mouth and nose. Supplied air respirators can be broken down into two categories, air-line respirators and self-contained breathing apparatus (SCBA). Air-line respirators connect the wearer's facepiece to a remote source of air either in a bottle or an air compressor. SCBA units supply air to users through an air tank worn on the user's back. Additional information on respirators is available in OSHA's Small Entity Compliance Guide for the Re-

vised Respiratory Protection Standard, Publication 9071, available online at http://www.osha.gov/Publications/SECG_RPS/secg_rps.html or <http://www.osha.gov/Publications/secgrev-current.pdf>

Employees using metalworking fluids or chemical baths to dissolve or clean metal scrap may be at added risk of hazardous chemicals spraying onto their bodies or heads and would need appropriate protection. Employees that use high-temperature gas torches need eye protection for flying pieces of scrap and for different types and intensities of light and possibly full-body protection from the extreme heat generated by some gas torches. Employees who weld or torchcut stainless steel must be informed of the hazards of hexavalent chromium that is generated in the process and can be inhaled with the fumes.

Employers must dispose of and/or properly clean, launder, repair, and replace PPE. Employees should not be allowed to take work clothing or equipment home or off the work site, and are prohibited from doing so under OSHA's Cadmium standard, 29 CFR 1910.1027, and Hexavalent Chromium standard, 29 CFR 1910.1026. Employers subject to OSHA's Arsenic and Lead standards (29 CFR 1910.1018 and 1910.1025, respectively) must train their employees on the hazards related to exposure to contaminated clothing. Employers should provide clearly-marked containers for PPE and maintain separate storage areas for work clothes and street clothes. Further PPE suggestions are discussed along with each process, earlier in this document.

Applicable Standards

- 29 CFR 1910.132, *General requirements*
- 29 CFR 1910.133, *Eye and face protection*
- 29 CFR 1910.134, *Respiratory protection*
- 29 CFR 1910.135, *Head protection*
- 29 CFR 1910.136, *Occupational foot protection*
- 29 CFR 1910.137, *Electrical protective devices*
- 29 CFR 1910.138, *Hand protection*
- 29 CFR 1910.1018, *Arsenic*
- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.1026, *Hexavalent Chromium*
- 29 CFR 1910.1027, *Cadmium*

Sources of Additional Information

- OSHA Safety and Health Topics: Ventilation, <http://www.osha.gov/SLTC/ventilation/>

The Need to Provide Hearing Protection

Noise is a pervasive occupational health problem. According to NIOSH, 30 million employees are occupationally exposed to hazardous noise, and about one-third of these people have noise-induced hearing loss, nearly all caused by occupational exposure to hazardous noise levels. (NSC 2000)

OSHA requires employers to make hearing protectors and audiometric testing available to all employees exposed to 8-hour TWA noise levels of 85 dB or above. Employees must wear hearing protection if exposures to noise levels are 90 dB or above (8-hour TWA) or above 85 dB (8-hr. TWA) for employees who have experienced a standard threshold shift. These requirements are set to ensure that employees have access to protectors before they experience significant hearing loss. (29 CFR 1910.95)

Employees that work with or near heavy machinery including melting furnaces, or material handling equipment may need hearing protection for protection from noise hazards. The incidence of noise-induced hearing loss can be reduced, or often eliminated, through the successful application of engineering controls and hearing conservation programs. For example, employers can install sound-proofing to enclose loud processes or equipment to stop loud noises from traveling to all work areas. If engineering controls are not adequate to eliminate problematic workplace noise, employees can use hearing protection devices such as earplugs, canal caps, or earmuffs.

For additional information regarding OSHA requirements and guidance on hearing protection, refer to OSHA 3074, *Hearing Conservation*. To ensure compliance, employers should also refer directly to the OSHA standards in 29 CFR 1910.95.

Applicable Standards

- 29 CFR 1910.95, *Occupational Noise Exposure*

Sources of Additional Information

- OSHA 3074, *Hearing Conservation*
- OSHA Safety and Health Topics: Noise and Hearing Conservation, <http://www.osha.gov/SLTC/noisehearingconservation/>
- National Safety Council, Safeworker, <http://www.nsc.org/pubs/sw.htm>

What You Need to Know about Hazard Communication

Employees in the recycling industry may come in contact with a wide range of hazardous materials in their workplace. These materials may include the metals and scrap materials themselves as well as any chemicals used or produced in the recycling processes. Employers must ensure that employees are trained on the hazards of the metals and other substances that are in their recycling plants. In addition, employers must ensure that employees are trained on emergency procedures and that employees can obtain the required information immediately in the event of an emergency. Employees must be trained to wear appropriate PPE and to recognize situations where PPE is needed.

OSHA's Hazard Communication standard (HCS) (29 CFR 1910.1200) describes how employers are to identify and convey information about various workplace chemical hazards. The HCS requires chemical manufacturers and importers to evaluate the hazards of the chemicals they produce or import and provide information about these hazards and associated protective measures to downstream users through container labels and material safety data sheets (MSDSs). All employers with hazardous chemicals in their workplaces must develop and implement a written hazard communication program that includes provisions for container labeling, employee access to MSDSs and training for all potentially exposed employees.

Manufacturers and importers are required to provide information on the scrap metal they sell to recyclers. Manufacturers are also required to pass on any information they have regarding known contaminants of the scrap, as would be the case if cutting fluids were present. This information must, in turn, be given to the downstream users by the scrap recycler. However, the HCS does not require employers to create labels and MSDSs when they scrap manufactured articles, such as equipment, piping, radiators and furniture, when the employer scrapping the item did not manufacture it and does not, in fact, possess an MSDS for the item. Regardless, employers should check with their scrap supplier to determine if MSDSs and labels or other hazard information are available. If a scrap supplier obtains an MSDS from a manufacturer or distributor, the scrap supplier must make that MSDS available to any downstream user upon request.

The HCS provides employees the right to know the hazards and identities of the chemicals they are exposed to in the workplace. When employees have this information, they can effectively participate in their employers' programs and take steps to protect themselves.

Specifically, employees need to know about:

- The requirements of the HCS.
- Any operation in their work area where hazardous chemicals are present and the nature of the operations that could result in exposure to these substances.
- The physical and health hazards of chemicals in the work area.
- Work practices and other measures employees can take to protect themselves from potential hazards such as emergency procedures and personal protective equipment needed.
- The location and availability of the written hazard communication program.
- The content of applicable OSHA standards.

OSHA Publication 3111, Hazard Communication Guidelines for Compliance, and OSHA Publication 3084, Chemical Hazard Communication, discuss the requirements of the HCS in more detail. These documents discuss labeling, MSDS procedures, and other hazard communication requirements. Employers must consider special communication needs to ensure comprehension of the contents of the training program.

The substance-specific standards for Arsenic (29 CFR 1910.1018), Lead (29 CFR 1910.1025), Hexavalent Chromium (29 CFR 1910.1026), and Cadmium (29 CFR 1910.1027) also establish requirements (e.g., employee training, labeling, and posting of warning signs) for communicating the hazards associated with these metals to potentially exposed employees. Employers must refer to these standards for specific information on related hazard communication requirements.

Applicable Standards

- 29 CFR 1910.1200, *Hazard Communication*
- 29 CFR 1910.1018, *Arsenic*
- 29 CFR 1910.1025, *Lead*
- 29 CFR 1910.1026, *Hexavalent Chromium*
- 29 CFR 1910.1027, *Cadmium*

Sources of Additional Information

- OSHA 2254, Training Requirements in OSHA Standards and Training Guidelines
- OSHA 3084, Chemical Hazard Communication
- OSHA 3111, Hazard Communication Guidelines for Compliance
- OSHA Hazard Communication
<http://www.osha.gov/SLTC/hazardcommunications/index.html>

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American National Standards Institute (ANSI)

- ANSI Z87.1-2003, *Occupational and Educational Eye and Face Protection Devices*
- BSR Z89.1-1997, *Industrial Head Protection*
- ANSI Z9.1, *Open Surface Tanks Operation*
- ANSI Z9.2, *Fundamentals Covering the Design and Operation of Local Exhaust Systems*
- ANSI Z9.3, *Design, Construction, and Ventilation of Spray Finishing Operations*
- ANSI Z9.4, *Ventilation and Safe Practice of Abrasive Blasting Operations*
- ANSI Z9.5, *Laboratory Ventilation*

Agency for Toxic Substances and Disease Registry (ATSDR)

- ATSDR. 1990. *Toxicological Profile for Silver*.
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National Institute for Occupational Safety and Health (NIOSH)

- NIOSH. FACE. NIOSH Fatality Assessment and Control Evaluation (FACE) Program. Online database. <http://www.cdc.gov/niosh/face>
- NIOSH 98-116. What You Need to Know About Occupational Exposure to Metalworking Fluids.
- NIOSH, 2005 NIOSH Pocket Guide to Chemical Hazards.

Occupational Safety and Health Administration (OSHA) Standards

- 29 CFR 1910.19 – *Special provisions for air contaminants*
- 29 CFR 1910.94 – *Ventilation*
- 29 CFR 1910.95 – *Occupational Noise Exposure*
- 29 CFR 1910.106 – *Flammable and combustible liquids*
- 29 CFR 1910.119 – *Process safety management of highly hazardous chemicals*
- 29 CFR 1910.132 – *General requirements*
- 29 CFR 1910.133 – *Eye and face protection*
- 29 CFR 1910.134 – *Respiratory protection*
- 29 CFR 1910.135 – *Head protection*
- 29 CFR 1910.136 – *Occupational foot protection*
- 29 CFR 1910.137 – *Electrical protective devices*
- 29 CFR 1910.138 – *Hand protection*
- 29 CFR 1910.147 – *The control of hazardous energy (lockout/tagout)*
- 29 CFR 1910.176 – *Handling materials – general*.
- 29 CFR 1910.178 – *Powered industrial trucks*
- 29 CFR 1910.179 – *Overhead and gantry cranes*
- 29 CFR 1910.180 – *Crawler locomotive and truck cranes*
- 29 CFR 1910.181 – *Derricks*
- 29 CFR 1910.184 – *Slings*
- 29 CFR 1910.212 – *General requirements for all machines*
- 29 CFR 1910.219 – *Mechanical power-transmission apparatus*.
- 29 CFR 1910.242 – *Hand and portable powered tools and equipment (general)*
- 29 CFR 1910.243 – *Guarding of portable powered tools*
- 29 CFR 1910.244 – *Other portable tools and equipment*
- 29 CFR 1910.252 – *General requirements (Welding, Cutting, and Brazing)*
- 29 CFR 1910.253 – *Oxygen-fuel gas welding and cutting*
- 29 CFR 1910.1000 – *Air Contaminants*
- 29 CFR 1910.1000, Table Z-1 – *Limits for Air Contaminants*

- 29 CFR 1910.1000, Table Z-2
- 29 CFR 1910.1018 – *Arsenic*
- 29 CFR 1910.1025 – *Lead*
- 29 CFR 1910.1026 – *Hexavalent Chromium*
- 29 CFR 1910.1027 – *Cadmium*
- 29 CFR 1910.1096 – *Ionizing radiation*
- 29 CFR 1910.1200 – *Hazard Communication*
- 29 CFR 1910 Subpart H – *Hazardous Materials*
- 29 CFR 1910 Subpart I – *Personal Protective Equipment*
- 29 CFR 1910 Subpart L – *Fire protection*
- 29 CFR 1910 Subpart Q – *Welding, Cutting and Brazing*
- 29 CFR 1910 Subpart S – *Electrical*
- 29 CFR 1926.62 – *Lead in Construction*
- 29 CFR 1926.55 – App. A, *Gases, fumes, vapors, dusts, and mists*

Occupational Safety and Health Administration (OSHA) Databases and Web Pages

- OSHA IMIS. OSHA Form 170 Reports, *Integrated Management Information System (IMIS)*.
- OSHA eTool. OSHA, Lead Secondary Smelter eTool, <http://www.osha.gov/SLTC/etools/leadsmelter/>
- OSHA eTool. Lockout/Tagout eTool <http://www.osha.gov/dts/osta/lototrain/index.htm>
- OSHA Safety and Health Topics: Main Page <http://www.osha.gov/SLTC/index.html>
- OSHA Construction Safety and Health Outreach Program: Safety and Welding, <http://www.osha.gov/doc/outreachtraining/htmlfiles/welding.html>
- OSHA Hazard Communication Web Page: Foundation of Workplace Chemical Safety Programs, <http://www.osha.gov/SLTC/hazardcommunications/index.html>

Occupational Safety and Health Administration (OSHA) Publications

- OSHA 1620, Occupational Exposure to Beryllium (not yet released)
- OSHA 2254, Training Requirements in OSHA Standards and Training Guidelines
- OSHA 3074, Hearing Conservation
- OSHA 3084, Chemical Hazard Communication
- OSHA 3111, Hazard Communication Guidelines for Compliance
- OSHA 3136, Cadmium
- OSHA 3139, Occupational Exposure to Cadmium in the Construction Industry
- OSHA 3151, Personal Protective Equipment
- OSHA 3162, Screening and Surveillance: A

Guide to OSHA Standards

- OSHA 3170, Safeguarding Equipment and Protecting Employees from Amputations
- OSHA 3320, Small Entity Compliance Guide for the Hexavalent Chromium Standards

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Appendix: Exposure Limits for Selected Metals

SUBSTANCE	NIOSH REL	OSHA PEL
Aluminum Metal (as Al)	10 mg/m ³ (total dust) 5 mg/m ³ (resp)	15 mg/m ³ as Al (total) 5 mg/m ³ (resp)
pyro powders and welding fumes	5 mg/m ³	
soluble salts and alkyls	2 mg/m ³	
Antimony and compounds except Stibine (as Sb)	0.5 mg/m ³	0.5 mg/m ³
Arsenic, inorganic compounds (as As);	Ca C 0.002 mg/m ³ [15-minute]	0.010 mg/m ³ see 1910.1018
Arsenic, organic compounds (as As)	none	0.5 mg/m ³
Arsine	Ca C 0.002 mg/m ³ [15-minute]	0.05 ppm (0.2 mg/m ³)
Barium, soluble compounds, except	0.5 mg/m ³	0.5 mg/m ³
Barium Sulfate (as Ba)		
Barium sulfate	10 mg/m ³ (total dust) 5 mg/m ³ (resp)	15 mg/m ³ (total) 5 mg/m ³ (resp)
Beryllium and compounds (as Be)	Ca Not to exceed 0.0005 mg/m ³	0.002 mg/m ³ C 0.005 mg/m ³ 0.025 mg/m ³ [30-minute maximum peak]
Bismuth telluride, Undoped	10 mg/m ³ (total) 5 mg/m ³ (resp)	15 mg/m ³ (total) 5 mg/m ³ (resp)
Bismuth telluride, Se-doped	5 mg/m ³	
Cadmium and compounds (as Cd)	Ca	0.005 mg/m ³ see 1910.1027
Chromium (VI) compounds	(as Cr) Ca 0.001 mg/m ³	(as Cr) C 0.005 mg/m ³ see 1910.1026
Chromic acid and chromates		
Chromium (II) compounds (as Cr)	0.5 mg/m ³	0.5 mg/m ³
Chromium (III) compounds (as Cr)	0.5 mg/m ³	0.5 mg/m ³
Chromium metal (as Cr)	0.5 mg/m ³	1 mg/m ³
Chromium insoluble salts (as Cr)	0.5 mg/m ³	1 mg/m ³
Cobalt metal, dust, and fume (as Co)	0.05 mg/m ³	0.1 mg/m ³
Cobalt carbonyl	0.1 mg/m ³	
Cobalt hydrocarbonyl	0.1 mg/m ³	
Copper, fume (as Cu)	0.1 mg/m ³	0.1 mg/m ³
Copper, dust and mist (as Cu)	1 mg/m ³	1 mg/m ³
Hafnium and compounds (as Hf)	0.5 mg/m ³	0.5 mg/m ³
Hydrogen selenide (as Se)	0.05 ppm (0.2 mg/m ³)	0.05 ppm (0.2 mg/m ³)
Iron oxide	5 mg/m ³ dust and fume	10 mg/m ³ fume
Iron salts, soluble as Fe	1 mg/m ³	
Lead inorganic (as Pb)	0.050 mg/m ³	0.050 mg/m ³ see 1910.1025
Lead Chromate	See "Lead inorganic" and "Chromic acid & chromates"	See "Lead inorganic" and "Chromic acid & chromates"
Magnesium oxide fume		15 mg/m ³

SUBSTANCE	NIOSH		OSHA	
	REL	REL	PEL	PEL
Manganese compounds (as Mn)	1 mg/m ³ ST 3 mg/m ³		C 5 mg/m ³	
Manganese fume (as Mn)	1 mg/m ³ ST 3 mg/m ³		C 5 mg/m ³	
Mercury (organo) alkyl compounds (as Hg)	0.01 mg/m ³ ST 0.03 mg/m ³ [skin]		0.01 mg/m ³ C 0.04 mg/m ³	
Mercury (Elemental and Inorganic form)	C 0.1 mg/m ³ [skin]		C 0.1 mg/m ³	
Mercury vapor	0.05 mg/m ³ [skin]		C 0.1 mg/m ³	
Molybdenum insoluble compounds (as Mo)			15 mg/m ³	
Molybdenum soluble compounds			5 mg/m ³	
Nickel carbonyl (as Ni)	Ca 0.001 ppm (0.007 mg/m ³)		0.001 ppm (0.007 mg/m ³)	
Nickel, metal (as Ni)	Ca 0.015 mg/m ³		1 mg/m ³	
Nickel, insoluble compounds (as Ni)	Ca 0.015 mg/m ³		1 mg/m ³	
Nickel, soluble compounds (as Ni)	Ca 0.015 mg/m ³		1 mg/m ³	
Osmium tetroxide (as Os)	0.002 mg/m ³ (0.0002 ppm) ST 0.006 mg/m ³ (0.0006 ppm)		0.002 mg/m ³	
Platinum, metal	1 mg/m ³		none	
Platinum, soluble salts (as Pt)	0.002 mg/m ³		0.002 mg/m ³	
Rhodium (as Rh), metal fume and insoluble compounds	0.1 mg/m ³		0.1 mg/m ³	
Rhodium (as Rh), soluble compounds	0.001 mg/m ³		0.001 mg/m ³	
Selenium and compounds (as Se)	0.2 mg/m ³		0.2 mg/m ³	
Selenium hexafluoride (as Se)	0.05 ppm		0.05 ppm (0.4 mg/m ³)	
Silver, metal (as Ag)	0.01 mg/m ³		0.01 mg/m ³	
Silver, soluble compounds (as Ag)	0.01 mg/m ³		0.01 mg/m ³	
Stibine (Antimony hydride)	0.1 ppm (0.5 mg/m ³)		0.1 ppm (0.5 mg/m ³)	
Tantalum, metal and oxide dust	5 mg/m ³ ST 10 mg/m ³		5 mg/m ³	
Tellurium and compounds (as Te)	0.1 mg/m ³		0.1 mg/m ³	
Tellurium hexafluoride (as Te)	0.02 ppm (0.2 mg/m ³)		0.02 ppm (0.2 mg/m ³)	
Tetraethyl lead (as Pb)	0.075 mg/m ³ [skin]		0.075 mg/m ³ [skin]	
Tetramethyl lead (as Pb)	0.075 mg/m ³ [skin]		0.075 mg/m ³ [skin]	
Thallium, soluble compounds (as Tl)	0.1 mg/m ³ [skin]		0.1 mg/m ³ [skin]	
Tin, inorganic compounds (except oxides) (as Sn)	2 mg/m ³		2 mg/m ³	
Tin, organic compounds (as Sn)	0.1 mg/m ³ [skin]		0.1 mg/m ³	
Tin(II) oxide	2 mg/m ³			
Tin(IV) oxide	2 mg/m ³			
Titanium dioxide	Ca		15 mg/m ³	
Uranium, soluble compounds	Ca 0.05 mg/m ³		0.05 mg/m ³	

SUBSTANCE	NIOSH REL	OSHA PEL
Uranium, insoluble compounds	Ca 0.2 mg/m ³ ST 0.6 mg/m ³	0.25 mg/m ³
Vanadium, dust	C 0.05 mg/m ³ [15-minute] (as V)	C 0.05 mg/m ³ (as V2O5) (resp)
Vanadium, fumes	C 0.05 mg/m ³ [15-minute] (as V)	C 0.1 mg/m ³ (as V2O5)
Yttrium and compounds (as Y)	1 mg/m ³	1 mg/m ³
Zinc chloride fume	1 mg/m ³ ST 2 mg/m ³	1 mg/m ³
Zinc oxide fume	5 mg/m ³ ST 10 mg/m ³	5 mg/m ³
Zinc oxide dust	5 mg/m ³ C 15 mg/m ³	15 mg/m ³ (total) 5 mg/m ³ (resp)
Zinc stearate	10 mg/m ³ (total) 5 mg/m ³ (resp)	
Zirconium compounds (as Zr)	5 mg/m ³ ST 10 mg/m ³ (as Zr) (except Zirconium tetrachloride.)	5 mg/m ³

Sources: 29 CFR 1910.1000 Table Z-1; 29 CFR 1910.1000 Table Z-2; National Institute for Occupational Safety and Health (NIOSH) Pocket Guide, Publication 97-140, February 2004.

Legend of Acronyms and Notations for Appendix A

General			
mg/m ³	milligrams per cubic meter		
ppm	parts per million		
resp	respirable fraction of the airborne particulate		
skin	indicates the potential for dermal absorption		
total	total airborne particulate		
C	ceiling		
NIOSH			
Ca	carcinogen		
REL	recommended exposure limit		
ST	Short term exposure limit		
OSHA			
PEL	permissible exposure limit		
skin	indicates the potential for dermal absorption		
Substances			
A	Aluminum		
Ag	Silver		Ni Nickel
As	Arsenic		Os Osmium
Ba	Barium		Pb Lead
Be	Beryllium		Pb ₃ (AsO ₄) ₂ Lead Arsenate
Cd	Cadmium		Pt Platinum
Co	Cobalt		Rh Rhodium
Cr	Chromium		Sb Antimony
CrO ₃	Chromium Oxide		Se Selenium
Cu	Copper		Sn Tin
Fe	Iron		Te Tellurium
Hf	Hafnium		Tl Thallium
Hg	Mercury		V Vanadium
Mn	Manganese		V ₂ O ₅ Vanadium Pentoxide
Mo	Molybdenum		Y Yttrium
			Zr Zirconium

OSHA Assistance

OSHA can provide extensive help through a variety of programs, including technical assistance about effective safety and health programs, state plans, workplace consultations, voluntary protection programs, strategic partnerships, training and education, and more. An overall commitment to workplace safety and health can add value to your business, to your workplace, and to your life.

Safety and Health Program Management Guidelines

Effective management of employee safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. In fact, an effective safety and health program forms the basis of good employee protection and can save time and money (about \$4 for every dollar spent) and increase productivity and reduce employee injuries, illnesses, and related workers' compensation costs.

To assist employers and employees in developing effective safety and health programs, OSHA published recommended Safety and Health Program Management Guidelines (54 *Federal Register* (16): 3904-3916, January 26, 1989). These voluntary guidelines can be applied to all places of employment covered by OSHA.

The guidelines identify four general elements critical to the development of a successful safety and health management system:

- Management leadership and employee involvement,
- Worksite analysis,
- Hazard prevention and control, and
- Safety and health training.

The guidelines recommend specific actions, under each of these general elements, to achieve an effective safety and health program. The Federal Register notice is available online at www.osha.gov.

State Programs

The Occupational Safety and Health Act of 1970 (OSH Act) encourages states to develop and operate their own job safety and health plans. OSHA approves and monitors these plans. Twenty-four states, Puerto Rico, and the Virgin Islands currently operate approved state plans: 22 cover both private and public (state and local government) employment; Connecticut, New Jersey, New York, and the Virgin Islands cover the public sector only. States and territories with their own OSHA-approved occu-

pational safety and health plans must adopt standards identical to, or at least as effective as, the Federal OSHA standards.

Consultation Services

Consultation assistance is available on request to employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer. Primarily developed for smaller employers with more hazardous operations, the consultation service is delivered by state governments employing professional safety and health consultants. Comprehensive assistance includes an appraisal of all mechanical systems, work practices, and occupational safety and health hazards of the workplace and all aspects of the employer's present job safety and health program. In addition, the service offers assistance to employers in developing and implementing an effective safety and health program. No penalties are proposed or citations issued for hazards identified by the consultant. OSHA provides consultation assistance to the employer with the assurance that his or her name and firm and any information about the workplace will not be routinely reported to OSHA enforcement staff.

Under the consultation program, certain exemplary employers may request participation in OSHA's Safety and Health Achievement Recognition Program (SHARP). Eligibility for participation in SHARP includes receiving a comprehensive consultation visit, demonstrating exemplary achievements in workplace safety and health by abating all identified hazards, and developing an excellent safety and health program.

Employers accepted into SHARP may receive an exemption from programmed inspections (not complaint or accident investigation inspections) for a period of 1 year. For more information concerning consultation assistance, see OSHA's website at www.osha.gov.

Voluntary Protection Programs (VPP)

Voluntary Protection Programs and on-site consultation services, when coupled with an effective enforcement program, expand employee protection to help meet the goals of the OSH Act. The VPPs motivate others to achieve excellent safety and health results in the same outstanding way as they establish a cooperative relationship between employers, employees, and OSHA.

For additional information on VPP and how to apply, contact the OSHA regional offices listed at the end of this publication.

Strategic Partnership Program

OSHA's Strategic Partnership Program, the newest member of OSHA's cooperative programs, helps encourage, assist, and recognize the efforts of partners to eliminate serious workplace hazards and achieve a high level of employee safety and health. Whereas OSHA's Consultation Program and VPP entail one-on-one relationships between OSHA and individual worksites, most strategic partnerships seek to have a broader impact by building cooperative relationships with groups of employers and employees. These partnerships are voluntary, cooperative relationships between OSHA, employers, employee representatives, and others (e.g., trade unions, trade and professional associations, universities, and other government agencies).

For more information on this and other cooperative programs, contact your nearest OSHA office, or visit OSHA's website at www.osha.gov.

Alliance Program

Through the Alliance Program, OSHA works with groups committed to safety and health, including businesses, trade or professional organizations, unions and educational institutions, to leverage resources and expertise to develop compliance assistance tools and resources and share information with employers and employees to help prevent injuries, illnesses and fatalities in the workplace.

Alliance program agreements have been established with a wide variety of industries including meat, apparel, poultry, steel, plastics, maritime, printing, chemical, construction, paper and telecommunications. These agreements are addressing many safety and health hazards and at-risk audiences, including silica, fall protection, amputations, immigrant workers, youth and small businesses. By meeting the goals of the Alliance Program agreements (training and education, outreach and communication, and promoting the national dialogue on workplace safety and health), OSHA and the Alliance Program participants are developing and disseminating compliance assistance information and resources for employers and employees such as electronic assistance tools, fact sheets, toolbox talks, and training programs.

OSHA Training and Education

OSHA area offices offer a variety of information services, such as compliance assistance, technical advice, publications, audiovisual aids, and speakers for special engagements. OSHA's Training Institute in Arlington Heights, IL, provides basic and advanced courses in safety and health for Federal and state compliance officers, state consultants, Federal agency personnel, and private sector employers, employees, and their representatives.

The OSHA Training Institute also has established OSHA Training Institute Education Centers to address the increased demand for its courses from the private sector and from other federal agencies. These centers include colleges, universities, and nonprofit training organizations that have been selected after a competition for participation in the program.

OSHA also provides funds to nonprofit organizations, through grants, to conduct workplace training and education in subjects where OSHA believes there is a lack of workplace training. Grants are awarded annually. Grant recipients are expected to contribute 20 percent of the total grant cost.

For more information on training and education, contact the OSHA Training Institute, Directorate of Training and Education, 2020 South Arlington Heights Road, Arlington Heights, IL, 60005, (847) 297-4810, or see Training on OSHA's website at www.osha.gov. For further information on any OSHA program, contact your nearest OSHA regional office listed at the end of this publication.

Information Available Electronically

OSHA has a variety of materials and tools available on its website at www.osha.gov. These include electronic compliance assistance tools, such as *Safety and Health Topics Pages*, *eTools*, *Expert Advisors*; regulations, directives, publications and videos; and other information for employers and employees. OSHA's software programs and compliance assistance tools walk you through challenging safety and health issues and common problems to find the best solutions for your workplace.

A wide variety of OSHA materials, including standards, interpretations, directives, and more can be purchased on CD-ROM from the U.S. Government Printing Office, Superintendent of Documents, toll-free phone (866) 512-1800.

OSHA Publications

OSHA has an extensive publications program. For a listing of free or sales items, visit OSHA's website at www.osha.gov or contact the OSHA Publications Office, U.S. Department of Labor, 200 Constitution Avenue, NW, N-3101, Washington, DC 20210: Telephone (202) 693-1888 or fax to (202) 693-2498.

Contacting OSHA

To report an emergency, file a complaint, or seek OSHA advice, assistance, or products, call (800) 321-OSHA or contact your nearest OSHA Regional office listed at the end of this publication. The teletypewriter (TTY) number is (877) 889-5627.

Written correspondence can be mailed to the nearest OSHA Regional or Area Office listed at the end of this publication or to OSHA's national office at: U.S. Department of Labor, Occupational Safety and Health Administration, 200 Constitution Avenue, N.W., Washington, DC 20210.

By visiting OSHA's website at www.osha.gov, you can also:

- File a complaint online,
- Submit general inquiries about workplace safety and health electronically, and
- Find more information about OSHA and occupational safety and health.