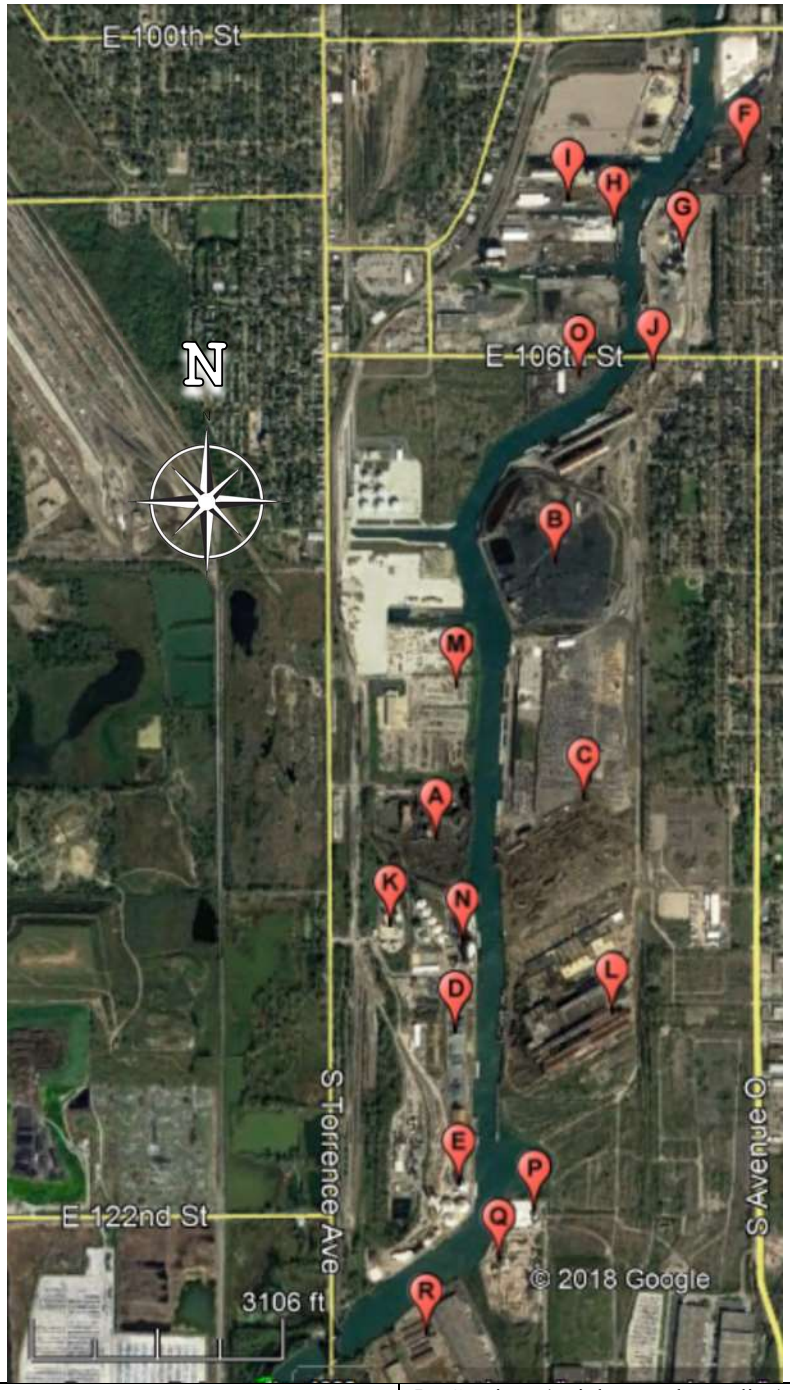
EXHIBIT A


E 114th St
American Zinc Recycling
Calumet River
Google

EXHIBIT B



A – AZR B – KCBX (coke, converted to “direct transfer” facility) C – South Shore Recycling (scrap metal) D – Ozinga (bulk materials) E – Cargill (agricultural products) F – S.H. Bell (bulk materials) G – Carmeuse Lime (bulk materials, no longer manufacturing) H – Skyway Cement Company I – ELG Metals, Inc. (stainless steel scrap)	J – Cronimet (stainless steel recycling) K – Vistra Energy Calumet Facility (gas-fired power plant) L – Regency Technology (e-Recycling) M – Walsh Construction (construction equipment storage) N – COFCO International (grain handling) O – Adelman’s Truck & Equipment (scrap yard) P – Savage Services Corporation (materials handling) Q – PVS Chemical Solutions R – Kinder-Morgan (bulk solids)

EXHIBIT C

Attention:
Horsehead Corporation Chicago Recycling Facility
Attn: Brad Sutek
2701 East 114th Street
Chicago, IL 60617

State of Illinois

CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT

Source:
Horsehead Corporation Chicago Recycling Facility
2701 East 114th Street
Chicago, IL 60617

I.D. No.: 031600AFV
Permit No.: 96030189

Permitting Authority:
Illinois Environmental Protection Agency
Bureau of Air, Permit Section
217/785-1705

CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT

[Title V Permit]

Type of Application:	Administrative Amendment
Purpose of Application:	Revise existing CAAPP Permit to correct typographical errors.
ID No.:	031600AFV
Permit No.:	96030189
Statement of Basis No.:	96030189-1601
Date Application Received:	August 17, 2006
Date Issued:	December 2, 2016
Date Revision Received	December 22, 2016
Date Revision Issued	January 10, 2017
Expiration Date:	December 2, 2021
Renewal Submittal Date:	9 Months Prior to December 2, 2021
Source Name:	Horsehead Corporation Chicago Recycling Facility
Address:	2701 East 114th Street
City:	Chicago
County:	Cook
ZIP Code:	60617

This permit is hereby granted to the above-designated source authorizing operation in accordance with this CAAPP permit, pursuant to the above referenced application. This source is subject to the conditions contained herein. If a conflict exists between this document and previous versions of the CAAPP permit, this document supercedes those terms and conditions of the permit for which the conflict exists. The previous permit issued December 2nd, 2016 is incorporated herein by reference. For further information on the source see Section 1 and for further discussion on the effectiveness of this permit see Condition 2.3(g).

If you have any questions concerning this permit, please contact Jacob Nutt at 217/785-1705.

Raymond E Pilapil

Raymond E. Pilapil
Manager, Permit Section
Division of Air Pollution Control

ECB:MTR:JDN:jws

cc: IEPA, Permit Section
IEPA, FOS, Region 1
Lotus Notes Database

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Section 1 - Source Information

1. Addresses

Source
Horsehead Corporation Chicago
Recycling Facility
2701 East 114th Street
Chicago, IL 60617

Operator
Horsehead Corp
4955 Steubenville Pike, Suite 405
Pittsburgh, PA 15205

Owner
Horsehead Corp
4955 Steubenville Pike, Suite 405
Pittsburgh, PA 15205

Permittee
The owner or operator of the source as identified in this table.

2. Contacts

Certified Officials

The source shall submit an Administrative Permit Amendment for any change in the Certified Officials, pursuant to Section 39.5(13) of the Act.

	Name	*Title*
Responsible Official	Timothy Basilone	Vice President, Environmental Affairs
Delegated Authority	No other individuals have been authorized by the IEPA.	N/A

Other Contacts

	Name	*Phone No.*	*Email*
Source Contact	Shannon Andrews	773-933-9262	sandrews@horsehead.net
Technical Contact	Chris Logelin	724-773-2284	clogelin@horsehead.net
Correspondence	Timothy Basilone	724-773-2223	tbasilone@horsehead.net
Billing	Brad Sutek	773-933-9263	bsutek@horsehead.net

3. Single Source

The source identified in Condition 1.1 above shall be defined to include all the following additional source(s):

I.D. No.	*Permit No.*	*Single Source Name and Address*
N/A	N/A	N/A

Section 2 - General Permit Requirements

1. Prohibitions

a. It shall be unlawful for any person to violate any terms or conditions of this permit issued under Section 39.5 of the Act, to operate the CAAPP source except in compliance with this permit issued by the IEPA under Section 39.5 of the Act or to violate any other applicable requirements. All terms and conditions of this permit issued under Section 39.5 of the Act are enforceable by USEPA and citizens under the Clean Air Act, except those, if any, that are specifically designated as not being federally enforceable in this permit pursuant to Section 39.5(7)(m) of the Act. [Section 39.5(6)(a) of the Act]

b. After the applicable CAAPP permit or renewal application submittal date, as specified in Section 39.5(5) of the Act, the source shall not operate this CAAPP source without a CAAPP permit unless the complete CAAPP permit or renewal application for such source has been timely submitted to the IEPA. [Section 39.5(6)(b) of the Act]

c. No owner or operator of the CAAPP source shall cause or threaten or allow the continued operation of an emission source during malfunction or breakdown of the emission source or related air pollution control equipment if such operation would cause a violation of the standards or limitations applicable to the source, unless this CAAPP permit granted to the source provides for such operation consistent with the Act and applicable Illinois Pollution Control Board regulations. [Section 39.5(6)(c) of the Act]

d. Pursuant to Section 39.5(7)(g) of the Act, emissions from the source are not allowed to exceed any allowances that the source lawfully holds under Title IV of the Clean Air Act or the regulations promulgated thereunder, consistent with Section 39.5(17) of the Act and applicable requirements, if any.

2. Emergency Provisions

Pursuant to Section 39.5(7)(k) of the Act, the owner or operator of the CAAPP source may provide an affirmative defense of emergency to an action brought for noncompliance with technology-based emission limitations under this CAAPP permit if the following conditions are met through properly signed, contemporaneous operating logs, or other relevant evidence:

a. i. An emergency occurred and the source can identify the cause(s) of the emergency.

ii. The source was at the time being properly operated.

iii. The source submitted notice of the emergency to the IEPA within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

iv. During the period of the emergency the source took all reasonable steps to minimize levels of emissions that exceeded the emission limitations, standards, or requirements in this permit.

b. For purposes of Section 39.5(7)(k) of the Act, "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, such as an act of God, that requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operation error.

c. In any enforcement proceeding, the source seeking to establish the occurrence of an emergency has the burden of proof. This provision is in addition to any emergency or

upset provision contained in any applicable requirement. This provision does not relieve the source of any reporting obligations under existing federal or state laws or regulations.

3. General Provisions

a. Duty to Comply

The source must comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the CAA and the Act, and is grounds for any or all of the following: enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [Section 39.5(7)(o)(i) of the Act]

b. Need to Halt or Reduce Activity is not a Defense

It shall not be a defense for the source in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [Section 39.5(7)(o)(ii) of the Act]

c. Duty to Maintain Equipment

The source shall maintain all equipment covered under this permit in such a manner that the performance or operation of such equipment shall not cause a violation of applicable requirements. [Section 39.5(7)(a) of the Act]

d. Disposal Operations

The source shall be operated in such a manner that the disposal of air contaminants collected by the equipment operations, or activities shall not cause a violation of the Act or regulations promulgated there under. [Section 39.5(7)(a) of the Act]

e. Duty to Pay Fees

i. The source must pay fees to the IEPA consistent with the fee schedule approved pursuant to Section 39.5(18) of the Act, and submit any information relevant thereto. [Section 39.5(7)(o)(vi) of the Act]

ii. The IEPA shall asses annual fees based on the allowable emissions of all regulated air pollutants, except for those regulated air pollutants excluded in Section 39.5(18)(f) of the Act and insignificant activities in Section 6, at the source during the term of this permit. The amount of such fee shall be based on the information supplied by the applicant in its complete CAAPP permit application. [Section 39.5(18)(a)(ii)(A) of the Act]

iii. The check should be payable to "Treasurer, State of Illinois" and sent to: Fiscal Services Section, Illinois EPA, P.O. Box 19276, Springfield, IL, 62794-9276. Include on the check: ID #, Permit #, and "CAAPP Operating Permit Fees". [Section 39.5(18)(e) of the Act]

f. Obligation to Allow IEPA Surveillance

Pursuant to Sections 4(a), 39.5(7)(a), and 39.5(7)(p)(ii) of the Act, inspection and entry requirements that necessitate that, upon presentation of credentials and other documents as may be required by law and in accordance with constitutional limitations, the source shall allow the IEPA, or an authorized representative to perform the following:

i. Enter upon the source's premises where the emission unit(s) are located or emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.

iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

iv. Sample or monitor any substances or parameters at any location at reasonable times:

A. As authorized by the Clean Air Act or the Act, at reasonable times, for the purposes of assuring compliance with this CAAPP permit or applicable requirements; or

B. As otherwise authorized by the Act.

v. Enter and utilize any photographic, recording, testing, monitoring, or other equipment for the purposes of preserving, testing, monitoring, or recording any activity, discharge or emission at the source authorized by this permit.

g. **Effect of Permit**

i. Pursuant to Section 39.5(7)(j)(iv) of the Act, nothing in this CAAPP permit shall alter or affect the following:

A. The provisions of Section 303 (emergency powers) of the CAA, including USEPA's authority under that Section.

B. The liability of the owner or operator of the source for any violation of applicable requirements prior to or at the time of permit issuance.

C. The applicable requirements of the acid rain program consistent with Section 408(a) of the Clean Air Act.

D. The ability of USEPA to obtain information from the source pursuant to Section 114 (inspections, monitoring, and entry) of the Clean Air Act.

ii. Notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, pursuant to Sections 39.5(7)(j) and (p) of the Act, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements. [35 IAC 201.122 and Section 39.5(7)(a) of the Act]

h. **Severability Clause**

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, other portions of this permit may continue to be in effect. Should any portion of this permit be determined to be illegal or unenforceable, the validity of the other provisions shall not be affected and the rights and obligations of the source shall be construed and enforced as if this permit did not contain the particular provisions held to be invalid and the applicable requirements underlying these provisions shall remain in force. [Section 39.5(7)(i) of the Act]

4. Testing

a. Tests conducted to measure composition of materials, efficiency of pollution control devices, emissions from process or control equipment, or other parameters shall be conducted using standard test methods if applicable test methods are not specified by the applicable regulations or otherwise identified in the conditions of this permit. Documentation of the test date, conditions, methodologies, calculations, and test results shall be retained pursuant to the recordkeeping procedures of this permit. Reports of

any tests conducted as required by this permit or as the result of a request by the IEPA shall be submitted as specified in Condition 7.1 of this permit. [35 IAC Part 201 Subpart J and Section 39.5(7)(a) of the Act]

b. Pursuant to Section 4(b) of the Act and 35 IAC 201.282, every emission source or air pollution control equipment shall be subject to the following testing requirements for the purpose of determining the nature and quantities of specified air contaminant emissions and for the purpose of determining ground level and ambient air concentrations of such air contaminants:

i. Testing by Owner or Operator: The IEPA may require the owner or operator of the emission source or air pollution control equipment to conduct such tests in accordance with procedures adopted by the IEPA, at such reasonable times as may be specified by the IEPA and at the expense of the owner or operator of the emission source or air pollution control equipment. All such tests shall be made by or under the direction of a person qualified by training and/or experience in the field of air pollution testing. The IEPA shall have the right to observe all aspects of such tests.

ii. Testing by the IEPA: The IEPA shall have the right to conduct such tests at any time at its own expense. Upon request of the IEPA, the owner or operator of the emission source or air pollution control equipment shall provide, without charge to the IEPA, necessary holes in stacks or ducts and other safe and proper testing facilities, including scaffolding, but excluding instruments and sensing devices, as may be necessary.

5. Recordkeeping

a. Control Equipment Maintenance Records

Pursuant to Section 39.5(7)(b) of the Act, a maintenance record shall be kept on the premises for each item of air pollution control equipment. At a minimum, this record shall show the dates maintenance was performed and nature of preventative maintenance activities.

b. Retention of Records

i. Records of all monitoring data and support information shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. [Section 39.5(7)(e)(ii) of the Act]

ii. Pursuant to Section 39.5(7)(a) of the Act, other records required by this permit including any logs, plans, procedures, or instructions required to be kept by this permit shall be retained for a period of at least 5 years from the date of entry unless a different period is specified by a particular permit provision.

c. Availability of Records

i. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall retrieve and provide paper copies, or as electronic media, any records retained in an electronic format (e.g., computer) in response to an IEPA or USEPA request during the course of a source inspection.

ii. Pursuant to Section 39.5(7)(a) of the Act, upon written request by the IEPA for copies of records or reports required to be kept by this permit, the Permittee shall promptly submit a copy of such material to the IEPA. For this purpose, material shall be submitted to the IEPA within 30 days unless additional time is provided by the IEPA or the Permittee believes that the volume and nature of

requested material would make this overly burdensome, in which case, the Permittee shall respond within 30 days with the explanation and a schedule for submittal of the requested material. (See also Condition 2.9(d))

6. Certification

a. Compliance Certification

i. Pursuant to Section 39.5(7)(p)(v)(C) of the Act, the source shall submit annual compliance certifications by May 1 unless a different date is specified by an applicable requirement or by a particular permit condition. The annual compliance certifications shall include the following:

A. The identification of each term or condition of this permit that is the basis of the certification.

B. The compliance status.

C. Whether compliance was continuous or intermittent.

D. The method(s) used for determining the compliance status of the source, both currently and over the reporting period consistent with the conditions of this permit.

ii. Pursuant to Section 39.5(7)(p)(v)(D) of the Act, all compliance certifications shall be submitted to USEPA Region 5 in Chicago as well as to the IEPA Compliance Section. Addresses are included in Attachment 3.

iii. Pursuant to Section 39.5(7)(p)(i) of the Act, all compliance reports required to be submitted shall include a certification in accordance with Condition 2.6(b).

b. Certification by a Responsible Official

Any document (including reports) required to be submitted by this permit shall contain a certification by the responsible official of the source that meets the requirements of Section 39.5(5) of the Act and applicable regulations. [Section 39.5(7)(p)(i) of the Act]. An example Certification by a Responsible Official is included in Attachment 4 of this permit.

7. Permit Shield

a. Pursuant to Section 39.5(7)(j) of the Act, except as provided in Condition 2.7(b) below, the source has requested and has been granted a permit shield. This permit shield provides that compliance with the conditions of this permit shall be deemed compliance with applicable requirements which were applicable as of the date the proposed permit for this source was issued, provided that either the applicable requirements are specifically identified within this permit, or the IEPA, in acting on this permit application, has determined that other requirements specifically identified are not applicable to this source and this determination (or a concise summary thereof) is included in this permit. This permit shield does not extend to applicable requirements which are promulgated after June 24, 2016 (date USEPA notice started), unless this permit has been modified to reflect such new requirements.

b. Pursuant to Section 39.5(7)(j) of the Act, this permit and the terms and conditions herein do not affect the Permittee's past and/or continuing obligation with respect to statutory or regulatory requirements governing major source construction or modification under Title I of the CAA. Further, neither the issuance of this permit nor any of the terms or conditions of the permit shall alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance.

c. Pursuant to Section 39.5(7)(a) of the Act, the issuance of this permit by the IEPA does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any currently pending or future legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the IEPA or the USEPA may have against the applicant including, but not limited to, any enforcement action authorized pursuant to the provision of applicable federal and state law.

8. Title I Conditions

Pursuant to Sections 39(a), 39(f), and 39.5(7)(a) of the Act, as generally identified below, this CAAPP permit may contain certain conditions that relate to requirements arising from the construction or modification of emission units at this source. These requirements derive from permitting programs authorized under Title I of the Clean Air Act (CAA) and regulations thereunder, and Title X of the Illinois Environmental Protection Act (Act) and regulations implementing the same. Such requirements, including the New Source Review programs for both major (i.e., PSD and nonattainment areas) and minor sources, are implemented by the IEPA.

a. This permit may contain conditions that reflect requirements originally established in construction permits previously issued for this source. These conditions include requirements from preconstruction permits issued pursuant to regulations approved or promulgated by USEPA under Title I of the CAA, as well as requirements contained within construction permits issued pursuant to state law authority under Title X of the Act. Accordingly, all such conditions are incorporated into this CAAPP permit by virtue of being either an "applicable Clean Air Act requirement" or an "applicable requirement" in accordance with Section 39.5 of the Act. These conditions are identifiable herein by a designation to their origin of authority.

b. This permit may contain conditions that reflect necessary revisions to requirements established for this source in preconstruction permits previously issued under the authority of Title I of the CAA. These conditions are specifically designated herein as "TIR".

   i. Revisions to original Title I permit conditions are incorporated into this permit through the combined legal authority of Title I of the CAA and Title X of the Act. Public participation requirements and appeal rights shall be governed by Section 39.5 of the Act.

   ii. Revised Title I permit conditions shall remain in effect through this CAAPP permit, and are therefore enforceable under the same, so long as such conditions do not expire as a result of a failure to timely submit a complete renewal application or are not removed at the applicant's request.

c. This permit may contain conditions that reflect new requirements for this source that would ordinarily derive from a preconstruction permit established under the authority of Title I of the CAA. These conditions are specifically designated herein as "TIN".

   i. The incorporation of new Title I requirements into this CAAPP permit is authorized through the combined legal authority of Title I of the CAA and Title X of the Act. Public participation requirements and appeal rights shall be governed by Section 39.5 of the Act.

   ii. Any Title I conditions that are newly incorporated shall remain in effect through this CAAPP permit, and are therefore enforceable under the same, so long as such conditions do not expire as a result of a failure to timely submit a complete renewal application or are not removed at the applicant's request.

9. Reopening and Revising Permit

a. **Permit Actions**

This permit may be modified, revoked, reopened and reissued, or terminated for cause in accordance with applicable provisions of Section 39.5 of the Act. The filing of a request by the source for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [Section 39.5(7)(o)(iii) of the Act]

b. Reopening and Revision

Pursuant to Section 39.5(15)(a) of the Act, this permit must be reopened and revised if any of the following occur:

i. Additional requirements become applicable to the equipment covered by this permit and three or more years remain before expiration of this permit;

ii. Additional requirements become applicable to the source for acid deposition under the acid rain program;

iii. The IEPA or USEPA determines that this permit contains a material mistake or that an inaccurate statement was made in establishing the emission standards or limitations, or other terms or conditions of this permit; or

iv. The IEPA or USEPA determines that this permit must be revised or revoked to ensure compliance with the applicable requirements.

c. Inaccurate Application

Pursuant to Sections 39.5(5)(e) and (i) of the Act, the IEPA has issued this permit based upon the information submitted by the source in the permit application referenced on page 1 of this permit. Any misinformation, false statement or misrepresentation in the application shall be grounds for revocation or reopening of this CAAPP under Section 39.5(15) of the Act.

d. Duty to Provide Information

The source shall furnish to the IEPA, within a reasonable time specified by the IEPA any information that the IEPA may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. Upon request, the source shall also furnish to the IEPA copies of records required to be kept by this permit. [Section 39.5(7)(o)(v) of the Act]

10. Emissions Trading Programs

No permit revision shall be required for increases in emissions allowed under any USEPA approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for elsewhere in this permit and that are authorized by the applicable requirement. [Section 39.5(7)(o)(vii) of the Act]

11. Permit Renewal

a. Upon the expiration of this permit, if the source is operated, it shall be deemed to be operating without a permit unless a timely and complete CAAPP application has been submitted for renewal of this permit. However, if a timely and complete application to renew this CAAPP permit has been submitted, the terms and all conditions of the most recent issued CAAPP permit will remain in effect until the issuance of a renewal permit. [Sections 39.5(5)(l) and (o) of the Act]

b. For purposes of permit renewal, a timely application is one that is submitted no less than 9 months prior to the date of permit expiration. [Section 39.5(5)(n) of the Act]

12. Permanent Shutdown

Pursuant to Section 39.5(7)(a) of the Act, this permit only covers emission units and control equipment while physically present at the source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shut down. This permit expires if all equipment is removed from the permitted location(s), notwithstanding the expiration date specified on this permit.

13. Startup, Shutdown, and Malfunction

Pursuant to Section 39.5(7)(a) of the Act, in the event of an action to enforce the terms or conditions of this permit, this permit does not prohibit a Permittee from invoking any affirmative defense that is provided by the applicable law or rule.

Section 3 - Source Requirements

1. Applicable Requirements

Pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act, the Permittee shall comply with the following applicable requirements. These requirements are applicable to all emission units (including insignificant activities unless specified otherwise in this Section) at the source.

a. Fugitive Particulate Matter

i. Pursuant to 35 IAC 212.301 and 35 IAC 212.314, no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source unless the wind speed is greater than 25 mph.

ii. Compliance Method (Fugitive Particulate Matter)

Upon request by the IEPA, the Permittee shall conduct observations at the property line of the source for visible emissions of fugitive particular matter from the source to address compliance with 35 IAC 212.301. For this purpose, daily observations shall be conducted for a week for particular area(s) of concern at the source, as specified in the request, observations shall begin either within one day or three days of receipt of a written request from the IEPA, depending, respectively, upon whether observations will be conducted by employees of the Permittee or a third-party observer hired by the Permittee to conduct observations on its behalf. The Permittee shall keep records for these observations, including identity of the observer, the date and time of observations, the location(s) from which observations were made, and duration of any fugitive emissions event(s).

b. Ozone Depleting Substances

Pursuant to 40 CFR 82.150(b), the Permittee shall comply with the standards for recycling and emissions reduction of ozone depleting substances pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioners in Subpart B of 40 CFR Part 82:

i. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.

ii. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.

iii. Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

iv. Any person performing service on a motor vehicle for consideration when this service involves the refrigerant in the motor vehicle air conditioner shall comply with 40 CFR Subpart B, Servicing of Motor Vehicle Air Conditioners.

v. All persons shall comply with the reporting and recordkeeping requirements of 40 CFR 82.166.

c. Asbestos Demolition and Renovation

i. Asbestos Fees. Pursuant to Section 9.13(a) of the Act, for any site for which the

Owner or Operator must file an original 10-day notice of intent to renovate or demolish pursuant to Condition 3.1(c)(ii) below and 40 CFR 61.145(b), the owner or operator shall pay to the IEPA with the filing of each 10-day notice a fee of $150.

ii. Pursuant to 40 CFR 61 Subpart M, Standard of Asbestos, prior to any demolition or renovation at this facility, the Permittee shall fulfill notification requirements of 40 CFR 61.145(b).

iii. Pursuant to 40 CFR 61.145(c), during demolition or renovation, the Permittee shall comply with the procedures for asbestos emission control established by 40 CFR 61.145(c).

d. Future Emission Standards

Pursuant to Section 39.5(15)(a) of the Act, this source shall comply with any new or revised applicable future standards of 40 CFR 60, 61, 62, or 63; or 35 IAC Subtitle B after the date issued of this permit. The Permittee shall, in accordance with the applicable regulation(s), comply with the applicable requirements by the date(s) specified and shall certify compliance with the applicable requirements of such regulation(s) as part of the annual compliance certification, as required by Condition 2.6(a). This permit may also have to be revised or reopened to address such new regulations in accordance to Condition 2.9.

2. Applicable Plans and Programs

Pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act, the Permittee shall comply with the following applicable requirements. These requirements are applicable to all emission units (including insignificant activities unless specified otherwise in this Section) at the source.

a. Fugitive PM Operating Program

i. Pursuant to 35 IAC 212.309, this source shall be operated under the provisions of Fugitive PM Operating Program prepared by the Permittee and submitted to the IEPA for its review. The Fugitive PM Operating Program shall be designed to significantly reduce fugitive particulate matter emissions, pursuant to 35 IAC 212.309(a). The Permittee shall comply with the Fugitive PM Operating Program and any amendments to the Fugitive PM Operating Program submitted pursuant to Condition 3.2(a)(ii). As a minimum, the Fugitive PM Operating Program shall include provisions identified in 35 IAC 212.310(a) through (g) and the following:

A. A detailed description of the best management practices utilized to achieve compliance with 35 IAC 212.304 through 212.308.

B. Estimated frequency of application of dust suppressants by location.

C. Such other information as may be necessary to facilitate the IEPA's review of the Fugitive PM Operating Program.

ii. Pursuant to 35 IAC 212.312, the Fugitive PM Operating Program shall be amended from time to time by the Permittee so that the Fugitive PM Operating Program is current. Such amendments shall be consistent with the requirements set forth by this Condition 3.2(a) and shall be submitted to the IEPA within 30 days of such amendment. Any future revision to the Fugitive PM Operating Program made by the Permittee during the permit term is automatically incorporated by reference provided the revision is not expressly disapproved, in writing, by the IEPA within 30 days of receipt of the revision. In the event that the IEPA notifies the Permittee of a deficiency with any revision to the Fugitive PM Operating Program, the Permittee shall be required to revise and resubmit the Fugitive PM Operating Program within 30 days of receipt of notification to address the deficiency pursuant to Section 39.5(7)(a) of the Act.

iii. The Fugitive PM Operating Program, as submitted by the Permittee on 1/28/2016, is incorporated herein by reference. The document constitutes the formal Fugitive PM Operating Program required under 35 IAC 212.310, addressing the control of fugitive particulate matter emissions from plant roadways, storage piles, access areas near storage piles, and other subject operations located at the facility that are subject to 35 IAC 212.309, which include, but may not be limited to the following:

A. Storage Piles (35 IAC 212.304);

B. Conveyor Loading Operations (35 IAC 212.305);

C. Traffic Areas (35 IAC 212.306);

D. Materials Collected by Pollution Control Equipment (35 IAC 212.307); and

E. Spraying or Choke-Feeding Requirements (35 IAC 212.308).

iv. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep a copy of the Fugitive PM Operating Program, any amendments or revisions to the Fugitive PM Operating Program (as required by Condition 3.2(a)), and the Permittee shall also keep a record of activities completed according to the Fugitive PM Operating Program.

b. PM_{10} Contingency Measure Plan

i. Pursuant to 35 IAC 212.700, the Permittee shall have on file with the IEPA a PM10 Contingency Measure Plan reflecting the PM10 emission reduction set forth in 35 IAC 212.701 and 212.703.

ii. The PM10 Contingency Measure Plan shall be implemented by the Permittee in accordance with 35 IAC 212.704 upon notification from the IEPA.

iii. Pursuant to 35 IAC 212.701(c), for operational changes subject to 35 IAC 212.304, 212.305, 212.306, 212.308, 212.316(a) through (e), 212.424 or 212.464 which require either a new permit or a revision to an existing permit, the Permittee shall, within 30 days after such changes, submit a request to modify this CAAPP permit in order to include a new, appropriate PM10 Contingency Measure Plan.

iv. The PM10 Contingency Measure Plan, as submitted by the Permittee on 3/31/14, is incorporated herein by reference. The document constitutes the formal PM10 Contingency Measure Plan required by 35 IAC 212.701, addressing the Levels I and II control measures for reducing annual source-wide fugitive emissions of PM10 from plant roads (paved and unpaved) and materials handling operations in the event of an exceedance of the 24-hour ambient air quality standard for PM10 under 35 IAC 212.704 or 212.705.

v. The Permittee shall keep a copy of the PM10 Contingency Measure Plan. The Permittee shall also keep a record of activities completed according to the PM10 Contingency Measure Plan.

vi. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep a copy of the PM10 Contingency Measure Plan, any amendments or revisions to the PM10 Contingency Measure Plan (as required by Condition 3.2(b)), and the Permittee shall also keep a record of activities completed according to the PM10 Contingency Measure Plan.

c. Episode Action Plan

Should this source become subject to 35 IAC 244.142, the Permittee shall prepare, submit, and operate under an Episode Action Plan for reducing the levels of emissions during yellow alerts, red alerts, and emergencies, consistent with safe operating procedures and

submitted to the IEPA for its review. The Episode Action Plan shall contain the information specified in 35 IAC 244.144. The Permittee shall immediately implement the appropriate steps described in this Episode Action Plan should an air pollution alert or emergency be declared. Any future Episode Action Plan made by the Permittee during the permit term is automatically incorporated by reference provided the Episode Action Plan is not expressly disapproved, in writing, by the IEPA within 30 days of receipt of the Episode Action Plan. In the event that the IEPA notifies the Permittee of a deficiency with any Episode Action Plan, the Permittee shall be required to revise and resubmit the Episode Action Plan within 30 days of receipt of notification to address the deficiency pursuant to Section 39.5(7)(a) of the Act.

d. Risk Management Plan (RMP)

Should this stationary source, as defined in 40 CFR 68.3, become subject to the federal regulations for Chemical Accident Prevention in 40 CFR Part 68, then the Permittee shall submit a compliance schedule for meeting the requirements of 40 CFR Part 68 by the date provided in 40 CFR 68.10(a); or submit a certification statement that the source is in compliance with all requirements of 40 CFR Part 68, including the registration and submission of the Risk Management Plan, as part of the annual compliance certification required by Condition 2.6(a). This condition is imposed in this permit pursuant to 40 CFR 68.215(a)(2)(i) and (ii).

3. Title I Requirements

a. i. Construction Permit 11080006 Requirements [T1]

A. Pursuant to Construction Permit 11080006, the combined VOM emissions from the following emission units shall not exceed 20.0 tons/year: Waelz Kiln System Rotary Kiln #1 and Rotary Kiln #2 (including the Polypropylene Glycol Injection System), the Natural Gas Fired Engine (554 HP), and the Diesel-Fired Engine (identified in Sections 4.2, 4.3, and 4.7). These emission units are not regulated by 35 IAC Part 218 (Subparts B, E, F, H, Q, R, S, T, (excluding 35 IAC 218.486), V, X, Y, Z, or BB or not included in any of the following categories: synthetic organic chemical manufacturing industry (SOCMI) distillation, SOCMI reactors, wood furniture, plastic parts coating (business machine), plastic parts coating (other), offset lithography, industrial wastewater, autobody refinishing, SOCMI batch processing, volatile organic liquid storage tanks and clean up solvent operation at the plant). [T1]

ii. Compliance Method (Construction Permit 11080006)

A. Pursuant to Section 39.5(7)(b)and (d) of the Act, compliance with annual limit in Condition 3.3(a) shall be determined from records including the 12 month running total of VOM emissions from the designated emission units. Total VOM records will be kept on a rolling 12 month basis, and will include data for the month of record plus the preceding 11 months of data. Total VOM will be determined using:

I. For the kiln systems, the sum of VOM emissions from polypropylene glycol used (tons/month) and VOM emissions from combustion of natural gas (calculated using the quantity of natural gas usage [ft3/month] and an emission factor);

II. For the natural gas engine, VOM emissions from natural gas combustion (calculated using the quantity of natural gas usage [ft3/month] and an emission factor);

III. For the diesel engine, VOM emissions from diesel fuel combustion (calculated using the operating hours (hours/month) of the engine and a VOM emission factor).

Recordkeeping

B. Pursuant to 39.5(7)(b) and (e) of the Act, and Construction Permit 11080006, the Permittee shall keep the following records as required in Conditions 4.2.2(d) and 4.2.2(h), 4.3.2(c) and 4.3.2(d), and 4.7.2(d), 4.7.2(h) and 4.7.2.(i).

4. Synthetic Minor Limits

As of the date of issuance of this permit, there are no source-wide synthetic minor limits that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. **Prompt Reporting**

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows:

- Requirements in Conditions 3.1(a)(i), 3.1(b), 3.1(c), and 3.1(d).
- Requirements in Conditions 3.2(a), 3.2(b), 3.2(c), and 3,2(d).
- Requirements in Condition 3.3.(a)(i)

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

b. **Semiannual Reporting**

i. Pursuant to Section 39.5(7)(f)(i) of the Act, the Permittee shall submit Semiannual Monitoring Reports to the IEPA, Air Compliance Section, summarizing required monitoring as part of the Compliance Methods in this Permit submitted every six months as follows, unless more frequent reporting is required in other parts of this permit.

Monitoring Period	Report Due Date
January through June	July 31
July through December	January 31

ii. All deviation reports required in this Permit shall be identified, summarized, and reported as part of the Semiannual Monitoring Report.

iii. The Semiannual Monitoring Report must be certified by a Responsible Official consistent with Condition 2.6(b).

c. Annual Emissions Reporting

Pursuant to 35 IAC Part 254, the Source shall submit an Annual Emission Report due by May 1 of the year following the calendar year in which the emissions took place. All records and calculations upon which the verified and reported data are based must be retained by the source.

Section 4 - Emission Unit Requirements

4.1 Process Emission Source

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
Carbon Material Bin	PM	1993	N/A	Bag Collector 16	None
Curing and Blending Building	PM	1992	N/A	Bag Collectors 11A, 11B, and 12	None
Feed Handling System with Pelletizer	PM	1987	N/A	Bag Collector 2, 7, 8, 9, and 13	None
Crude Zinc Oxide Bin	PM	1987	N/A	Bag Collector 5 and 6	None
Iron Rich Material Transfer Area	PM	1993	N/A	Bag Collector 14	None
Iron Rich Material Kilns Discharge Area	PM	1987	N/A	Bag Collector 1	None

2. Applicable Requirements

For the emission unit in Condition 4.1(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

ii. Compliance Method (Opacity Requirements)

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, to ensure compliance with Condition 4.1.2(a)(i)(A), at a minimum, the Permittee shall perform observations for opacity for each control device stack (e.g., each baghouse stack), in accordance with Reference Method 22 for visible emissions at least once per quarter during operation. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation to return the status of the operation to no visible emissions or shall perform a Reference Method 9 observation within one week. Corrective action may include, but is not limited to, shut down of the associated emission units, maintenance and repair, and/or adjustment of the equipment. If corrective action was taken, the Permittee shall perform a follow up observation for visible emissions in accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 shall be conducted within one week.

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each Method 22 and Method 9 for opacity conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.

b. i. Particulate Matter Requirements (PM)

A. Pursuant to 35 IAC 212.321(a), No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit for which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, which, at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c) (See Condition 7.2.a).

B. Pursuant to Construction Permit 85100055, emissions of PM from the Curing and Blending Building shall not exceed 1.0 pounds per hour and 4.4 tons per year. [T1]

C. Pursuant to the CAAPP Permit 96030189 issued on 5/15/2002, total PM emissions from the carbon material bin, feed handling system, crude zinc oxide bin, iron-rich material transfer area, and the iron-rich material kilns discharge area shall not exceed 35.1tons/yr. [T1]

D. Pursuant to 35 IAC 212.313, particulate collection equipment that is operated pursuant to 35 IAC 212.304 through 35 IAC 212.310 and 35 IAC 212.312, PM emissions from such equipment shall not exceed 68 mg/dscm (0.03 gr/dscf).

ii. Compliance Method (PM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall conduct annual inspections of air pollution control equipment associated with operations identified by section 4.1.1 to ensure that no clogs have developed and air pollution control equipment has not malfunctioned. If required by results of these inspections, maintenance and repair shall commence within 48 hours of the inspection.

B. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

C. Pursuant to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, the Feed Handling System with Pelletizer, Iron Rich Material Transfer Kiln Discharge Area, Curing and Blending Building, and Crude Zinc Oxide Bin Emission Units are subject to 40 CFR Part 64. The Permittee shall comply with the monitoring requirements of the CAM Plan described in Condition 7.5 and Table 7.5.1, pursuant to 40 CFR Part 64 as submitted in the Permittee's CAM plan application. At all times, the Owner or Operator shall maintain the monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment, pursuant to 40 CFR 64.7(a) and (b).

Testing

D. Pursuant to Section 39.5(7)(d)(ii) of the Act, during normal operation, the Permittee shall have the PM emissions from each Bag Collector measured as specified below:

I. Initial PM emission measurements of one of the Curing and Blending Building Bag Collectors (11A or 11B), and Bag Collector 12, shall be made no later than one year after the effective date of this Condition.

II. Initial PM emission measurements of two of the Feed Handling System with Pelletizer Bag Collectors (2, 7, 8, 9, or 13) shall be made no later than 24 months after the effective date of this Condition.

III. Initial PM emission measurements of the Iron Rich Material Transfer Area Bag Collector (14), shall be made no later than 36 months after the effective date of this Condition.

IV. Initial PM emission measurements of the Iron Rich Material Transfer Kiln Discharge Area Bag Collector (1), shall be made no later than 48 months after the effective date of this Condition.

V. For those emission units serviced by multiple Bag Collectors, any subsequent PM emissions shall be measured from a different Bag Collector from that which is tested per Conditions 4.1.2(b)(ii)(D)(I or II)).

VI. Measurements of PM shall be made in accordance with applicable USEPA Test Method(s), specifically Method 5, and also following Condition 7.1 of this permit.

Recordkeeping

E. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of PM emissions based on emission factors representative of the most recent valid stack tests with supporting calculations (lbs/hr and tons/year). In the event of an invalid test, a retest will be conducted. In the interim, until such time valid test results are obtained, emission factors representative of the previous valid stack test will continue to be used for emission calculation purposes, as applicable.

F. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of inspections of air pollution control devices along with the logs of maintenance/repair performed on these control devices.

I. Date of inspection, individual performing the inspection, and nature of the inspection

II. Identification and description of any defective equipment, effect on emissions, date identified, date repaired, and nature of the repair.

c. i. **Operational and Production Requirements**

A. Pursuant to Construction Permit 85120055, operation of the Curing and Blending Building shall not exceed a process weight rate of 110 tons per hour. [T1]

B. Pursuant to 35 IAC 212.309, the material handling and processing operations shall be operated in accordance with the provisions of the operating program as described in 35 IAC 212.309 and 212.310 (see also Condition 3.2(a)).

ii. Compliance Method (Operational and Production Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall operate, and maintain the bag collectors, including annual inspection, routine maintenance and prompt repair of defects, if any, that assures compliance with the conditions of this section.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep the following records addressing use of good operating practices for the bag collectors:

I. Records for periodic inspection of the bag collectors with date, name of individual performing the inspection, and the nature of the inspection.

II. Records of prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records of inlet flow rates per respective bag collector (scf/min)

3. Non-Applicability Determinations

a. The Carbon Material Bin and Iron Rich Material Kiln Transfer Area are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the Carbon Material Bin and Iron Rich Material Kiln Transfer Area do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

b. Pursuant to 40 CFR 60 Subpart OOO, the Iron Rich Material Transfer Area and the Iron Rich Material Kilns Discharge Area are not subject to 40 CFR Subpart OOO since none of the nonmetallic minerals defined in 40 CFR 60.671 make up a majority of the Iron Rich material processed at the facility.

c. Pursuant to 40 CFR 60 Subpart LL, since the facility does not produce metallic mineral concentrate from an Ore the facility is not subject to 40 CFR Subpart LL.

d. Pursuant to 40 CFR 63 Subpart GGGGGG, since the facility does not process zinc sulfide ore and does not meet the definition of a zinc production facility the facility is not subject to 40 CFR 63 Subpart GGGGGG.

e. Pursuant to 40 CFR 63 Subpart TTTTTT, the facility does not make any brass or bronze ingots and does not process any magnesium nor is it considered a secondary zinc processing plant thus the facility is not subject to 40 CFR 63 Subpart TTTTTT.

4. Other Requirements

For the emission units in Condition 4.1.1 above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. Operational Flexibility Requirements

I. Pursuant to 35 IAC 201.102, the Permittee is authorized to make the following physical or operational change with respect to the Process Emission Source without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in timely for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

Raw materials and their constituents may be changed so long as that substitution does not violate applicable regulations of 35 IAC 212.321(a), Section 5.4 of this permit, or exceed emission limitations per condition 4.1.2(b).

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act. Addresses are included in Attachment 3.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

- Requirements in Conditions 4.1.2(a)(i),(b)(i), and (c)(i).
- Requirements in Condition 4.1.4(a)(I)

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

4.2 Waelz Kiln System

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
Rotary Kiln #1	PM, SO_2, NOx, VOM, CO, Lead	1942	N/A	Product Collectors 3 and 10	COM
Rotary Kiln #2	PM, SO_2, NOx, VOM, CO, Lead	1992	N/A	Product Collectors 3 and 10	COM

2. Applicable Requirements

For the emission units in Condition 4.2(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

ii. Compliance Method (Opacity Requirements)

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, and pursuant to 35 IAC 201.281, and Operating Permit 85120055, to ensure compliance with Condition 4.2.2(a)(i)(A), continuous monitoring systems for measurement of opacity of emissions (based on a 6 minute block average) with permanent recorders shall be operated on the exhaust of product collectors 3 and 10.

B. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall keep opacity records for the COMS, including the records of the output of the system and 6 minute averages, the time when COMS is not in service and duration of such event.

b. i. Particulate Matter Requirements (PM)

A. Pursuant to 35 IAC 212.321(a), no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321(a).

B. Pursuant to 35 IAC 212.322(b)(1), No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced prior to April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.322.

C. Pursuant to Operating Permit 85120055, Emission of PM from Kiln #1 shall not exceed 2.44 pounds per hour and 10.0 tons per year. [T1]

D. Pursuant to Operating Permit 85120055, Emission of PM from Kiln #2 shall not exceed 2.80 pounds per hour and 11.5 tons per year. [T1]

ii. Compliance Method (PM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall conduct quarterly inspections of product collection equipment associated with operations identified by section 4.2.1 to ensure that no clogs have developed and the equipment has not malfunctioned. If required by results of these inspections, maintenance and repair shall commence within 48 hours of the inspection.

B. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

C. Pursuant to Section 39.5(7)(d)(ii) of the Act, during normal operation, the Permittee shall have the PM emissions from each kiln measured as specified below:

i. PM emissions shall be measured at least once every 5 years after the effective date of this permit, but no later than 9 months before the expiration date of this permit.

ii. Measurements of PM shall be made in accordance with applicable USEPA Test Method(s), specifically Method 5, and also following Condition 7.1 of this permit.

Recordkeeping

D. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of PM emissions based on emission factors representative of the most recent valid stack tests with supporting calculations (lbs/hr and tons/year). In the event of an invalid test, a retest will be conducted. In the interim, until such time valid test results are obtained, emission factors representative of the previous valid stack test will continue to be used for emission calculation purposes.

E. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of inspections of the product collector devices along with the logs of maintenance/repair performed on these control devices.

i. Date of inspection, individual performing the inspection, and nature of the inspection

ii. Identification and description of any defective equipment, effect on emissions, date identified, date repaired, and nature of the repair.

c. i. Sulfur Dioxide Requirements (SO_2)

A. Pursuant to 35 IAC 214.301, No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm.

B. Pursuant to Operating Permit 85120055, Emission of SO_2 from Kiln #1 shall not exceed 1.22 pounds per hour and 5.0 tons per year. [T1]

C. Pursuant to Operating Permit 85120055, Emission of SO_2 from Kiln #2 shall not exceed 1.22 pounds per hour and 5.0 tons per year. [T1]

ii. Compliance Method (SO_2 Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

B. Pursuant to 39.5(7)(a) of the Act, the Permittee shall use pipeline quality natural gas certified by gas supplier.

Recordkeeping

A. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of SO_2 emissions with supporting calculations (lb/hr and tons/yr).

d. i. Volatile Organic Material Requirements (VOM)

A. Pursuant to Construction Permit 11080006, emissions of VOM attributable to the Polypropylene Glycol Injection System, combined, shall not exceed 1.0 tons/month and 7.2 tons/year. [T1]

B. Pursuant to 35 IAC 218.301, no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 218.302, 35 IAC 218.303, or 35 IAC 218.304 and the following exemption: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall only apply to photochemically reactive material.

ii. Compliance Method (VOM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Recordkeeping

B. Pursuant to Construction Permit 11080006, The Permittee shall maintain records of the following items for the Polypropylene Glycol Injection System: [T1]

I. A file containing the emission factors used by the Permittee to determine VOM emissions attributable to the Polypropylene Glycol Injection System, if other than 100 percent loss of material as VOM emissions, with supporting documentation and calculations.

II. Records for amount of organic material used by the Polypropylene Glycol Injection System (tons/month and tons/year, by type).

III. Records of the VOM emissions attributable to the Polypropylene Glycol Injection System (tons/month and tons/year), with supporting calculations.

C. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of VOM emissions with supporting calculations (lb/hr and tons/yr).

e. i. Carbon Monoxide Requirements (CO)

A. Pursuant to Operating Permit 85120055, Emission of CO from Kiln #1 shall not exceed 17.33 pounds per hour and 71.12 tons per year. [T1]

B. Pursuant to Operating Permit 85120055, Emission of CO from Kiln #2 shall not exceed 16.21 pounds per hour and 66.53 tons per year. [T1]

ii. Compliance Method (CO Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Section 39.5(7)(d)(ii) of the Act, during normal operation, the Permittee shall measure the CO emissions from each kiln as specified below:

I. CO emissions shall be measured at least once every 5 years after the effective date of this permit, but no later than 9 months before the expiration date of this permit.

II. Measurements of CO shall be made in accordance with applicable USEPA Test Method 10 and Condition 7.1 of this permit.

Recordkeeping

C. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of CO emissions based on emission factors representative of the most recent valid stack tests with supporting calculations (tons/yr and either lb/hr or tons/month). In the event of an invalid test, a retest will be conducted. In the interim, until such time valid test results are obtained, emission factors representative of the previous valid stack test will continue to be used for emission calculation purposes.

f. i. Nitrogen Oxide Requirements (NO_x)

A. Pursuant to Operating Permit 85120055, Emission of NO_x from Kiln #1 shall not exceed 9.58 pounds per hour and 39.32 tons per year. [T1]

B. Pursuant to Operating Permit 85120055, Emission of NO_x from Kiln #2 shall not exceed 9.50 pounds per hour and 39.00 tons per year. [T1]

ii. Compliance Method (NO_x Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Section 39.5(7)(d)(ii) of the Act, during normal operation, the Permittee shall measure the NO_x emissions from each kiln as specified below:

I. NO_x emissions shall be measured at least once every 5 years after the effective date of this permit, but no later than 9 months before the expiration date of this permit.

II. Measurements of NO_x shall be made in accordance with applicable USEPA Test Method 7 and Condition 7.1 of this permit.

Recordkeeping

C. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of NO_x emissions based on emission factors representative of the most recent valid stack tests with supporting calculations (tons/year and either lb/hr or tons/month). In the event of an invalid test, a retest will be conducted. In the interim, until such time valid test results are obtained, emission factors representative of the previous valid stack test will continue to be used for emission calculation purposes.

g. i. **Hazardous Air Pollutant Requirements (HAP)**

A. Pursuant to Operating Permit 85120055, Emission of Lead from Kiln #1 shall not exceed 0.066 pounds per hour and 0.27 tons per year. [T1]

B. Pursuant to Operating Permit 85120055, Emission of Lead from Kiln #2 shall not exceed 0.078 pounds per hour and 0.32 tons per year. [T1]

ii. Compliance Method (HAP Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall conduct a test of lead emissions from the kiln by using Method 29 at least once every 5 years after the effective date of this permit, but no later than 9 months before the expiration date of this permit. The Permittee shall comply with all applicable testing requirements of Section 7.1

Recordkeeping

C. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of Lead emissions based on emission factors representative of the most recent valid stack tests with supporting calculations (tons/year and either lb/hr or tons/month). In the event of an invalid test, a retest will be conducted. In the interim, until such time valid test results are obtained, emission factors representative of the previous valid stack test will continue to be used for emission calculation purposes.

h. i. **Operational and Production Requirements**

A. Pursuant to Construction Permit 11080006, VOM usage for the Polypropylene Glycol Injection System combined and other organic materials shall not exceed 1.0 tons per month and 7.2 tons per year. [T1]

B. Pursuant to Construction Permit 11080006, at all times, the Permittee shall also, to the extent practicable, maintain and operate the affected systems and associated air pollution control measures in a manner consistent with good air pollution control practice for minimizing emissions. [T1]

C. Pursuant to Operating Permit 85120055, operation of Kiln #1 shall not exceed 8208 hours per year and 342 days per year. [T1]

D. Pursuant to Operating Permit 85120055, operation of Kiln #2 shall not exceed 8208 hours per year and 342 days per year. [T1]

E. Pursuant to Operating Permit 85120055, the process weight rate of from Kiln #1 shall not exceed 16.7 tons per hour. [T1]

F. Pursuant to Operating Permit 85120055, the process weight rate of from Kiln #2 shall not exceed 18.2 tons per hour. [T1]

G. Pursuant to 35 IAC 212.309, the material handling and processing operations shall be operated in accordance with the provisions of the operating program as described in 35 IAC 212.309 and 212.310 (see also Condition 3.2(a)).

ii. Compliance Method (Operational and Production Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the following items for the Waelz Kiln System and Product Collectors:

I. For Waelz kiln system:

1. The process weight rate of the Waelz kiln system,

2. Operating hours, and

3. Receipts and kiln feed compositions.

4. Total natural gas usage (ft3/month and ft3/year)

II. Annual aggregate NO_x, PM, CO, Lead, SO_2, and VOM emissions from each Waelz kiln system, based on emission factors representative of the most recent valid stack tests, with supporting calculations. In the event of an invalid test, a retest will be conducted. In the interim, until such time valid test results are obtained, emission factors representative of the previous valid stack test will continue to be used for emission calculation purposes.

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

1. Date and duration of malfunction, breakdown or startup,

2. Full and detailed explanation of the cause,

3. Contaminants emitted and an estimate of quantity of emissions,

4. Measures taken to minimize the amount of emissions during the malfunction, breakdown or startup, and

5. Measures taken to reduce future occurrences and frequency of incidents.

IV. Opacity data shall be kept for two years and made available to Agency personnel upon request.

V. Records addressing use of good operating practices for the product collector:

1. Records for periodic inspection of the product collector with date, name of individual performing the inspection, and the nature of the inspection.

2. Records of prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

3. Non-Applicability Determinations

a. The Waelz Kiln System is not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the Waelz Kiln System does not use an add-on control device since Product Collectors are not "control devices" as defined under CAM regulatory provisions.

b. Pursuant to Construction Permit 11080006, the Polypropylene Glycol Injection System is not subject to the control requirements of 35 IAC Subpart TT, Other Emission Units. This is because the permitted VOM emissions including the Polypropylene Glycol Injection System, of the plant, would be less than 25 tons per year.

c. The Waelz Kiln System is not subject to NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Dc, since the Waelz Kiln System, by nature of operation, is not a fuel combustion source.

d. Pursuant to 40 CFR 60 Subpart LL, since the facility does not produce metallic mineral concentrate from an Ore the facility is not subject to 40 CFR Subpart LL.

e. Pursuant to 40 CFR 63 Subpart GGGGGG, since the facility does not process zinc sulfide ore and does not meet the definition of a zinc production facility the facility is not subject to 40 CFR 63 Subpart GGGGGG.

f. Pursuant to 40 CFR 63 TTTTTT, the facility does not make any brass or bronze ingots and does not process any magnesium nor is it considered a secondary zinc processing plant thus the facility is not subject to 40 CFR 63 Subpart TTTTTT.

4. Other Requirements

For the emission units in Condition 4.2.1 above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. Malfunction Breakdown Requirements

i. Authorization for State Requirements

A. Malfunction Breakdown Provisions

Pursuant to 35 IAC 201.149, 201.261, and 201.262, the source is authorized to continue operation in violation of the applicable requirements of Conditions 4.2.2(b, c & d) during malfunction breakdown. Pursuant to Section 39.5(7)(b) of the Act, in the event of a malfunction or breakdown of the Waelz kiln system, the Permittee is authorized to continue operation of the Waelz kiln system in violation of the applicable requirement of 35 IAC 218.301, 212.321, 212.322, and 214.301 as necessary to prevent risk of injury to personnel or severe damage to equipment. The Permittee shall comply with all applicable requirements in Section 7.1 of this permit. This authorization is subject to the following requirements:

I. The Permittee shall repair the damaged feature(s) of the Waelz kiln system or restore the Waelz kiln system to normal operating conditions; this allowance applies only to the Waelz kiln system in order to bring the kiln to ambient temperature; the heat and the process charge being immediately discontinued upon malfunction. Normal operation shall be established within one day unless the feature(s) cannot be repaired within one day or the Waelz kiln system cannot be restored to normal operating conditions, and the Permittee obtains an extension, for up to 5 days, from the Illinois EPA. The request for such an extension must document that the damaged feature(s) are unavailable and specify a schedule of actions the Permittee will take that will assure the feature(s) will be repaired or the Waelz kiln system will be restored to normal operating conditions as soon as possible.

II. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 4.2.2.

b. Operational Flexibility Requirements

i. Pursuant to 35 IAC 201.102, the Permittee is authorized to make the following physical or operational change with respect to the Waelz Kiln system without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

A. Raw materials and their constituents may be changed so long as that substitution does not violate applicable requirements of Condition 4.2.2 or exceed emission limits of Condition 4.2.2.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

- Requirements in Conditions 4.2.2(a)(i), 4.2.2(b)(i), 4.2.2(c)(i), 4.2.2(d)(i), 4.2.2(e)(i), 4.2.2(f)(i), 4.2.2(g)(i), and 4.2.2(h)(i)
- Requirements in Conditions 4.2.4(a)(i), and 4.2.4(b)(i).

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

b. State Reporting

i. The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the Waelz kiln system with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

A. Notification within 60 days of operation of an Waelz kiln system that may not have been in compliance with the opacity limitations in Condition 4.2.2(a), with a copy of such record for each incident.

B. Emissions of NO_x, PM, CO, Lead, SO_2, or VOM from the Waelz kiln system in excess of the limits specified in Condition 4.2.2 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

4.3 Natural Gas Fired Engines

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
Natural Gas Fired Engine (554 HP)	SO_2, HAP	1993	N/A	None	None

2. Applicable Requirements

For the emission unit in Condition 4.3(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit.

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, the Permittee shall perform observations for opacity on the engine stack, in accordance with Reference Method 22 for visible emissions at least once per calendar year during operation. If the engine has not operated during the year, the observation is not required. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation to return the status of the operation to no visible emissions or shall perform a Reference Method 9 observation within one week. Corrective action may include, but is not limited to, shut down of the associated emission units, maintenance and repair, and/or adjustment of the equipment. If corrective action was taken, the Permittee shall perform a follow up observation for visible emissions in accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 shall be conducted within one week.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall keep records for each Method 22 and Method 9 for opacity conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.

b. i. Sulfur Dioxide Requirements (SO_2)

A. Pursuant to 35 IAC 214.301, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm

ii. Compliance Method (SO_2 Requirements)

A. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of SO_2 emissions with supporting calculations (ppm).

c. i. Hazardous Air Pollutant Requirements (HAP)

A. Pursuant to 40 CFR 63.6585, the -emergency stationary RICE is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ.

B. Pursuant to 40 CFR 63 Subpart ZZZZ, Table 2d, Row 5, the Permittee shall:

I. Change oil and filter every 500 hours of operation or annually, whichever comes first;

II. Inspect Spark Plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and

III. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

ii. Compliance Method (HAP Requirements)

A. Pursuant to 40 CFR 63 Subpart ZZZZ, Table 6, Row 9 the Permittee shall:

I. Operate and maintain the RICE according to the manufacturer's emission -related operation and maintenance instructions; or

II. Develop and follow the Permittee's own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

B. Pursuant to 40 CFR 63.6640(f), the emergency stationary RICE must be operated according to the following:

I. There is no time limit on the use of emergency stationary RICE in emergency situations in accordance with 40 CFR 63.6640(f)(1)

II. Emergency stationary RICE may be operated for up to 100 hours per calendar year for maintenance checks and readiness testing in accordance with 40 CFR 63.6640(f)(2)(i).

III. Emergency stationary RICE at an area source of HAP may be operated for up to 50 hours per calendar year in non-emergency situations in accordance with 40 CFR 63.6640(f)(4). The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing, as provided in 40 CFR 63.6640(f)(2)(i)

Recordkeeping

C. Pursuant to 40 CFR 63.6655, the Permittee shall keep records of the following:

I. Records of the occurrence and duration of each malfunction of operation (i.e., process equipment).

II. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process equipment to its normal or usual manner of operation.

III. Records of the hours of operation of the engine recorded through the non-resettable hour meter.

IV. Records of the number of hours spent for emergency operation, including what classified the operation as emergency, and the number of hours spent for non-emergency operation.

V. Records of maintenance conducted on the engine in order to demonstrate that the Permittee operated and maintained the engine according to maintenance instructions/plan, in accordance with 40 CFR 63 Subpart ZZZZ, table 6, Row 9.

d. i. Operational and Production Requirements

A. Pursuant to Section 39.5(7)(a) of the Act, pipeline quality natural gas shall be the only fuel fired by the engine.

B. Pursuant to 39.5(7)(a) of the Act, the Permittee shall use pipeline quality natural gas certified by a gas supplier

ii. Compliance Method (Operational and Production Requirements)

Recordkeeping

A. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of the type of fuel fired by the engine.

B. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall keep records of each inspection and tune-up performed along with a maintenance and repair log. These records shall include, at a minimum: date and time inspections/tune-ups were performed, name(s) of inspection personnel, identification of equipment being inspected, findings of the inspections/tune-ups, operation and maintenance procedures, and a description of any maintenance and repair activities that resulted in a modification or reconstruction of the piece of equipment.

C. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of the following:

I. Total natural gas usage for natural gas engine (ft3/mo and ft3/yr);

II. Hours of operation; and

III. Annual aggregate CO, PM, SO_2, VOM, and NO_x emissions from the natural gas engine, based on fuel consumption and the applicable emission factors, with supporting calculations.

3. Non-Applicability Determinations

a. The Natural Gas Engine is not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the Natural Gas Engine does not use an add-on control device to achieve compliance with an emission limitation or standard.

b. The Natural Gas Engine is not subject to the requirements of 35 IAC 212.321 or 212.322 due to the unique nature of this unit, a process weight rate cannot be set so that such rules cannot reasonably be applied.

c. The Natural Gas Engine is not subject to the requirements of 35 IAC 217 Subpart Q, Stationary Reciprocating Internal Combustion Engines and Turbines because the source emits less than 100 tpy NO_x, per 35 IAC 217.386(a)(2).

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

I. Requirements in Conditions 4.3.2(a)(i), 4.3.2(b)(i), 4.3.2(c)(i), and 4.3.2(d)(i).

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

4.4 Fugitive Emissions

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
Facility Roadways	PM	1987	N/A	None	None
Carbon Storage Pile	PM	1987	N/A	None	None
Carbon handling by Conveyor	PM	1987	N/A	None	None
Iron-Rich Material Handling	PM	1987	N/A	None	None
Iron-Rich Material Storage Pile	PM	1987	N/A	None	None

2. Applicable Requirements

For the emission unit in Condition 4.4(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30%, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

B. Pursuant to 35 IAC 212.316(c), the Permittee shall not cause or allow fugitive particulate matter emissions from roadways to exceed an opacity of 10 percent.

C. Pursuant to 35 IAC 212.316(d), the Permittee shall not cause or allow fugitive particulate matter emissions from storage piles to exceed an opacity of 10 percent, to be measured four feet from the pile surface.

D. Pursuant to 35 IAC 212.316(f), the Permittee shall not cause or allow fugitive particulate matter emissions from any emission unit to exceed an opacity of 20 percent.

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform opacity observations at the crucial points of the fugitive emission sources (roads and storage piles) in accordance with Method 22 for visible emissions on at least monthly basis. If visible emissions are observed, the Permittee shall take corrective action within 24 hours of such observation. Corrective action may include, but is not limited to, shut down of the operation, maintenance and repair, and/or adjustment of equipment. If corrective action was taken, the Permittee shall perform a follow up observation for visible emissions in accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 and Section 7.1 of this permit shall be conducted within 7 days.

Testing

B. Pursuant to 35 IAC 212.109, upon request by the Illinois EPA, pursuant to Section 39.5(7)(d) of the Act, measurements of opacity shall be conducted in accordance with Method 9, 40 CFR Part 60, Appendix A, except that for

roadways and parking areas the number of readings required for each vehicle pass will be three taken at 5-second intervals. The first reading shall be at the point of maximum opacity and second and third readings shall be made at the same point, the observer standing at right angles to the plume at least 15 feet away from the plume and observing 4 feet above the surface of the roadway or parking area. After four vehicles have passed, the 12 readings will be averaged. This test method shall be used to determine compliance with 35 IAC 212.301.

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep the following records:

I. Records of each observation performed. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.

II. Records of all Method 9 opacity measurements made in accordance with Condition 4.3.2(a)(ii)(A).

b. i. Operational or Production Requirements

A. Pursuant to 35 IAC 212.306, all normal traffic pattern access surrounding storage piles and all normal traffic pattern roads and parking areas at the facility shall be paved or treated with water, oils or chemical dust suppressants. All paved areas shall be cleaned on a regular basis. All areas treated with water, oils or chemical dust suppressants shall have the treatment applied on a regular basis, as needed, in accordance with the operating program required by 35 IAC 212.309, 212.310 and 212.312 (See Condition 3.2(a)).

ii. Compliance Method (Operational or Production Requirements)

A. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain the following records for Fugitive Emissions:

I. For Facility Roads:

1. Types of vehicles which travel facility roadways

2. Number of each type of vehicles which travel facility roadways

3. Mileage of facility paved and/or unpaved roadways traveled by each type of vehicle. Records for fugitive road dust shall be calculated on an annual basis, except this calculation shall be updated if substantial changes to the roads occur, i.e. additional roads added.

II. For carbon storage pile:

1. Quantity of carbon material handled (Tons/yr)

III. For carbon handling by conveyor:

1. Quantity of carbon material transported (ton/yr)

IV. Quantity of iron-rich material handled (ton/yr)

3. Non-Applicability Determinations

a. The fugitive emission units are not subject to 35 IAC 212.321 or 212.322 due to the disperse nature of such emission units, such rules cannot reasonably be applied, pursuant to 35 IAC 212.323.

b. The fugitive emission units are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the emission units does not use an add-on control device to achieve compliance with an emission limitation or standard.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

I. Requirements in Conditions 4.4.2(a)(i), and 4.4.2(b)(i).

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

4.5 Gasoline Storage Tank

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
250 Gallon Gasoline Storage Tanks	VOM, HAP	1972	N/A	Submerged Loading Pipe	None

2. Applicable Requirements

For the emission unit in Condition 4.5(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. **Work Practice Requirements (35 IAC Part 215)**

A. Pursuant to 35 IAC 218.583(a)(1), no person shall cause or allow the transfer of gasoline from any delivery vessel into any stationary storage tank for the gasoline dispensing operation unless the tank is equipped with a submerged loading pipe.

ii. Compliance Method (VOM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, the Permittee shall conduct semi-annual inspections of the gasoline storage tank and dispensing operation while the tank is being filled by inspecting at least the following:

I. Retractors, hoses, breakaways, swivels.

II. Adapters, vapor caps, rubber gaskets, and spill containment buckets.

III. Gauges and meters.

IV. Submerged loading pipe is physically present and the condition of the pipe for integrity.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain the records of conducted inspections, with a date and results of such inspections.

C. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall keep a copy of operating instructions and maintenance log.

D. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the following:

I. Design information for the tank showing the presence of a permanent submerged loading pipe;

II. Maintenance and repair records for the tank, as related to the repair or replacement of the loading pipe;

III. The throughput of the tank, gal/mo and gal/yr; and

IV. The monthly and aggregate annual VOM emissions from the tank based on the material stored, the tank throughput, and the applicable emission factors and formulas with supporting calculations.

b. i. HAP Emissions - Work Practice Requirements (40 CFR 63 Subpart CCCCCC)

A. Pursuant to 40 CFR 63.11116(a), the Permittee shall fulfill at least the following requirements in regards to the gasoline dispensing operation with monthly throughput of less than 10,000 gallons of gasoline:

I. Minimize gasoline spills;

II. Clean up spills as expeditiously as practicable;

III. Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use; and

IV. Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

B. Pursuant to 40 CFR 63.11130, the Permittee must comply with the applicable general provisions specified in the general provisions of 40 CFR Part 63 as shown in Table 3 of 40 CFR 63 Subpart CCCCCC and Section 7.4(a) of this permit.

ii. Compliance Method (Federal Work Practice Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, the Permittee shall conduct semi-annual inspections of the gasoline storage tank and dispensing operation to ensure that the operating requirements established by Condition 4.5.2(b)(i)(A) and 40 CFR 63.11116(a) are met. The tank shall be inspected while the tank is being filled.

Recordkeeping

A. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall keep on site written operating procedures or instructions on how to implement the operating requirements established by Condition 4.5.2(b)(i)(A) and 40 CFR 63.11116(a).

B. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall maintain the records of inspections conducted to comply with Condition 4.5.2(d)(ii)(A), with a date and results of such inspections.

c. i. Operational and Production Requirements

A. Pursuant to Section 39.5(7)(a) of the Act, the gasoline throughput shall not exceed 10,000 gallons per month and 100,000 per year.

B. Pursuant to Section 39.5(7)(a) of the Act, the gasoline storage tank shall only be used for the storage of gasoline.

ii. Compliance Method (Operational and Production Requirements)

A. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall keep monthly and annual records of gasoline throughput.

3 Non-Applicability Determinations

a. The gasoline storage tank is not subject to the New Source Performance Standards (NSPS) for Volatile Organic Liquid Storage Vessels, 40 CFR 60 Subpart Kb, because the gasoline storage tank does not have vessel with a capacity greater than or equal to 75 cubic meters (m3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984, as required by 40 CFR 60.110b(a).

b. The gasoline storage tank is not subject to 35 IAC 218.301 because the gasoline storage tank does not use organic material as defined in 35 IAC 211.4250(b).

c. The gasoline storage tank is not subject to 35 IAC 218.586(c) because the average monthly gasoline throughput is less than 10,000 gallons as limited by Condition 4.3.2(c)(i)(A).

d. The gasoline storage tank is not subject to 35 IAC 218.581 and 215.582 because the tank is not a bulk gasoline plant or bulk gasoline terminal as defined in 35 IAC 211.790 and 211.810, respectively.

e. The gasoline storage tank and associated dispensing operations are not subject to 40 CFR 64, Compliance Assurance Monitoring (CAM) for VOM or HAPs because the tank uses a passive control measure, such as a seal, lid, or roof, that is not considered a control device because it acts to prevent the release of pollutants.

f. The gasoline storage tank is not subject to the NSPS for volatile organic liquid storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after July 23, 1984, 40 CFR 60 Subpart Kb, because the tank was constructed prior to 1984.

g. The gasoline storage tank is not subject to the requirements of 35 IAC 218.123, petroleum liquid storage tanks, pursuant to 35 IAC 218.123(a)(2), which exempts storage tanks with a capacity less than 151.42 m3.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included for the gasoline tank.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

I. Requirements in Conditions 4.5.2(b)(i), and 4.5.2(c)(i) through (ii).

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

b. State Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

I. Any storage of VOL in a tank that is not in compliance with the requirements of Conditions 7.5.3(b) (see also 35 IAC 218.122(b)), e.g., no "permanent submerged loading pipe," within thirty days of becoming aware of the non-compliance status. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance;

II. Any storage of VOL in a tank that is out of compliance with the requirements of Conditions 7.5.3(b) (see also 35 IAC 218.122(b)) due to damage, deterioration, or other condition of the loading pipe, within 30 days of becoming aware of the non-compliance status. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps to be taken to avoid future non-compliance;

III. The storage of any VOL or VPL other than the material specified in Condition 7.5.5 within 30 days of becoming aware of the noncompliance status. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps to be taken to avoid future non-compliance.

4.6 Iron Rich Material Processing

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
Screener	PM	2016	N/A	None	None
Crusher	PM	2016	N/A	None	None
Storage Piles and Associated Roadways	PM	2016	N/A	None	None

2. Applicable Requirements

For the emission unit in Condition 4.6(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

B. Pursuant to Construction Permit 16020022, the normal traffic pattern roadways associated with the process equipment and the storage piles are subject to the following state rules for opacity and visible emissions: [T1]

I. 35 IAC 212.316(c), which provides that the opacity of fugitive particulate matter emissions from roadways shall not exceed 10 percent.

II. 35 IAC 212.316(d), which provides that the opacity of fugitive particulate matter emissions from storage piles shall not exceed 10 percent, to be measured four feet from the pile surface.

C. Pursuant to 35 IAC 212.316(f), the Permittee shall not cause or allow fugitive particulate matter emissions from any emission unit to exceed an opacity of 20 percent.

D. Pursuant to 35 IAC 212.309, the process equipment and associated normal traffic pattern roads shall be operated under the provisions of the source's the Operating Program for fugitive dust in accordance with 35 IAC 212.310 and 212.312.

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, to ensure compliance with Condition 4.1.2(a)(i)(A), at a minimum, the Permittee shall perform observations for opacity for each emission unit, in accordance with Reference Method 22 for visible emissions at least once per quarter during operation. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation to return the status of the operation to no visible emissions or shall perform a Reference Method 9 observation within one week. Corrective action may include, but is not limited to, shut down of the associated emission units, maintenance and repair, and/or adjustment of the equipment. If corrective action was taken, the Permittee shall perform a follow up observation for visible emissions in

accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 shall be conducted within one week.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each Method 22 and Method 9 for opacity conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation

b. i. **Particulate Matter Requirements (PM)**

A. Pursuant to 35 IAC 212.308, the process equipment shall be equipped with water or a surfactant solution sprays, utilize a choke feeder, or be treated by an equivalent method in accordance with the Operating Program for fugitive dust, pursuant to 35 IAC 212.309.

B. Pursuant to 35 IAC 202.301, the Permittee shall not cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by and observer looking generally overhead at a point beyond the property line of the source unless the wind speed is greater than 40.2 kilometers/hour (25 miles/hour).

C. Pursuant to 35 IAC 212.321, the Permittee shall not cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection 35 IAC 212.321(c).

D. Pursuant to Construction Permit 16020022, PM emissions from the Crusher and Screener combined shall not exceed 1.1 tons per year. [T1]

ii. Compliance Method (PM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of PM emissions with supporting information and calculations (tons/year).

c. i. **Operational and Production Requirements**

A. Pursuant to Construction Permit 16020022, the screener shall not process more than 25,000 tons/month and 200,000 tons/year of material. [T1]

B. Pursuant to Construction Permit 16020022, the crusher shall not process more than 7,500 tons/month and 60,000 tons/year of material. [T1]

ii. Compliance Method (Operational and Production Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Recordkeeping

B. Pursuant to Construction permit16020022, the Permittee shall maintain a file for the process equipment that includes the following information: [T1]

I. The capacities of the screeners and crusher (tons/hour).

C. Pursuant to Construction permit 16020022, the Permittee shall maintain records of the amounts of material processed by the screener and crusher (tons/month and tons/year). [T1]

D. Pursuant to Construction permit16020022, the Permittee shall maintain an operating log or other records for the process equipment that, at a minimum, includes the information specified by 35 IAC 212.316(g)(1) and (2). [T1]

d. i. **Work Practice Requirements**

A. Pursuant to Construction Permit 16020022, the Permittee shall operate and maintain the process equipment, and storage piles in accordance with good air pollution control practice to minimize emissions. [T1]

ii. Compliance Method (Work Practice Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform monthly inspections of the Iron Rich Material Processing.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) and (e) of the Act, the Permittee shall keep records of each inspection and tune-up performed along with a maintenance and repair log. These records shall include, at a minimum: date and time inspections/tune-ups were performed, name(s) of inspection personnel, identification of equipment being inspected, findings of the inspections/tune-ups, operation and maintenance procedures, and a description of any maintenance and repair activities that resulted in a modification or reconstruction of the piece of equipment.

3 Non-Applicability Determinations

a. The Screener, Crusher, and Storage Piles are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the Screener, Crusher, and Storage Piles do not use an add-on control device to achieve compliance with an emission limitation or standard.

b. Pursuant to Construction Permit 16020022, the Screener, Crusher, and Storage Piles are not subject to the NSPS for Nonmetallic Mineral Processing Plants, 40 CFR 60 Subpart OOO. This is because the process equipment will not process material that is a "nonmetallic mineral" as defined by 40 CFR 60.671.

c. Pursuant to Construction Permit 16020022, the Screener, Crusher, and Storage Piles are not subject to the NSPS for Metallic Mineral Processing Plants, 40 CFR 60 Subpart LL.

d. This is because the process equipment will not process material that is a "metallic mineral concentrate," i.e., metal ore, as defined in 40 CFR 60.381.

e. Pursuant to Construction Permit 16020022, the Screener, Crusher, and Storage Piles are not subject to the NESHAP for Primary Nonferrous Metals Area Sources - Zinc, Cadmium and Beryllium, 40 CFR 63 Subpart GGGGGG. This is because the source is not a "primary zinc production facility" as defined in 40 CFR 63.11167.

f. Pursuant to Construction Permit 16020022, the Screener, Crusher, and Storage Piles are not subject to the NESHAP for Secondary Nonferrous Metals Processing Area Sources, 40 CFR 63 Subpart TTTTTT. This is because the source is not a "secondary nonferrous metals processing facility" as defined in 40 CFR 63.11472.

g. Pursuant to Construction Permit 16020022, the Screener, Crusher, and Storage Piles are not subject to the emission limit for PM_{10} in 35 IAC 212.324(b) pursuant to 35 IAC 212.324(d), which provides that 35 IAC 212.324(b) shall only apply to stack emissions and not to fugitive emissions.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

I. Requirements in Conditions 4.6.2(a)(i), 4.6.2(b)(i), 4.6.2(c)(i), and 4.6.2(d)(i).

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

b. State Reporting

i. Pursuant to 35 IAC 212.316(g)(1), the Permittee shall submit an annual report to the Illinois EPA addressing its implementation of the control measures for the units that may be needed for compliance with the applicable opacity limits in 35 IAC 212.316.

4.7 Engine

1. Emission Units and Operations

Emission Units	Pollutants Being Regulated	Original Construction Date	Modification/ Reconstruction Date	Air Pollution Control Devices or Measures	Monitoring Devices
Diesel-Fired Engine	PM, SO_2, VOM, CO, NOx, HAP	2016	N/A	None	None

2. Applicable Requirements

For the emission unit in Condition 4.5(1) above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, to ensure compliance with Condition 4.1.2(a)(i)(A), at a minimum, the Permittee shall perform observations for opacity for each emission unit, in accordance with Reference Method 22 for visible emissions at least once per quarter during operation. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation to return the status of the operation to no visible emissions or shall perform a Reference Method 9 observation within one week. Corrective action may include, but is not limited to, shut down of the associated emission units, maintenance and repair, and/or adjustment of the equipment. If corrective action was taken, the Permittee shall perform a follow up observation for visible emissions in accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 shall be conducted within one week.

Recordkeeping

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each Method 22 and Method 9 for opacity conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation

b. i. Particulate Matter Requirements (PM)

A. Pursuant to Construction Permit 16020022, emission of PM from the Diesel-Fired Engine shall not exceed 0.44 tons per year. [T1]

ii. Compliance Method (PM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Construction permit 16020022, upon written request from the Illinois EPA, the Permittee shall have performance tests conducted for the Diesel-Fired Engine for emissions of PM by an approved independent testing service. All performance tests for PM must be conducted in compliance with the requirements in 40 CFR 60.4212. [T1]

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of PM emissions with supporting calculations (tons/month and tons/year).

c. i. Sulfur Dioxide Requirements (SO_2)

A. Pursuant to Construction Permit 16020022, emission of SO_2 from the Diesel-Fired Engine shall not exceed 0.44 tons per year. [T1]

B. Pursuant to 35 IAC 214.301, the emission of sulfur dioxide (SO_2) into the atmosphere from the Diesel-Fired Engine shall not exceed 2,000 ppm.

C. Pursuant to 35 IAC 214.304, the Diesel-Fired Engine shall comply with 35 IAC 214.122(b)(2), pursuant to which:

I. Until December 31, 2016, the SO_2 emissions from the Diesel-Fired Engine shall not exceed 0.3 lb/mmBtu of actual heat input.

II. Beginning January 1, 2017, the sulfur content of the fuel used in the Diesel-Fired Engine shall not exceed 15 ppm.

ii. Compliance Method (SO_2 Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Construction permit 16020022, upon written request from the Illinois EPA, the Permittee shall have performance tests conducted for the Diesel-Fired Engine for emissions of SO_2 by an approved independent testing service. All performance tests for SO_2 must be conducted in compliance with the requirements in 40 CFR 60.4212.

C. Fuel Oil Testing

I. Pursuant to Section 39.5(7)(d) of the Act, in the event that the fuel oil supplier is unable to provide the sulfur content of the fuel oil supply for the engine, the Permittee shall have the sulfur content of the oil supply to the engine, in lbs/mmBtu and weight percent, determined from an analysis of representative sample of the oil supply, as follows:

1. From a sample taken no later than 90 days after first operating the engine pursuant to this permit, provided, however, that if such sample is taken following operation of the engine, the sample shall be taken prior to adding more oil to the storage tank.

2. From a sample taken no later than 30 days after acceptance of a shipment of fuel whose sulfur content would not meet Condition 4.7.2(c)(i)(B) based upon supplier data, provided however, that if the engine are operated following acceptance of such a shipment, the sample shall be taken prior to adding a subsequent shipment of oil to the relevant storage tank.

3. From a sample taken no later than 30 days after a request for such a sample is made by the Illinois EPA, provided, however, that such sample shall be taken prior to adding more oil to the relevant storage tank.

II. Sampling and analysis, including that which forms the basis for the suppliers' data, shall be conducted using methods that would be acceptable under the federal New Source Performance Standards for Stationary Gas Turbines, 40 CFR 60.335(b)(2) and (c) or the federal Acid Rain Program, 40 CFR 75, Appendix D, Optional SO_2 Emissions Data Protocol for Gas-Fired and Oil-Fired Units e.g., ASTM D4057-88 and ASTM D129-91.

Note: Condition 4.7.2(i)(ii)(C) is for fuel testing methodology only, and is in no way intended to subject the source to those provisions.

Recordkeeping

D. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of SO_2 emissions with supporting calculations (tons/month and tons/year).

E. Pursuant to Sections 39.5(7)(b) and (e) of the Act, the Permittee shall maintain the following records related to the sulfur content of the distillate fuel oil fired in the engines:

1. Records for each shipment of fuel oil received, including the amount received, maximum sulfur content, and supplier. The Permittee may utilize data provided by the fuel oil supplier for the sulfur content of each shipment. The sulfur content of the fuel oil supply to the engines, based on the weighted average of material in the storage tank, or the sulfur content of the supply shall be assumed to be the highest sulfur content for any shipment in the tank.

2. Records for operation of an engine with fuel oil that exceeds the applicable limit for sulfur content, with date, duration, and explanation.

d. i. Volatile Organic Material Requirements (VOM)

A. Pursuant to Construction Permit 16020022, emission of VOM from the Diesel-Fired Engine shall not exceed 0.44 tons per year. [T1]

ii. Compliance Method (VOM Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Construction permit 16020022, upon written request from the Illinois EPA, the Permittee shall have performance tests conducted for the Diesel-Fired Engine for emissions of VOM by an approved independent testing service. All performance tests for VOM must be conducted in compliance with the requirements in 40 CFR 60.4212. [T1]

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of VOM emissions with supporting calculations (tons/month and tons/year).

e. i. Carbon Monoxide Requirements (CO)

A. Pursuant to Construction Permit 16020022, emission of CO from the Diesel-Fired Engine shall not exceed 4.11 pounds per hour and 4.1 tons per year. [T1]

ii. Compliance Method (CO Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Construction permit 16020022, upon written request from the Illinois EPA, the Permittee shall have performance tests conducted for the Diesel-Fired Engine for emissions of CO by an approved independent testing service. All performance tests for CO must be conducted in compliance with the requirements in 40 CFR 60.4212. [T1]

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of CO emissions with supporting calculations (lbs/hr and tons/year).

f. i. Nitrogen Oxide Requirements (NO_x)

A. Pursuant to Construction Permit 16020022, emission of NOx from the Diesel-Fired Engine shall not exceed 6.8 pounds per hour and 6.8 tons per year. [T1]

ii. Compliance Method (NO_x Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Construction permit 16020022, upon written request from the Illinois EPA, the Permittee shall have performance tests conducted for the

Diesel-Fired Engine for emissions of NO_x by an approved independent testing service. All performance tests for NO_x must be conducted in compliance with the requirements in 40 CFR 60.4212. [T1]

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of NO_x emissions with supporting calculations (lbs/hr and tons/year).

g. i. **Hazardous Air Pollutant Requirements (HAP)**

A. Pursuant to Construction Permit 16020022, emission of HAP from the Diesel-Fired Engine shall not exceed 0.44 tons per year. [T1]

B. Pursuant to 40 CFR 63.6590(c) of Subpart ZZZZ, the Diesel-Fired Engine must meet the requirements of 40 CFR Subpart ZZZZ by meeting the requirements of 40 CFR Part 60 Subpart IIII.

ii. Compliance Method (HAP Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Testing

B. Pursuant to Construction permit 16020022, upon written request from the Illinois EPA, the Permittee shall have performance tests conducted for the Diesel-Fired Engine for emissions of HAP by an approved independent testing service. [T1]

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of HAP emissions with supporting calculations (tons/month and tons/year).

h. i. **New Source Performance Standards (NSPS) - 40 CFR 60 Subpart IIII**

A. Pursuant to 40 CFR 60.4200(a)(2)(i), the engine is subject to NSPS, 40 CFR 60 Subpart IIII, because the engine is a stationary CI ICE, is not a fire pump engine, was manufactured after April 1, 2006, and commenced construction (i.e., were ordered) after July 11, 2005.

B. Pursuant to 40 CFR 60.4204(b) and 60.4201(b), the engine must comply with the emission standards in Table 1 of 40 CFR 60 Subpart IIII, as follows:

Maximum engine power	Emission standards in g/KW-hr (g/HP-hr)							
	HC		NO_x		CO		PM	
225≤KW<450 (300≤HP<600)	1.3	(1.0)	9.2	(6.9)	11.4	(8.5)	0.54	(0.40)

C. Pursuant to 40 CFR 60.4218, the Permittee must meet the applicable General Provisions of 40 CFR 60 Subpart A as specified in Condition 7.2(a).

D. Pursuant to Construction Permit 16020022, the Diesel-Fired Engine is subject to and shall comply with the applicable standards in Table 1 of 40 CFR 89.112(a) and 89.113, pursuant to 40 CFR 60.4204(b), which requires: The Diesel-Fired Engine, as an engine with a rated power output greater than or equal to 225 kW

and less than 450 kW, must be certified by the manufacturer to meet emission standards of 4.0 grams per kilowatt-hour (g/kw-hour) for combined nonmethane hydrocarbons (NMHC) plus nitrogen oxides (NO_x); 3.5 g/kW-hr for carbon monoxide (CO); and 0.20 g/kW-hr for PM.

I. The opacity of the exhaust from the Diesel-Fired Engine shall not exceed (1) 20 percent during the acceleration mode; (2) 15 percent during the lugging mode; and (3) 50 percent during the peaks in either the acceleration or lugging modes.

E. Pursuant to Construction Permit 16020022, the Permittee shall operate and maintain the Diesel-Fired Engine, over the entire life of the engine, according to the manufacturer's written instructions or procedures developed by the Permittee that are approved by the engine manufacturer, pursuant to 40 CFR 60.4211(a) and 60.4206. For the engine, the Permittee shall also meet any applicable requirements of 40 CFR Parts 89, 94 and/or 1068.

F. Pursuant to Construction Permit 16020022, the Permittee shall use diesel fuel in the Diesel-Fired Engine that meets the requirements of 40 CFR 80.510, pursuant to 40 CFR 60.4207.

G. Pursuant to Construction Permit 16020022, for the Diesel-Fired Engine, the Permittee shall demonstrate compliance with the applicable NSPS emission standards in accordance with 40 CFR 60.4211(c).

H. Pursuant to Construction Permit 16020022, for the Diesel-Fired Engine, the Permittee shall comply with monitoring and recordkeeping requirements of 40 CFR 60.4209(b) and 60.4214(c), if the Diesel-Fired Engine is equipped with a diesel particulate filter to comply with the emission standards in 40 CFR 60.4204, pursuant to 40 CFR 60.4209 and 60.4214.]

I. Pursuant to Construction Permit 16020022, the Permittee is not required to conduct initial performance tests under the Engine NSPS because the Permittee is purchasing an engine that is certified by the manufacturer according to 40 CFR Part 89 as complying with applicable NSPS emission standards, pursuant to 40 CFR 60.4211(c) and 60.4218.

ii. Compliance Method (NSPS Subpart IIII)

A. Pursuant to 40 CFR 60.4211(c), the Permittee demonstrates compliance with the emission standards specified in Condition 4.7.2(h)(i)(B) by having purchased an engine certified to these emission standards. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in Condition 4.7.2(j)(ii)(c).

B. Pursuant to 40 CFR 60.4214(c), for any engine equipped with a diesel particulate filter, the Permittee must keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.

C. Permittee may change only those emission-related settings that are permitted by the manufacturer

D. Pursuant to 40 CFR 60.4211(g), if the Permittee does not install, configure, operate, and maintain the engine and any control device according to the manufacturer's emission-related written instructions, or the Permittee changes emission-related settings in a way that is not permitted by the manufacturer, the Permittee must demonstrate compliance by keeping a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engines in a manner consistent with good air pollution control practice for minimizing emissions. In addition, the Permittee must conduct an

initial performance test to demonstrate compliance with the applicable emission standards in Condition 4.7.2(h)(i)(B) within 1 year of start-up, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after changing emission-related settings in a way that is not permitted by the manufacturer. The Permittee must conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards in Condition 4.7.2(h)(i)(B).

E. Pursuant to 40 CFR 60.4214(a)(2), the Permittee shall maintain records of the following information:

I. All notifications submitted to comply with this subpart and all documentation supporting any notification.

II. Maintenance conducted on the engine.

III. Documentation from the manufacturer that the engine is certified to meet the emission standards in Condition 4.7.2(h)(i)(B).

i. i. Operational and Production Requirements

A. Pursuant to Construction Permit 16020022, the total rated capacity of the Diesel-Fired Engine shall not exceed 500 horsepower. [T1]

B. Pursuant to Construction Permit 16020022, the Diesel-Fired Engine shall not operate for more than 2000 hours per year. [T1]

ii. Compliance Method (Operational and Production Requirements)

Monitoring

A. Pursuant to Section 39.5(7)(b) and (d) of the Act, compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months as a running 12 month total.

Recordkeeping

B. Pursuant to Sections 39.5(7)(b) and (e) of the Act, the Permittee shall maintain records of the type of fuel fired by the engine on a monthly and annual basis, including maximum sulfur content.

C. Pursuant to Construction Permit 16020022, the Permittee shall maintain records of the following items for the Diesel-Fired Engine:

I. A file for the engine that includes the following information:

i. The Manufacturer's specification for the engine's model year, maximum engine capacity, manufacturer's certification of compliance with 40 CFR Part 89 or Part 1039, and associated emission factors.

ii. Data for the maximum hourly emission rates from the engine for NO_x, NOx plus NMHC, CO PM, SO_2 and HAPs (g/kW-hour and lbs/hour), with supporting documentation and calculations.

II. An operating log or other general records for the operation of the engine. A maintenance and repair log or other records, listing activity(ies) performed with date.

III. Operating hours for the engine (hours/month and hours/year).

j. i. Work Practice Requirements

A. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall maintain and operate the engine in a manner consistent with safety and good air pollution control practice for minimizing emissions.

ii. Compliance Method (Work Practice Requirements)

Monitoring

B. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform monthly inspections of the engine.

Recordkeeping

C. Pursuant to Sections 39.5(7)(b) and (e) of the Act, the Permittee shall keep records of each inspection of the engine performed along with a maintenance and repair log. These records shall include, at a minimum the following:

I. Date and time inspections were performed;

II. Name(s) of inspection personnel;

III. Identification of equipment being inspected;

IV. Findings of the inspections;

V. Operation and maintenance procedures; and

VI. A description of all maintenance and repair activities performed including if the activity resulted in a modification or reconstruction of the piece of equipment.

3 Non-Applicability Determinations

a. The engine is not subject to 35 IAC 212.206, because the engine is not by definition fuel combustion emission units as defined at 35 IAC 211.2470.

b. The engines is not subject to 35 IAC 212.321 or 212.322, due to the unique nature of such units, a process weight rate cannot be set so that such rules cannot reasonably be applied, pursuant to 35 IAC 212.323.

c. The engines are not subject to 35 IAC 214.122, because the engine is not a fuel combustion emission unit as defined by 35 IAC 211.2470.

d. The engines are not subject to 35 IAC 215.301, because the engine does not use organic material that would make it subject to 35 IAC 215.301.

e. The engines are not subject to 35 IAC 216.121, because the engine are not fuel combustion emission unit as defined by 35 IAC 211.2470.

f. The engines are not subject to 35 IAC 217.141, because the engine is not a fuel combustion emission unit as defined by 35 IAC 211.2470.

g. The engines are not subject to 35 IAC 217 Subpart Q because the engines is not listed in Appendix G as required by 35 IAC 217.386(a)(1) and because the source emits less than 100 tpy NO_x per IAC 217.386(a)(2).

h. The engines is not subject to 35 IAC 217 Subpart U because the engines is not a fossil fuel-fired stationary boiler, combustion turbine, or combined cycle system, with a maximum design heat input greater than 250 mmBtu/hr, pursuant to 35 IAC 217.454(a).

i. The engines are not subject to 35 IAC 217 Subpart W because pursuant to 35 IAC 217.751 the provisions of Subpart W shall not apply for any control period in 2009 or thereafter.

j. The engines are not subject to the New Source Performance Standards (NSPS) for Stationary Spark Ignition Internal Combustion Engines, 40 CFR Part 60, Subpart JJJJ, because the engines is not a spark ignition engines as required by that rule, pursuant to 40 CFR 60.4230 and defined pursuant to 40 CFR 60.4248.

k. The Diesel-Fired Engine is not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the Diesel-Fired Engine does not use an add-on control device to achieve compliance with an emission limitation or standard.

l. The Diesel-Fired Engine is not subject to the requirements of 35 IAC Part 212, Subpart L, because a process weight rate cannot be set, due to the nature of such unit, so that these rules cannot reasonably be applied, pursuant to 35 IAC 212.323.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act.

a. Prompt Reporting

i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:

I. Requirements in Conditions 4.7.2(a)(i), 4.7.2(b)(i), 4.7.2(c)(i), 4.7.2(d)(i), 4.7.2(e)(i), 4.7.2(f)(i), 4.7.2(g)(i), 4.7.2(h)(i), 4.7.2(i)(i), and 4.7.2(j)(i).

B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Reports required by in Condition 3.5(b).

iii. The deviation reports shall contain at a minimum the following information:

A. Date and time of the deviation.

B. Emission unit(s) and/or operation involved.

C. The duration of the event.

D. Probable cause of the deviation.

E. Corrective actions or preventative measures taken.

Section 5 - Title I Requirements

This Section is reserved for Title I requirements not specified in Sections 3 or 4. As of the date of issuance of this permit, there are no Title I requirements that need to be separately addressed in this Section.

Section 6 - Insignificant Activities Requirements

1. Insignificant Activities Subject to Specific Regulations

Pursuant to 35 IAC 201.210 and 201.211, the following activities at the source constitute insignificant activities. Pursuant to Sections 9.1(d) and 39.5(6)(a) of the Act, the insignificant activities are subject to specific standards promulgated pursuant to Sections 111, 112, 165, or 173 of the Clean Air Act. The Permittee shall comply with the following applicable requirements:

Insignificant Activity	*Number of Units*	*Insignificant Activity Category*
Gas turbines and stationary reciprocating internal combustion engines of between 1118 and 112 kW (1500 and 150 horsepower) power output that are emergency or standby units	1	35 IAC 201.210(a)(16)

a. **Applicable Requirements**

Pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act, the Permittee shall comply with the following applicable requirements in addition to the applicable requirements in Condition 6.4:

i. **New Source Performance Standard Requirements (NSPS)**

A. Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII)

I. Pursuant to 40 CFR 60.4205(b) and 60.4202(a)(2), the engines are subject to the emission limitations of 40 CFR 89.112 and 89.113.

II. The engines shall meet the applicable general provisions of 40 CFR 60 Subpart A. See Condition 7.2(b).

III. The engines shall comply with the applicable emission limitations and operating limitations, fuel requirements, general compliance requirements, testing and initial compliance requirements, continuous compliance requirements, notifications, reports, and records and other requirements and information of 40 CFR 60 Subpart IIII and 40 CFR 89 Subpart B.

ii. **National Emission Standards for Hazardous Air Pollutants (NESHAP)**

Pursuant to 40 CFR 63.6595(a)(i), the source must:

A. Subpart ZZZZ for Existing Emergency CI Engines > 500 hp.

I. Meet the applicable general provisions of 40 CFR 63 Subpart A. See Condition 7.4(b).

II. Pursuant to 40 CFR 63.6595(a)(1), the engine must comply with the applicable emission limitations and operating limitations; general compliance requirements; testing and initial compliance requirements; continuous compliance requirements; notifications, reports, and records; and other requirements and information of 40 CFR 63 Subpart ZZZZ.

III. The Permittee shall install, maintain, and operate the emergency CI in accordance with the following requirements:

1. Pursuant to 40 CFR 63.6640(f), there is no limit on the use of the emergency RICE units in emergency situations.

2. Pursuant to 40 CFR 63.6640(f), the permittee shall not allow the engine(s) to exceed 100 hours for maintenance checks and readiness testing and emergency demand response. The Permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year.

3. Pursuant to 40 CFR 63.6640(f), the permittee may operate the engines up to 50 hours per year for non-emergency situations, but those hours are to be counted towards the 100 hours/year for maintenance and testing and emergency demand response.

2. Insignificant Activities in 35 IAC 201.210(a)

In addition to any Insignificant Activities identified in Condition 6.1, the following additional activities at the source constitute insignificant activities:

Insignificant Activity	Number of Units	Insignificant Activity Category
Downdraft Booth with HEPA Filter	1	35 IAC 201.210(a)(2)(a)(3)
Direct combustion units used for comfort heating and fuel combustion emission units as further detailed in 35 IAC 201.210(a)(4).	13	35 IAC 201.210(a)(4)
Storage tanks of virgin or rerefined distillate oil, hydrocarbon condensate from natural gas pipeline or storage systems, lubricating oil, or residual fuel oil.	2	35 IAC 201.210(a)(11)

3. Insignificant Activities in 35 IAC 201.210(b)

Pursuant to 35 IAC 201.210, the source has identified insignificant activities as listed in 35 IAC 201.210(b)(1) through (28) as being present at the source. The source is not required to individually list the activities.

4. Applicable Requirements

Insignificant activities in Conditions 6.1 and 6.2 are subject to the following general regulatory limits notwithstanding status as insignificant activities. The Permittee shall comply with the following requirements, as applicable:

a. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as provided in 35 IAC 212.123(b).

b. Pursuant to 35 IAC 212.321 or 212.322 (see Conditions 7.2(a) and (b)), no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceed the allowable emission rates specified 35 IAC 212.321 or 212.322 and 35 IAC Part 266.

c. Pursuant to 35 IAC 214.301, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2,000 ppm, except as provided in 35 IAC Part 214.

d. Pursuant to 35 IAC 218.301, no person shall cause or allow the discharge of more than 8 lbs/hr of organic material into the atmosphere from any emission source, except as provided in 35 IAC 218.302, 218.303, 218.304 and the following exception: If no odor nuisance exists the limitation of 35 IAC 215 Subpart K shall apply only to photochemically reactive material.

e. Pursuant to 35 IAC 218.122(b), no person shall cause or allow the loading of any organic material into any stationary tank having a storage capacity of greater than 250 gal, unless such tank is equipped with a permanent submerged loading pipe, submerged fill, or an equivalent device approved by the IEPA according to 35 IAC Part 201 or unless such tank is a pressure tank as described in 35 IAC 215.121(a) or is fitted with a recovery system as described in 35 IAC 215.121(b)(2). Exception as provided in 35 IAC 218.122(c): If no odor nuisance exists the limitations of 35 IAC 215.122 shall only apply to the loading of volatile organic liquid with a vapor pressure of 2.5 psia or greater at 70oF.

f. Pursuant to 35 IAC 218.182, for each cold cleaning degreaser, the Permittee shall comply with the applicable equipment and operating requirements of 35 IAC 218.182, except as provided in 35 IAC 218.181.

5. Compliance Method

Pursuant to Section 39.5(7)(b) of the Act, the source shall maintain records of the following items for the insignificant activities in Conditions 6.1 and 6.2:

a. List of all insignificant activities, including insignificant activities added as specified in Condition 6.6, the categories the insignificant activities fall under, and supporting calculations as needed for any insignificant activities listed in 35 IAC 201.210(a)(1) through (3).

b. Potential to emit emission calculations before any air pollution control device for any insignificant activities listed in 35 IAC 201.210(a)(1) through (3).

6. Notification Requirements for Insignificant Activities

The source shall notify the IEPA accordingly to the addition of insignificant activities:

a. Notification 7 Days in Advance

i. Pursuant to 35 IAC 201.212(b), 35 IAC 201.146(kkk), and Sections 39.5(12)(a) and (b) of the Act; for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(a)(1) and 201.211 and is not currently identified in Conditions 6.1 or 6.2, a notification to the IEPA Permit Section 7 days in advance of the addition of the insignificant activity is required. A construction permit is not required. Addresses are included in Attachment 3. The notification shall include the following pursuant to 35 IAC 201.211(b):

A. A description of the emission unit including the function and expected operating schedule of the unit.

B. A description of any air pollution control equipment or control measures associated with the emission unit.

C. The emissions of regulated air pollutants in lb/hr and ton/yr.

D. The means by which emissions were determined or estimated.

E. The estimated number of such emission units at the source.

F. Other information upon which the applicant relies to support treatment of such emission unit as an insignificant activity.

ii. Pursuant to 35 IAC 201.212(b), 35 IAC 201.146(kkk), and Sections 39.5(12)(a) and (b) of the Act; for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(a)(2) through 201.210(a)(18) and is not currently identified in Conditions 6.1 or 6.2, a notification to the IEPA Permit Section 7 days in advance of the addition of the insignificant activity is required. A construction permit is not required. Addresses are included in Attachment 3.

iii. Pursuant to Sections 39.5(12)(a)(i)(b) and 39.5(12)(b)(iii) of the Act, the permit shield described in Section 39.5(7)(j) of the Act (see Condition 2.7) shall not apply to any addition of an insignificant activity noted above.

b. Notification Required at Renewal

Pursuant to 35 IAC 201.212(a) and 35 IAC 201.146(kkk), for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(a) and is currently identified in Conditions 6.1 or 6.2, a notification is not required until the renewal of this permit. A construction permit is not required.

c. Notification Not Required

Pursuant to 35 IAC 201.212(c) and 35 IAC 201.146(kkk), for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(b) as describe in Condition 6.3, a notification is not required. A construction permit is not required.

Section 7 - Other Requirements

1. Testing

a. Pursuant to Section 39.5(7)(a) of the Act, a written test protocol shall be submitted at least sixty (60) days prior to the actual date of testing, unless it is required otherwise in applicable state or federal statutes. The IEPA may at the discretion of the Compliance Section Manager (or designee) accept protocol less than 60 days prior to testing provided it does not interfere with the IEPA's ability to review and comment on the protocol and does not deviate from the applicable state or federal statutes. The protocol shall be submitted to the IEPA, Compliance Section and IEPA, Stack Test Specialist for its review. Addresses are included in Attachment 3. This protocol shall describe the specific procedures for testing, including as a minimum:

i. The name and identification of the emission unit(s) being tested.

ii. Purpose of the test, i.e., permit condition requirement, IEPA or USEPA requesting test.

iii. The person(s) who will be performing sampling and analysis and their experience with similar tests.

iv. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

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

vi. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods. Include if emission tests averaging of 35 IAC 283 will be used.

vii. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with detailed justification. This shall be included as a waiver of the test procedures. If a waiver has already been obtained by the IEPA or USEPA, then the waiver shall be submitted.

viii. Any proposed use of an alternative test method, with detailed justification. This shall be included as a waiver of the test procedures. If a waiver has already been obtained by the IEPA or USEPA, then the waiver shall be submitted.

ix. Sampling of materials, QA/QC procedures, inspections, etc.

b. The IEPA, Compliance Section shall be notified prior to these tests to enable the IEPA to observe these tests pursuant to Section 39.7(a) of the Act as follows:

i. Notification of the expected date of testing shall be submitted in writing a minimum of thirty (30) days prior to the expected test date, unless it is required otherwise in applicable state or federal statutes.

ii. Notification of the actual date and expected time of testing shall be submitted in writing a minimum of five (5) working days prior to the actual date of the test. The IEPA may at its discretion of the Compliance Section Manager (or designee) accept notifications with shorter advance notice provided such notifications will not interfere with the IEPA's ability to observe testing.

c. Copies of the Final Report(s) for these tests shall be submitted to the IEPA, Compliance Section within fourteen (14) days after the test results are compiled and finalized but

no later than ninety (90) days after completion of the test, unless it is required otherwise in applicable state or federal statutes or the IEPA may at the discretion of the Compliance Section Manager (or designee) an alternative date is agreed upon in advance pursuant to Section 39.7(a) of the Act. The Final Report shall include as a minimum:

i. General information including emission unit(s) tested.

ii. A summary of results.

iii. Discussion of conditions during each test run (malfunction/breakdown, startup/shutdown, abnormal processing, etc.).

iv. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.

v. Detailed description of test conditions, including:

A. Process information, i.e., mode(s) of operation, process rate, e.g. fuel or raw material consumption.

B. Control equipment information, i.e., equipment condition and operating parameters during testing.

C. A discussion of any preparatory actions taken, i.e., inspections, maintenance and repair.

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

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

viii. Results of the sampling of materials, QA/QC procedures, inspections, etc.

ix. Discussion of whether protocol was followed and description of any changes to the protocol if any occurred.

x. Demonstration of compliance showing whether test results are in compliance with applicable state or federal statutes.

d. Copies of all test reports and other test related documentation shall be kept on site as required by Condition 2.5(b) pursuant to Section 39.5(7)(e)(ii) of the Act.

2. PM Process Weight Rate Requirements

a. New Process Emission Units - 35 IAC 212.321

New Process Emission Units For Which Construction or Modification Commenced On or After April 14, 1972 [35 IAC 212.321].

i. No person shall cause or allow the emission of PM into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of PM from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c). See Condition 7.2(a)(iii) below. [35 IAC 212.321(a)]

ii. Interpolated and extrapolated values of the data in 35 IAC 212.321(c) shall be determined by using the equation: [35 IAC 212.321(b)]

$$E = A(P)^B$$

Where:

P = Process weight rate (T/hr)
E = Allowable emission rate (lbs/hr)

A. Process weight rates of less than 450 T/hr:

A = 2.54
B = 0.53

B. Process weight rates greater than or equal to 450 T/hr:

A = 24.8
B = 0.16

iii. Limits for New Process Emission Units [35 IAC 212.321(c)]:

P (T/hr)	E (lbs/hr)	P (T/hr)	E (lbs/hr)
0.05	0.55	25.00	14.00
0.10	0.77	30.00	15.60
0.20	1.10	35.00	17.00
0.30	1.35	40.00	18.20
0.40	1.58	45.00	19.20
0.50	1.75	50.00	20.50
0.75	2.40	100.00	29.50
1.00	2.60	150.00	37.00
2.00	3.70	200.00	43.00
3.00	4.60	250.00	48.50
4.00	5.35	300.00	53.00
5.00	6.00	350.00	58.00
10.00	8.70	400.00	62.00
15.00	10.80	450.00	66.00
20.00	12.50	500.00	67.00

b. Existing Process Emission Units - 35 IAC 212.322

Existing Process Emission Units For Which Construction or Modification Commenced Prior to April 14, 1972 [35 IAC 212.322].

i. No person shall cause or allow the emission of PM into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of PM from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.322(c)). See Condition 7.2(b)(iii) below. [35 IAC 212.322(a)]

ii. Interpolated and extrapolated values of the data in 35 IAC 212.322(c) shall be determined by using the equation: [35 IAC 212.322(b)]

$$E = C + A(P)^B$$

Where:

P = Process weight rate (T/hr)
E = Allowable emission rate (lbs/hr)

A. Process weight rates of less than 450 T/hr:

A = 4.10
B = 0.67
C = 0

B. Process weight rates greater than or equal to 450 T/hr:

A = 55.0
B = 0.11
C = -40.0

iii. Limits for Existing Process Emission Units [35 IAC 212.322(c)]:

P (T/hr)	E (lbs/hr)	P (T/hr)	E (lbs/hr)
0.05	0.55	25.00	35.40
0.10	0.87	30.00	40.00
0.2	1.40	35.00	41.30
0.30	1.83	40.00	42.50
0.40	2.22	45.00	43.60
0.50	2.58	50.00	44.60
0.75	3.38	100.00	51.20
1.00	4.10	150.00	55.40
2.00	6.52	200.00	58.60
3.00	8.56	250.00	61.00
4.00	10.40	300.00	63.10
5.00	12.00	350.00	64.90
10.00	19.20	400.00	66.20
15.00	25.20	450.00	67.70
20.00	30.50	500.00	69.00

3. 40 CFR 60 Subpart A Requirements (NSPS)

a. 60 Subpart A and IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Pursuant to 40 CFR 60 Subpart A and Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, the Permittee shall comply with the following applicable General Provisions as indicated:

General Provisions citation	Subject of citation	Applies to Subpart	Explanation
60.1	General applicability of the General Provisions	Yes	
60.2	Definitions	Yes	Additional terms defined in 60.4219.
60.3	Units and abbreviations	Yes	
60.4	Address	Yes	
60.5	Determination of construction or modification	Yes	
60.6	Review of plans	Yes	
60.7	Notification and Recordkeeping	Yes	Except that 60.7 only applies as specified in 60.4214(a).
60.8	Performance tests	Yes	Except that 60.8 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder and engines that are not certified.
60.9	Availability of information	Yes	
60.10	State Authority	Yes	
60.11	Compliance with standards and maintenance requirements	No	Requirements are specified in Subpart IIII.
60.12	Circumvention	Yes	
60.13	Monitoring requirements	Yes	Except that 60.13 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder.
60.14	Modification	Yes	
60.15	Reconstruction	Yes	
60.16	Priority list	Yes	
60.17	Incorporations by reference	Yes	
60.18	General control device requirements	No	
60.19	General notification and reporting requirements	Yes	

4. 40 CFR 60 Subpart A Requirements (NESHAP)

a. 40 CFR 63 Subpart A and Subpart CCCCCC - National Emission Standards for Hazardous Air Pollutants: Gasoline Dispensing Facilities

Pursuant to 40 CFR 63 Subpart A and Table 1 to Subpart CCCCCC of Part 63, the Permittee shall comply with the following applicable General Provisions as indicated:

Citation	Subject	Brief description	Applies to Subpart CCCCCC
63.1	Applicability	Initial applicability determination; applicability after standard established; permit requirements; extensions, notifications	Yes, specific requirements given in 63.11111.
63.1(c)(2)	Title V Permit	Requirements for obtaining a title V permit from the applicable permitting authority	Yes, 63.11111(f) of Subpart CCCCCC exempts identified area sources from the obligation to obtain title V operating permits.
63.2	Definitions	Definitions for Part 63 standards	Yes, additional definitions in 63.11132.
63.3	Units and Abbreviations	Units and abbreviations for Part 63 standards	Yes.
63.4	Prohibited Activities and Circumvention	Prohibited activities; Circumvention, severability	Yes.
63.5	Construction/Reconstruction	Applicability; applications; approvals	Yes, except that these notifications are not required for facilities subject to 63.11116
63.6(a)	Compliance with Standards/Operation & Maintenance—Applicability	General Provisions apply unless compliance extension; General Provisions apply to area sources that become major	Yes.
63.6(b)(1)-(4)	Compliance Dates for New and Reconstructed Sources	Standards apply at effective date; 3 years after effective date; upon startup; 10 years after construction or reconstruction commences for CAA Section 112(f)	Yes.
63.6(b)(5)	Notification	Must notify if commenced construction or reconstruction after proposal	Yes.
63.6(b)(6)	[Reserved]		
63.6(b)(7)	Compliance Dates for New and Reconstructed Area Sources That Become Major	Area sources that become major must comply with major source standards immediately upon becoming major, regardless of whether required to comply when they were an area source	No.

63.6(c)(1)-(2)	Compliance Dates for Existing Sources	Comply according to date in this Subpart, which must be no later than 3 years after effective date; for CAA section 112(f) standards, comply within 90 days of effective date unless compliance extension	No, 63.11113 specifies the compliance dates.
63.6(c)(3)-(4)	[Reserved]		
63.6(c)(5)	Compliance Dates for Existing Area Sources That Become Major	Area sources That become major must comply with major source standards by date indicated in this subpart or by equivalent time period (e.g., 3 years)	No.
63.6(d)	[Reserved]		
63.6(e)(1)(i)	General duty to minimize emissions	Operate to minimize emissions at all times; information Administrator will use to determine if operation and maintenance requirements were met.	No. See 63.11115 for general duty requirement.
63.6(e)(1)(ii)	Requirement to correct malfunctions ASAP	Permittee must correct malfunctions as soon as possible.	No.
63.6(e)(2)	[Reserved]		
63.6(e)(3)	Startup, Shutdown, and Malfunction (SSM) Plan	Requirement for SSM plan; content of SSM plan; actions during SSM	No.
63.6(f)(1)	Compliance Except During SSM	You must comply with emission standards at all times except during SSM	No.
63.6(f)(2)-(3)	Methods for Determining Compliance	Compliance based on performance test, operation and maintenance plans, records, inspection	Yes.
63.6(g)(1)-(3)	Alternative Standard	Procedures for getting an alternative standard	Yes.
63.6(h)(1)	Compliance with Opacity/Visible Emission (VE) Standards	You must comply with opacity/VE standards at all times except during SSM	No.
63.6(h)(2)(i)	Determining Compliance with Opacity/VE Standards	If standard does not State test method, use EPA Method 9 for opacity in Appendix A of Part 60 of this chapter and EPA Method 22 for VE in Appendix A of Part 60 of this chapter	No.
63.6(h)(2)(ii)	[Reserved]		
63.6(h)(2)(iii)	Using Previous Tests To Demonstrate Compliance With Opacity/VE Standards	Criteria for when previous opacity/VE testing can be used to show compliance with this subpart	No.
63.6(h)(3)	[Reserved]		
63.6(h)(4)	Notification of Opacity/VE Observation Date	Must notify Administrator of anticipated date of observation	No.
63.6(h)(5)(i), (iii)-(v)	Conducting Opacity/VE Observations	Dates and schedule for conducting opacity/VE observations	No.
63.6(h)(5)(ii)	Opacity Test Duration and Averaging Times	Must have at least 3 hours of observation with 30 6-minute averages	No.
63.6(h)(6)	Records of Conditions During Opacity/VE Observations	Must keep records available and allow Administrator to inspect	No.

63.6(h)(7)(i)	Report Continuous Opacity Monitoring System (COMS) Monitoring Data From Performance Test	Must submit COMS data with other performance test data	No.
63.6(h)(7)(ii)	Using COMS Instead of EPA Method 9	Can submit COMS data instead of EPA Method 9 results even if rule requires EPA Method 9 in Appendix A of Part 60 of this chapter, but must notify Administrator before performance test	No.
63.6(h)(7)(iii)	Averaging Time for COMS During Performance Test	To determine compliance, must reduce COMS data to 6-minute averages	No.
63.6(h)(7)(iv)	COMS Requirements	Permittee must demonstrate that COMS performance evaluations are conducted according to 63.8(e); COMS are properly maintained and operated according to 63.8(c) and data quality as 63.8(d)	No.
63.6(h)(7)(v)	Determining Compliance with Opacity/VE Standards	COMS is probable but not conclusive evidence of compliance with opacity standard, even if EPA Method 9 observation shows otherwise. Requirements for COMS to be probable evidence-proper maintenance, meeting Performance Specification 1 in Appendix B of Part 60 of this chapter, and data have not been altered	No.
63.6(h)(8)	Determining Compliance with Opacity/VE Standards	Administrator will use all COMS, EPA Method 9 (in Appendix A of Part 60 of this chapter), and EPA Method 22 (in Appendix A of Part 60 of this chapter) results, as well as information about operation and maintenance to determine compliance	No.
63.6(h)(9)	Adjusted Opacity Standard	Procedures for Administrator to adjust an opacity standard	No.
63.6(i)(1)-(14)	Compliance Extension	Procedures and criteria for Administrator to grant compliance extension	Yes.
63.6(j)	Presidential Compliance Exemption	President may exempt any source from requirement to comply with this subpart	Yes.
63.7(a)(2)	Performance Test Dates	Dates for conducting initial performance testing; must conduct 180 days after compliance date	Yes.
63.7(a)(3)	CAA Section 114 Authority	Administrator may require a performance test under CAA section 114 at any time	Yes.
63.7(b)(1)	Notification of Performance Test	Must notify Administrator 60 days before the test	Yes.
63.7(b)(2)	Notification of Re-scheduling	If have to reschedule performance test, must notify Administrator of rescheduled date as soon as practicable and without delay	Yes.
63.7(c)	Quality Assurance(QA)/Test Plan	Requirement to submit site-specific test plan 60 days before the test or on date Administrator agrees with; test plan approval procedures; performance audit requirements; internal and external QA procedures for testing	Yes.
63.7(d)	Testing Facilities	Requirements for testing facilities	Yes.

63.7(e)(1)	Conditions for Conducting Performance Tests	Performance test must be conducted under representative conditions	No, 63.11120(c) specifies conditions for conducting performance tests.
63.7(e)(2)	Conditions for Conducting Performance Tests	Must conduct according to this subpart and EPA test methods unless Administrator approves alternative	Yes.
63.7(e)(3)	Test Run Duration	Must have three test runs of at least 1 hour each; compliance is based on arithmetic mean of three runs; conditions when data from an additional test run can be used	Yes.
63.7(f)	Alternative Test Method	Procedures by which Administrator can grant approval to use an intermediate or major change, or alternative to a test method	Yes.
63.7(g)	Performance Test Data Analysis	Must include raw data in performance test report; must submit performance test data 60 days after end of test with the Notification of Compliance Status; keep data for 5 years	Yes.
63.7(h)	Waiver of Tests	Procedures for Administrator to waive performance test	Yes.
63.8(a)(1)	Applicability of Monitoring Requirements	Subject to all monitoring requirements in standard	Yes.
63.8(a)(2)	Performance Specifications	Performance Specifications in Appendix B of 40 CFR Part 60 apply	Yes.
63.8(a)(3)	[Reserved]		
63.8(a)(4)	Monitoring of Flares	Monitoring requirements for flares in 63.11 apply	Yes.
63.8(b)(1)	Monitoring	Must conduct monitoring according to standard unless Administrator approves alternative	Yes.
63.8(b)(2)-(3)	Multiple Effluents and Multiple Monitoring Systems	Specific requirements for installing monitoring systems; must install on each affected source or after combined with another affected source before it is released to the atmosphere provided the monitoring is sufficient to demonstrate compliance with the standard; if more than one monitoring system on an emission point, must report all monitoring system results, unless one monitoring system is a backup	No.
63.8(c)(1)	Monitoring System Operation and Maintenance	Maintain monitoring system in a manner consistent with good air pollution control practices	No.
63.8(c)(1)(i)-(iii)	Operation and Maintenance of Continuous Monitoring Systems (CMS)	Must maintain and operate each CMS as specified in 63.6(e)(1); must keep parts for routine repairs readily available; must develop a written SSM plan for CMS, as specified in 63.6(e)(3)	No.

63.8(c)(2)-(8)	CMS Requirements	Must install to get representative emission or parameter measurements; must verify operational status before or at performance test	No.
63.8(d)	CMS Quality Control	Requirements for CMS quality control, including calibration, etc.; must keep quality control plan on record for 5 years; keep old versions for 5 years after revisions	No.
63.8(e)	CMS Performance Evaluation	Notification, performance evaluation test plan, reports	No.
63.8(f)(1)-(5)	Alternative Monitoring Method	Procedures for Administrator to approve alternative monitoring	No.
63.8(f)(6)	Alternative to Relative Accuracy Test	Procedures for Administrator to approve alternative relative accuracy tests for continuous emissions monitoring system (CEMS)	No.
63.8(g)	Data Reduction	COMS 6-minute averages calculated over at least 36 evenly spaced data points; CEMS 1 hour averages computed over at least 4 equally spaced data points; data that cannot be used in average	No.
63.9(a)	Notification Requirements	Applicability and State delegation	Yes.
63.9(b)(1)-(2), (4)-(5)	Initial Notifications	Submit notification within 120 days after effective date; notification of intent to construct/reconstruct, notification of commencement of construction/reconstruction, notification of startup; contents of each	No, per 40 CFR 63.11116
63.9(c)	Request for Compliance Extension	Can request if cannot comply by date or if installed best available control technology or lowest achievable emission rate	Yes.
63.9(d)	Notification of Special Compliance Requirements for New Sources	For sources that commence construction between proposal and promulgation and want to comply 3 years after effective date	Yes.
63.9(e)	Notification of Performance Test	Notify Administrator 60 days prior	Yes.
63.9(f)	Notification of VE/Opacity Test	Notify Administrator 30 days prior	No.
63.9(g)	Additional Notifications when Using CMS	Notification of performance evaluation; notification about use of COMS data; notification that exceeded criterion for relative accuracy alternative	Yes, however, there are no opacity standards.
63.9(h)(1)-(6)	Notification of Compliance Status	Contents due 60 days after end of performance test or other compliance demonstration, except for opacity/VE, which are due 30 days after; when to submit to Federal vs. State authority	No, per 40 CFR 63.11116
63.9(i)	Adjustment of Submittal Deadlines	Procedures for Administrator to approve change when notifications must be submitted	Yes.
63.9(j)	Change in Previous Information	Must submit within 15 days after the change	Yes.

63.10(a)	Recordkeeping/Reporting	Applies to all, unless compliance extension; when to submit to Federal vs. State authority; procedures for owners of more than one source	Yes.
63.10(b)(1)	Recordkeeping/Reporting	General requirements; keep all records readily available; keep for 5 years	Yes.
63.10(b)(2)(i)	Records related to SSM	Recordkeeping of occurrence and duration of startups and shutdowns	No.
63.10(b)(2)(ii)	Records related to SSM	Recordkeeping of malfunctions	No. *See* 63.11125(d) for recordkeeping of (1) occurrence and duration and (2) actions taken during malfunction.
63.10(b)(2)(iii)	Maintenance records	Recordkeeping of maintenance on air pollution control and monitoring equipment	Yes.
63.10(b)(2)(iv)	Records Related to SSM	Actions taken to minimize emissions during SSM	No.
63.10(b)(2)(v)	Records Related to SSM	Actions taken to minimize emissions during SSM	No.
63.10(b)(2)(vi)-(xi)	CMS Records	Malfunctions, inoperative, out-of-control periods	No.
63.10(b)(2)(xii)	Records	Records when under waiver	Yes.
63.10(b)(2)(xiii)	Records	Records when using alternative to relative accuracy test	Yes.
63.10(b)(2)(xiv)	Records	All documentation supporting Initial Notification and Notification of Compliance Status	Yes.
63.10(b)(3)	Records	Applicability determinations	Yes.
63.10(c)	Records	Additional records for CMS	No.
63.10(d)(1)	General Reporting Requirements	Requirement to report	Yes.
63.10(d)(2)	Report of Performance Test Results	When to submit to Federal or State authority	Yes.
63.10(d)(3)	Reporting Opacity or VE Observations	What to report and when	No.
63.10(d)(4)	Progress Reports	Must submit progress reports on schedule if under compliance extension	Yes.
63.10(d)(5)	SSM Reports	Contents and submission	No. *See* 63.11126(b) for malfunction reporting requirements.
63.10(e)(1)-(2)	Additional CMS Reports	Must report results for each CEMS on a unit; written copy of CMS performance evaluation; two-three copies of COMS performance evaluation	No.

63.10(e)(3)(i)-(iii)	Reports	Schedule for reporting excess emissions	No.
63.10(e)(3)(iv)-(v)	Excess Emissions Reports	Requirement to revert to quarterly submission if there is an excess emissions and parameter monitor exceedances (now defined as deviations); provision to request semiannual reporting after compliance for 1 year; submit report by 30th day following end of quarter or calendar half; if there has not been an exceedance or excess emissions (now defined as deviations), report contents in a statement that there have been no deviations; must submit report containing all of the information in 63.8(c)(7)-(8) and 63.10(c)(5)-(13)	No.
63.10(e)(3)(iv)-(v)	Excess Emissions Reports	Requirement to revert to quarterly submission if there is an excess emissions and parameter monitor exceedances (now defined as deviations); provision to request semiannual reporting after compliance for 1 year; submit report by 30th day following end of quarter or calendar half; if there has not been an exceedance or excess emissions (now defined as deviations), report contents in a statement that there have been no deviations; must submit report containing all of the information in 63.8(c)(7)-(8) and 63.10(c)(5)-(13)	No, 63.11130(K) specifies excess emission events for this subpart.
63.10(e)(3)(vi)-(viii)	Excess Emissions Report and Summary Report	Requirements for reporting excess emissions for CMS; requires all of the information in 63.10(c)(5)-(13) and 63.8(c)(7)-(8)	No.
63.10(e)(4)	Reporting COMS Data	Must submit COMS data with performance test data	No.
63.10(f)	Waiver for Recordkeeping/Reporting	Procedures for Administrator to waive	Yes.
63.11(b)	Flares	Requirements for flares	No.
63.12	Delegation	State authority to enforce standards	Yes.
63.13	Addresses	Addresses where reports, notifications, and requests are sent	Yes.
63.14	Incorporations by Reference	Test methods incorporated by reference	Yes.
63.15	Availability of Information	Public and confidential information	Yes.

b. 40 CFR 63 Subpart A and Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Pursuant to 40 CFR 63 Subpart A and Table 1 to Subpart ZZZZ of Part 63, the Permittee shall comply with the following applicable General Provisions as indicated:

General provisions citation	Subject of citation	Applies to subpart	Explanation
63.1	General applicability of the General Provisions	Yes.	
63.2	Definitions	Yes	Additional terms defined in 63.6675.
63.3	Units and abbreviations	Yes.	
63.4	Prohibited activities and circumvention	Yes.	
63.5	Construction and reconstruction	Yes.	
63.6(a)	Applicability	Yes.	
63.6(b)(1)-(4)	Compliance dates for new and reconstructed sources	Yes.	
63.6(b)(5)	Notification	Yes.	
63.6(b)(6)	[Reserved]		
63.6(b)(7)	Compliance dates for new and reconstructed area sources that become major sources	Yes.	
63.6(c)(1)-(2)	Compliance dates for existing sources	Yes.	
63.6(c)(3)-(4)	[Reserved]		
63.6(c)(5)	Compliance dates for existing area sources that become major sources	Yes.	
63.6(d)	[Reserved]		
63.6(e)	Operation and maintenance	No.	
63.6(f)(1)	Applicability of standards	No.	
63.6(f)(2)	Methods for determining compliance	Yes.	
63.6(f)(3)	Finding of compliance	Yes.	
63.6(g)(1)-(3)	Use of alternate standard	Yes.	
63.6(h)	Opacity and visible emission standards	No	Subpart ZZZZ does not contain opacity or visible emission standards.
63.6(i)	Compliance extension procedures and criteria	Yes.	

63.6(j)	Presidential compliance exemption	Yes.	
63.7(a)(1)-(2)	Performance test dates	Yes	Subpart ZZZZ contains performance test dates at 63.6610, 63.6611, and 63.6612.
63.7(a)(3)	CAA section 114 authority	Yes.	
63.7(b)(1)	Notification of performance test	Yes	Except that 63.7(b)(1) only applies as specified in 63.6645.
63.7(b)(2)	Notification of rescheduling	Yes	Except that 63.7(b)(2) only applies as specified in 63.6645.
63.7(c)	Quality assurance/test plan	Yes	Except that 63.7(c) only applies as specified in 63.6645.
63.7(d)	Testing facilities	Yes.	
63.7(e)(1)	Conditions for conducting performance tests	No.	Subpart ZZZZ specifies conditions for conducting performance tests at 63.6620.
63.7(e)(2)	Conduct of performance tests and reduction of data	Yes	Subpart ZZZZ specifies test methods at 63.6620.
63.7(e)(3)	Test run duration	Yes.	
63.7(e)(4)	Administrator may require other testing under section 114 of the CAA	Yes.	
63.7(f)	Alternative test method provisions	Yes.	
63.7(g)	Performance test data analysis, recordkeeping, and reporting	Yes.	
63.7(h)	Waiver of tests	Yes.	
63.8(a)(1)	Applicability of monitoring requirements	Yes	Subpart ZZZZ contains specific requirements for monitoring at 63.6625.
63.8(a)(2)	Performance specifications	Yes.	

63.8(a)(3)	[Reserved]		
63.8(a)(4)	Monitoring for control devices	No.	
63.8(b)(1)	Monitoring	Yes.	
63.8(b)(2)-(3)	Multiple effluents and multiple monitoring systems	Yes.	
63.8(c)(1)	Monitoring system operation and maintenance	Yes.	
63.8(c)(1)(i)	Routine and predictable SSM	No	
63.8(c)(1)(ii)	SSM not in Startup Shutdown Malfunction Plan	Yes.	
63.8(c)(1)(iii)	Compliance with operation and maintenance requirements	No	
63.8(c)(2)-(3)	Monitoring system installation	Yes.	
63.8(c)(4)	Continuous monitoring system (CMS) requirements	Yes	Except that Subpart ZZZZ does not require Continuous Opacity Monitoring System (COMS).
63.8(c)(5)	COMS minimum procedures	No	Subpart ZZZZ does not require COMS.
63.8(c)(6)-(8)	CMS requirements	Yes	Except that Subpart ZZZZ does not require COMS.
63.8(d)	CMS quality control	Yes.	
63.8(e)	CMS performance evaluation	Yes Except that 63.8(e) only applies as specified in 63.6645.	Except for 63.8(e)(5)(ii), which applies to COMS.
63.8(f)(1)-(5)	Alternative monitoring method	Yes	Except that 63.8(f)(4) only applies as specified in 63.6645.
63.8(f)(6)	Alternative to relative accuracy test	Yes	Except that 63.8(f)(6) only applies as specified in 63.6645.

63.8(g)	Data reduction	Yes	Except that provisions for COMS are not applicable. Averaging periods for demonstrating compliance are specified at 63.6635 and 63.6640.
63.9(a)	Applicability and State delegation of notification requirements	Yes.	
63.9(b)(1)-(5)	Initial notifications	Yes, except that 63.9(b) only applies as specified in 63.6645.	Except that 63.9(b)(3) is reserved.
63.9(c)	Request for compliance extension	Yes	Except that 63.9(c) only applies as specified in 63.6645.
63.9(d)	Notification of special compliance requirements for new sources	Yes	Except that 63.9(d) only applies as specified in 63.6645.
63.9(e)	Notification of performance test	Yes	Except that 63.9(e) only applies as specified in 63.6645.
63.9(f)	Notification of visible emission (VE)/opacity test	No	Subpart ZZZZ does not contain opacity or VE standards.
63.9(g)(1)	Notification of performance evaluation	Yes	Except that 63.9(g) only applies as specified in 63.6645.
63.9(g)(2)	Notification of use of COMS data	No	Subpart ZZZZ does not contain opacity or VE standards.
63.9(g)(3)	Notification that criterion for alternative to RATA is exceeded	Yes, except that 63.9(g) only applies as specified in 63.6645.	If alternative is in use.

63.9(h)(1)-(6)	Notification of compliance status	Yes	Except that notifications for sources using a CEMS are due 30 days after completion of performance evaluations. 63.9(h)(4) is reserved. Except that 63.9(h) only applies as specified in 63.6645.
63.9(i)	Adjustment of submittal deadlines	Yes.	
63.9(j)	Change in previous information	Yes.	
63.10(a)	Administrative provisions for recordkeeping/reporting	Yes.	
63.10(b)(1)	Record retention	Yes	Except that the most recent 2 years of data do not have to be retained on site.
63.10(b)(2)(i)-(v)	Records related to SSM	No.	
63.10(b)(2)(vi)-(xi)	Records	Yes.	
63.10(b)(2)(xii)	Record when under waiver	Yes.	
63.10(b)(2)(xiii)	Records when using alternative to RATA	Yes	For CO standard if using RATA alternative.
63.10(b)(2)(xiv)	Records of supporting documentation	Yes.	
63.10(b)(3)	Records of applicability determination	Yes.	
63.10(c)	Additional records for sources using CEMS	Yes	Except that 63.10(c)(2)-(4) and (9) are reserved.
63.10(d)(1)	General reporting requirements	Yes.	
63.10(d)(2)	Report of performance test results	Yes.	

63.10(d)(3)	Reporting opacity or VE observations	No	Subpart ZZZZ does not contain opacity or VE standards.
63.10(d)(4)	Progress reports	Yes.	
63.10(d)(5)	Startup, shutdown, and malfunction reports	No.	
63.10(e)(1) and (2)(i)	Additional CMS Reports	Yes.	
63.10(e)(2)(ii)	COMS-related report	No	Subpart ZZZZ does not require COMS.
63.10(e)(3)	Excess emission and parameter exceedances reports	Yes.	Except that 63.10(e)(3)(i)(C) is reserved.
63.10(e)(4)	Reporting COMS data	No	Subpart ZZZZ does not require COMS.
63.10(f)	Waiver for recordkeeping/reporting	Yes.	
63.11	Flares	No.	
63.12	State authority and delegations	Yes.	
63.13	Addresses	Yes.	
63.14	Incorporation by reference	Yes.	
63.15	Availability of information	Yes.	

5. Compliance Assurance Monitoring (CAM) Requirements

a. CAM Provisions

i. Proper Maintenance

Pursuant to 40 CFR 64.7(b), at all times, the source shall maintain the monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.

Continued Operation

Pursuant to 40 CFR 64.7(c), except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the source shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit (PSEU) is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of 40 CFR Part 64, including data averages and calculations, or fulfilling a minimum data availability requirement, if applicable. The source shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Response to Excursions or Exceedances

A. Pursuant to 40 CFR 64.7(d)(1), upon detecting an excursion or exceedance, the source shall restore operation of the PSEU (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action (such as through response by a computerized distribution control system), or any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.

B. Pursuant to 40 CFR 64.7(d)(2), determination of whether the source has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include but is not limited to, monitoring results, review of operation and maintenance procedures and records, and inspection of the control device.

b. Monitoring - Monitoring

Pursuant to 40 CFR 64.7(a), the source shall comply with the monitoring requirements of the CAM Plans as described in 7.5(e) below, pursuant to 40 CFR Part 64 as submitted in the source's CAM plan application.

c. Monitoring - Recordkeeping

Pursuant to 40 CFR 64.9(b)(1), the source shall maintain records of the monitoring data, monitor performance data, corrective actions taken, monitoring equipment maintenance, and other supporting information related to the monitoring requirements established for CAM.

d. Monitoring - Reporting

Pursuant to Sections 39.5(7)(b) and (f) of the Act, the source shall submit the following reporting requirements:

i. Semiannual Reporting

As part of the required Semiannual Monitoring Reports, the source shall submit a CAM report including the following at a minimum:

A. Summary information on the number, duration, and cause of excursions or exceedances, and the corrective actions taken pursuant to 40 CFR 64.6(c)(3) and 64.9(a)(2)(i).

B. Summary information on the number, duration, and cause for monitoring equipment downtime incidents, other than downtime associated with calibration checks pursuant to 40 CFR 64.6(c)(3) and 64.9(a)(2)(ii).

e. CAM Plan

The following tables contain the CAM Plan in this CAAPP permit:

Table	Emission Unit Section	PSEU Designation	Pollutant
7.5.1	4.1	Feed Handling System and Pelletizer; Crude Zinc Oxide Bin; Iron Rich Material Kiln Discharge Area; Curing and Blending Building	PM

Table 7.5.1 - CAM Plan

Emission Unit Section:	4.1
PSEU Designation:	Feed Handling System and Pelletizer; Crude Zinc Oxide Bin; Iron Rich Material Kiln Discharge Area; Curing and Blending Building
Pollutant:	PM

Indicators:	#1) Visible Emissions (Opacity)	#2) Work/Maintenance Practices
General Criteria		
The Monitoring Approach Used to Measure the Indicators:	Daily Method 22 observations will be made of baghouse exhaust stacks to assess for visible emissions. If any visible emissions are observed, a Method 9 opacity observation will occur within 1 hour to determine if a deviation of an applicable regulatory opacity standard is occurring. If a Method 9 observation indicates a deviation from an applicable regulatory opacity standard, corrective measures will be taken to mitigate the deviation from opacity standards.	Inspections on baghouses (per established procedures) are completed and documented on forms on a weekly basis to note performance information and inspect the equipment. If an inspection uncovers a need for maintenance, such maintenance activity will be initiated within 4 hours of completing the inspection.
The Indicator Range Which Provides a Reasonable Assurance of Compliance:	A visible emissions excursion is an observation that identifies visible emissions. Visible emissions were selected as the performance indicator because it is indicative of operation of the baghouse in a manner necessary to comply with the particulate emission standard. When the baghouse is operating properly, there will be no visible emissions from the exhaust. Any increase in visible emissions may indicate reduced performance of a particulate control device; therefore, the presence of visible emissions is used as a performance indicator. Method 9 observations were chosen as a response step to assess if a deviation from an applicable regulatory opacity standard is occurring, and to trigger additional corrective actions to mitigate visible emissions.	A maintenance excursion is defined as a failure to perform the inspection on a weekly basis.
Quality Improvement Plan (QIP) Threshold Levels:	5% of Method 9 opacity observations demonstrating visible emissions in excess of an applicable regulatory opacity standard over a 6-month period, on a per-unit basis.	5% of inspections missed over a 6-month period, on a per-unit basis.
Performance Criteria		
The Specifications for Obtaining Representative Data:	Visual observations of the stack discharge are made from a location with an unobstructed view consistent with Method 22 procedures. If necessary, Method 9 observations will follow 40 CFR Part 60 Subpart A procedures.	Not applicable

Verification Procedures to Confirm the Operational Status of the Monitoring:	Weekly supervisory review of all daily observations.	Monthly supervisory review of all inspections.
Quality Assurance and Quality Control (QA/QC) Practices that Ensure the Validity of the Data:	Employees tasked with visible emissions observations are trained in Method 22 procedures. Annual refresher training occurs. Method 9 certified observers are present at the facility, and certifications are maintained per semi-annual recertification.	Employees tasked with inspections are trained in applicable job requirements and functions for completing inspection procedures. Annual refresher training occurs.
The Monitoring Frequency:	Observations are performed daily when the unit is operating.	Inspections occur weekly.
The Data Collection Procedures That Will Be Used:	Visible emission readings are taken on a daily basis in accordance with Method 22 procedures. If necessary, Method 9 observations will follow 40 CFR Part 60 Subpart A procedures.	Maintenance logs are available demonstrating that inspections are being made and that required maintenance is being performed.
The Data Averaging Period For Determining Whether an Excursion or Exceedance Has Occurred:	Readings are taken in accordance with the time periods required by Method 22 (minimum 6 minute duration). If necessary, Method 9 observations will follow 40 CFR part 60 Subpart A procedures (determined as an average of 24 consecutive observations recorded at 15-second intervals).	Not applicable

6. Emissions Reduction Marketing Systems (ERMS)

a. Definitions

The ERMS is a "cap and trade" market system for major stationary sources located in the Chicago ozone nonattainment area. It is designed to reduce VOM emissions from stationary sources to contribute to reasonable further progress toward attainment, as required by Section 182(c) of the CAA.

The ERMS addresses VOM emissions during a seasonal allotment period from May 1 through September 30. Participating sources must hold "allotment trading units" (ATUs) for their actual seasonal VOM emissions. Each year participating sources are issued ATUs based on allotments set in the sources' CAAPP permits. These allotments are established from historical VOM emissions or "baseline emissions" lowered to provide the emissions reductions from stationary sources required for reasonable further progress.

By December 31 of each year, the end of the reconciliation period following the seasonal allotment period, each source should have sufficient ATUs in its transaction account to cover its actual VOM emissions during the preceding season. A transaction account's balance as of December 31 will include any valid ATU transfer agreements entered into as of December 31 of the given year, provided such agreements are promptly submitted to the Illinois EPA for entry into the transaction account database.

The Illinois EPA will then retire ATUs in sources' transaction accounts in amounts equivalent to their seasonal emissions. When a source does not appear to have sufficient ATUs in its transaction account, the Illinois EPA will issue a notice to the source to begin the process for Emissions Excursion Compensation.

In addition to receiving ATUs pursuant to their allotments, participating sources may also obtain ATUs from the market, including ATUs bought from other participating sources and general participants in the ERMS that hold ATUs (35 IAC 205.630) and ATUs issued by the Illinois EPA as a consequence of VOM emissions reductions from an Emissions Reduction Generator or an Intersector Transaction (35 IAC 205.500 and 35 IAC 205.510).

During the reconciliation period, sources may also buy ATUs from a secondary reserve of ATUs managed by the Illinois EPA, the "Alternative Compliance Market Account" (ACMA) (35 IAC 205.710). Sources may also transfer or sell the ATUs that they hold to other sources or participants (35 IAC 205.630).

b. Applicability

This permit is issued based on this source not being a participating source in the Emissions Reduction Market System (ERMS), 35 IAC Part 205, pursuant to 35 IAC 205.200. This is based on the source's actual VOM emissions during the seasonal allotment period from May 1 through September 30 of each year being less than 10 tons and the source's baseline emissions also being less than 10 tons.

c. Recordkeeping and Reporting

i. The Permittee shall maintain the following records to allow the confirmation of actual VOM emissions during the seasonal allotment period:

ii. Records of operating data and other information for each individual emission unit or group of related emission units at the source, as specified in Sections 5 and 7 of this permit, as appropriate, to determine actual VOM emissions during the seasonal allotment period;

iii. Records of the VOM emissions, in tons, during the seasonal allotment period, with supporting calculations, for each individual emission unit or group of related emission units at the source, determined in accordance with the procedures specified in Sections 5 and 7 of this permit; and

iv. Total VOM emissions from the source, in tons, during each seasonal allotment period, which shall be compiled by November 30 of each year.

v. In the event that the source's VOM emissions during the seasonal allotment period equal or exceed 10 tons, the source shall become a participating source in the ERMS and beginning with the following seasonal allotment period, shall comply with 35 IAC Part 205, by holding allotment trading units (ATUs) for its VOM emissions during each seasonal allotment period, unless the source obtains exemption from the ERMS by operating with seasonal VOM emissions of no more than 15 tons pursuant to a limitation applied for and established in its CAAPP permit.

Section 8 - State Only Requirements

1. Permitted Emissions for Fees

The annual emissions from the source for purposes of "Duties to Pay Fees" of Condition 2.3(e), not considering insignificant activities as addressed by Section 6, shall not exceed the following limitations. The overall source emissions shall be determined by adding emissions from all emission units. Compliance with these limits shall be determined on a calendar year basis. This Condition is set for the purpose of establishing fees and is not federally enforceable. See Section 39.5(18) of the Act.

Pollutant		Tons/Year
Volatile Organic Material	(VOM)	20.4
Sulfur Dioxide	(SO_2)	10.5
Particulate Matter	(PM)	62.6
Nitrogen Oxides	(NO_x)	87.0
HAP, not included in VOM or PM	(HAP)	---
	Total ---	180.50

Attachment 1 - List of Emission Units at This Source

Section	Emission Units	Description
4.1	Process Emission Source	Carbon Material Bin - Storage container for carbon material. Curing and Blending Building - Receiving, curing and blending of material in this building. Feed Handling System - Transferring of feed material. Crude Zinc Oxide Bin - Storage/loading of Crude Zinc Oxide Bin for shipping. Iron-Rich Material Transfer Area - Conveying Iron-Rich Material to storage. Iron-Rich Material Kilns Discharge Area - Discharge of Iron-Rich Material from Waelz Kilns.
4.2	Waelz Kiln System	Blended metal-bearing and carbon-bearing materials are fed to the Waelz Kilns (2 units) where, fueled by the combustion of natural gas or oil, the materials react in a reduction/oxidation sequence. The oxidized reduction products are drawn through fabric filter product collectors where crude zinc oxide is extracted from the exit gas stream.
4.3	Natural Gas Engine	Natural gas engine used to turn induction fan for process draft.
4.4	Fugitive Emissions	Moving vehicles create particulate matter (road dust) emissions from facility roadways; particulate matter is also created from a carbon storage pile as well as carbon handling by a conveyor from hopper to the carbon storage bin.
4.5	Gasoline Storage Tank	A 250 gallon tank with open vent and 3500 gallons per year throughput.
4.6	Iron Rich Material Processing	A screener, crusher, storage piles and associated roadways
4.7	Engine	One diesel-fired engine

Attachment 2 - Acronyms and Abbreviations

acfm	Actual cubic feet per minute
ACMA	Alternative Compliance Market Account
Act	Illinois Environmental Protection Act [415 ILCS 5/1 et seq.]
AP-42	Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Other Sources (and Supplements A through F), USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711
ATU	Allotment trading unit
BACT	Best Available Control Technology
BAT	Best Available Technology
BTU	British Thermal Units
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAAPP	Clean Air Act Permit Program
CAIR	Clean Air Interstate Rule
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CISWI	Commercial Industrial Solid Waste Incinerator
CO	Carbon monoxide
CO_2	Carbon dioxide
COMS	Continuous Opacity Monitoring System
CPMS	Continuous Parameter Monitoring System
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
EAF	Electric arc furnace
ERMS	Emissions Reduction Market System
°F	Degrees Fahrenheit
GHG	Green house gas
gr	Grains
HAP	Hazardous air pollutant
Hg	Mercury
HMIWI	Hospital medical infectious waste incinerator
HP	Horsepower
hr	Hour
H_2S	Hydrogen sulfide
I.D. No.	Identification number of source, assigned by IEPA
IAC	Illinois Administrative Code
ILCS	Illinois Compiled Statutes
IEPA	Illinois Environmental Protection Agency
KW	Kilowatts
LAER	Lowest Achievable Emission Rate
lb	Pound

m	Meter
MACT	Maximum Achievable Control Technology
mm	Million
mon	Month
MSDS	Material Safety Data Sheet
MSSCAM	Major Stationary Sources Construction and Modification (Non-attainment New Source Review)
MW	Megawatts
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen oxides
NSPS	New Source Performance Standards
NSR	New Source Review
PM	Particulate matter
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns as measured by applicable test or monitoring methods
ppm	Parts per million
ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration
PSEU	Pollutant-Specific Emission Unit
psia	Pounds per square inch absolute
PTE	Potential to emit
RACT	Reasonable Available Control Technology
RMP	Risk Management Plan
scf	Standard cubic feet
SCR	Selective catalytic reduction
SIP	State Implementation Plan
SO_2	Sulfur dioxide
T1	Title I - identifies Title I conditions that have been carried over from an existing permit
T1N	Title I New - identifies Title I conditions that are being established in this permit
T1R	Title I Revised - identifies Title I conditions that have been carried over from an existing permit and subsequently revised in this permit
USEPA	United States Environmental Protection Agency
VOM	Volatile organic material

Attachment 3 - Contact and Reporting Addresses

IEPA Compliance Section	Illinois EPA, Bureau of Air Compliance & Enforcement Section (MC 40) 1021 North Grand Avenue East P.O. Box 19276 Springfield, Illinois 62794-9276 Phone No.: 217/782-2113
IEPA Stack Test Specialist	Illinois EPA, Bureau of Air Compliance Section Source Monitoring - Third Floor 9511 Harrison Street Des Plaines, Illinois 60016 Phone No.: 847/294-4000
IEPA Air Quality Planning Section	Illinois EPA, Bureau of Air Air Quality Planning Section (MC 39) 1021 North Grand Avenue East P.O. Box 19276 Springfield, Illinois 62794-9276 Phone No.: 217/782-2113
IEPA Air Regional Field Operations Regional Office #1	Illinois EPA, Bureau of Air Regional Office #1 9511 Harrison Street Des Plaines, Illinois 60016 Phone No.: 847/294-4000
IEPA Permit Section	Illinois EPA, Bureau of Air Permit Section (MC 11) 1021 North Grand Avenue East P.O. Box 19506 Springfield, Illinois 62794-9506 Phone No.: 217/782-2113
USEPA Region 5 - Air Branch	USEPA (AR - 17J) Air and Radiation Division 77 West Jackson Boulevard Chicago, Illinois 60604 Phone No.: 312/353-2000

Attachment 4 - Example Certification by a Responsible Official

SIGNATURE BLOCK
NOTE: THIS CERTIFICATION MUST BE SIGNED BY A RESPONSIBLE OFFICIAL. APPLICATIONS WITHOUT A SIGNED CERTIFICATION WILL BE DEEMED AS INCOMPLETE.
I CERTIFY UNDER PENALTY OF LAW THAT, BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION CONTAINED IN THIS APPLICATION ARE TRUE, ACCURATE AND COMPLETE. ANY PERSON WHO KNOWINGLY MAKES A FALSE, FICTITIOUS, OR FRAUDULENT MATERIAL STATEMENT, ORALLY OR IN WRITING, TO THE ILLINOIS EPA COMMITS A CLASS 4 FELONY. A SECOND OR SUBSEQUENT OFFENSE AFTER CONVICTION IS A CLASS 3 FELONY. (415 ILCS 5/44(H)) AUTHORIZED SIGNATURE: BY: _____ _____ AUTHORIZED SIGNATURE — TITLE OF SIGNATORY _____ _____/_____/_____ TYPED OR PRINTED NAME OF SIGNATORY — DATE

EXHIBIT D

DEPARTMENT OF PUBLIC HEALTH
POLLUTION PREVENTION UNIT
333 SOUTH STATE STREET, ROOM 200
CHICAGO, ILLINOIS 60604

CITY OF CHICAGO

DATE OF INSPECTION 8/13/13

FUGITIVE EMISSION INSPECTION CHECKLIST

Part 1: FACILITY INFORMATION

NAME: American Zinc Recycling Corp. PLANT NUMBER: ENVAIR 112615

STREET ADDRESS 2701 E. 114th St. 60617 Current Certificate of Operation? ☒ Yes ☐ No

NAME OF CONTACT: Brad Stutek PHONE: 773-938-9260

CONTACT EMAIL ADDRESS:

Part 2: OUTDOOR STORAGE INFORMATION

TYPE(S) OF MATERIAL: Coke, Iron Rich Material - (IRM)

VOLUME: Coke - 392.00, IRM - 44,989.00 Cubic Yards HEIGHT: Coke - 12', IRM - 15' Feet

Are materials stored at least 50ft from the river? ☒ Yes ☐ No 30 ft. height marker? ☒ Yes ☐ No

Any changes in type of material? ☐ Yes ☒ No Date change occurred: N/A

Is facility subject to any variance? ☒ Yes ☐ No
If YES, list section(s): Dust monitors -

Part 3: EMISSION POINTS

	YES	NO	N/A
Property Line			
1. Are there 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?		X	

If YES, provide more information (including the source of the emissions):

Storage Piles			
a) Is there any dust suppression system?	X		

If YES, describe type of dust suppression system used:
Water each day, as needed.

b) How is runoff managed?
-> Collected, put into onsite pond RoxRecycling.

	YES	NO	N/A
c) Are all storage piles protected by a cover or sprayed with a surfactant solution or water on a regular basis or as needed, in accordance with the Fugitive Dust Plan?	X		
If NO, Identify the storage pile and provide more information, if visible emissions are observed or indicated: use of water as needed			
2. Are all loading/unloading operations of the storage pile utilizing spray systems, telescopic chutes, or other equivalent methods in accordance with the Fugitive Dust Plan?	X		
If NO, identify the operation and provide more information, if visible emissions are observed or indicated:			
Traffic Areas			
3. Are all normal traffic pattern roads and parking facilities paved and cleaned regularly in accordance with the Fugitive Dust Plan?	X		
Identify the area and provide more information if visible emissions are observed or indicated: Water Truck applies water to ground, sweeper used.			
Crushing, Screening, Conveying, Bagging, and Loading/unloading Operations			
4. Are all material processing operations, (such as crushers, screening, bagging operations, etc.) being controlled by a dust collection system in accordance with the Fugitive Dust Plan?	X		
If NO, identify the operation and provide more information if visible emissions are observed or indicated: -> Enclosed conveyor or Water used.			
5. Are all transfer points, truck loading/unloading, railcar loading/unloading, Barge loading/unloading being controlled according to the Fugitive Dust Plan?	X		
If NO, identify the operation and provide more information, if visible emissions are observed or indicated: - Pre-wet material, water used as needed. - Barge, hopper chute closed.			
Part 4: GOOD HOUSEKEEPING PRACTICES			
1. Are materials loaded into vehicles in a way that prevents leaking/spilling of material?	X		
2. Any track-out observed?		X	
3. If a vehicle leaks/spills onto a road, is the leak/spill being cleaned within an hour?	X		
4. If a vehicle leaks/spills into a waterway, is it being cleaned immediately?	X		
5. Is a street sweeper available to clean paved roads of spilled or tracked out material inside or within a quarter mile of the facility?	X		
6. Is sweeper equipped with a water spray and a vacuum system to prevent dust during street sweeping?	X		
7. Are all non-storage areas within the facility cleared of spilled or misplaced material by the end of each work shift?	X		
8. Are facility roads paved and maintained?	X		
9. Any wheel wash, rumble strips, or other means to clean outgoing trucks?	X		
10. Is runoff being managed?	X		

Part 5: MONITORING AND RECORD KEEPING			
	YES	NO	N/A
1. Is the facility maintaining the following records?			
a) Daily weather conditions, including wind speed and direction:	X		
b) Daily cleaning and street sweeping log:	X		
c) Log of fugitive dust monitoring, including any incidents where the RAL is exceeded and any response activities:	X		
d) Record of quarterly visual and opacity testing:	X		
e) Schedule and log of routine inspection, maintenance, calibration and testing activities:	X		
f) Log of application of water or chemical stabilizers:	X		
g) Log of instances when activities were suspended due to high winds:	X		
2. Records maintained for at least three years?	X		
3. Are records in compliance with Fugitive Dust Plan submitted to CDPH?	X		

Part 6: INSPECTION SUMMARY

Comments/Issues for follow-up:

- Noted IRM Screening are Conveyors
- Water used for Control, Chutes Exposed to Air.
- Kiln II burner emission observed. ~ 10-15% opacity.
  * Management Shut down Kiln. adjusted to Abate.

BRAD D

OWNER/OPERATOR

K. Scott

INSPECTOR

EXHIBIT E

CleanAir

CleanAir Engineering
500 W. Wood Street
Palatine, IL 60067-4975
800-627-0033
www.cleanair.com

REPORT ON A PARTICULATE EMISSIONS TEST PROGRAM

Baghouses 11B and 12 Outlets

American Zinc Recycling Corporation
4955 Steubenville Pike, Suite 405
Pittsburgh, PA 15205
Client Reference No. 319090-000 OS

CleanAir Project No. 13383
STAC Certificate No. 2007.002.0113.1217
Revision 0, Final Report
January 4, 2018

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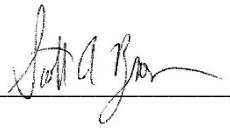
COMMITMENT TO QUALITY

To the best of our knowledge, the data presented in this report are accurate, complete, error free and representative of the actual emissions during the test program. Clean Air Engineering operates in conformance with the requirements of ASTM D7036-04 Standard Practice for Competence of Air Emission Testing Bodies.

Report Submittal:



January 4, 2018

Scott Brown, QSTI
Senior Project Manager / Quality Director
sbrown@cleanair.com
(800) 627-0033 ext. 4544

Date

I hereby certify that the information contained within the final test report has been reviewed and, to the best of my ability, verified as accurate.

Independent Report and Appendix Review:

January 4, 2018

Bill Ansell, QSTI
Midwest Engineering Group Technical Leader
bansell@cleanair.com
(800) 627-0033 ext. 4545

Date

REPORT REVISION HISTORY

Version	Revision	Date	Pages	Comments
Draft	D0a	12/11/17	All	Draft version of original document.
Final	0	01/04/18	All	Final version of original document.

PROJECT PERSONNEL

Name	Affiliation	Project Responsibility
Chris Logelin	American Zinc Recycling Corporation	Client Contact
Shannon Andrews	American Zinc Recycling Corporation	Client Contact
Bill Franek	Illinois Environmental Protection Agency	Representative
Scott Brown	CleanAir	Project Manager / Report Submittal
Bill Ansell	CleanAir	Project Field Leader / Report Review
Justin Lowe	CleanAir	Field Scientist

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ACRONYMS & ABBREVIATIONS

AAS (atomic absorption spectrometry)
acfm (actual cubic feet per minute)
ACI (activated carbon injection)
ADL (above detection limit)
AIG (ammonia injection grid)
APC (air pollution control)
AQCS (air quality control system(s))
ASME (American Society of Mechanical Engineers)
ASTM (American Society for Testing and Materials)
BDL (below detection limit)
Btu (British thermal units)
CAM (compliance assurance monitoring)
CARB (California Air Resources Board)
CCM (Controlled Condensation Method)
CE (capture efficiency)
°C (degrees Celsius)
CEMS (continuous emissions monitoring system(s))
CFB (circulating fluidized bed)
CFR (Code of Federal Regulations)
cm (centimeter(s))
COMS (continuous opacity monitoring system(s))
CT (combustion turbine)
CTI (Cooling Technology Institute)
CTM (Conditional Test Method)
CVAAS (cold vapor atomic absorption spectroscopy)
CVAFS (cold vapor atomic fluorescence spectrometry)
DI H_2O (de-ionized water)
%dv (percent, dry volume)
DLL (detection level limited)
DE (destruction efficiency)
DCI (dry carbon injection)
DGM (dry gas meter)
dscf (dry standard cubic feet)
dscfm (dry standard cubic feet per minute)
dscm (dry standard cubic meter)
ESP (electrostatic precipitator)
FAMS (flue gas adsorbent mercury speciation)
°F (degrees Fahrenheit)
FB (field blank)
FCC (fluidized catalytic cracking)
FCCU (fluidized catalytic cracking unit)
FEGT (furnace exit gas temperatures)
FF (fabric filter)
FGD (flue gas desulfurization)
FIA (flame ionization analyzer)
FID (flame ionization detector)
FPD (flame photometric detection)
FRB (field reagent blank)
FSTM (flue gas sorbent total mercury)
ft (feet or foot)
ft^2 (square feet)
ft^3 (cubic feet)
ft/sec (feet per second)
FTIR (Fourier Transform Infrared Spectroscopy)
FTRB (field train reagent blank)
g (gram(s))
GC (gas chromatography)
GFAAS (graphite furnace atomic absorption spectroscopy)
GFC (gas filter correlation)
gr/dscf (grains per dry standard cubic feet)
> (greater than)/ ≥ (greater than or equal to)
g/s (grams per second)
H_2O (water)
HAP(s) (hazardous air pollutant(s))
HI (heat input)
hr (hour(s))
HR GC/MS (high-resolution gas chromatography and mass spectrometry)
HRVOC (highly reactive volatile organic compounds)
HSRG(s) (heat recovery steam generator(s))
HVT (high velocity thermocouple)
IC (ion chromatography)
IC/PCR (ion chromatography with post column reactor)
ICP/MS (inductively coupled argon plasma mass spectroscopy)
ID (induced draft)
in. (inch(es))
in. H_2O (inches water)
in. Hg (inches mercury)
IPA (isopropyl alcohol)
ISE (ion-specific electrode)
kg (kilogram(s))
kg/hr (kilogram(s) per hour)
< (less than)/ ≤ (less than or equal to)
L (liter(s))
lb (pound(s))
lb/hr (pound per hour)
lb/MMBtu (pound per million British thermal units)
lb/TBtu (pound per trillion British thermal units)
lb/lb-mole (pound per pound mole)
LR GC/MS (low-resolution gas chromatography and mass spectrometry)
m (meter)
m^3 (cubic meter)
MACT (maximum achievable control technology)
MASS® (Multi-Point Automated Sampling System)
MATS (Mercury and Air Toxics Standards)
MDL (method detection limit)
µg (microgram(s))
min. (minute(s))
mg (milligram(s))
ml (milliliter(s))
MMBtu (million British thermal units)
MW (megawatt(s))
NCASI (National Council for Air and Stream Improvement)
ND (non-detect)
NDIR (non-dispersive infrared)
NDO (natural draft opening)
NESHAP (National Emission Standards for Hazardous Air Pollutants)
ng (nanogram(s))
Nm^3 (Normal cubic meter)
% (percent)
PEMS (predictive emissions monitoring systems)
PFGC (pneumatic focusing gas chromatography)
pg (picogram(s))
PJFF (pulse jet fabric filter)
ppb (parts per billion)
PPE (personal protective equipment)
ppm (parts per million)
ppmdv (parts per million, dry volume)
ppmwv (parts per million, wet volume)
PSD (particle size distribution)
psi (pound(s) per square inch)
PTE (permanent total enclosure)
PTFE (polytetrafluoroethylene)
QA/QC (quality assurance/quality control)
QI (qualified individual)
QSTI (qualified source testing individual)
QSTO (qualified source testing observer)
RA (relative accuracy)
RATA (relative accuracy test audit)
RB (reagent blank)
RE (removal or reduction efficiency)
RM (reference method)
scf (standard cubic feet)
scfm (standard cubic feet per minute)
SCR (selective catalytic reduction)
SDA (spray dryer absorber)
SNCR (selective non-catalytic reduction)
STD (standard)
STMS (sorbent trap monitoring system)
TBtu (trillion British thermal units)
TEOM (Tapered Element Oscillating Microbalance)
TEQ (toxic equivalency quotient)
ton/hr (ton per hour)
ton/yr (ton per year)
TSS (third stage separator)
USEPA or EPA (United States Environmental Protection Agency)
UVA (ultraviolet absorption)
WFGD (wet flue gas desulfurization)
%wv (percent, wet volume)

1. PROJECT OVERVIEW

Test Program Summary

American Zinc Recycling Corporation (AZR) contracted CleanAir Engineering (CleanAir) to complete testing on two baghouses at the Facility, located in Chicago, Illinois. The test program included the following objective:

- Perform particulate testing to demonstrate compliance with the Facility's EPA Clean Air Act Permit Program (CAAPP) No. 96030189, ID No. 031600AFV, Condition 4.1.2.b.ii.D.I.

A summary of the test program results is presented below. Section 2 Results provides a more detailed account of the test conditions and data analysis.

Table 1-1:
Summary of Results

Source Constituent	Sampling Method	Average Emission	Permit Limit[1]
Baghouse 11B Stack			
PM (lb/hr)	EPA M5	0.35	NA
PM (tons/year)	EPA M5	1.5	NA
Baghouse 12 Stack			
PM (lb/hr)	EPA M5	0.10	NA
PM (tons/year)	EPA M5	0.44	NA
Curing and Blending Building (11B and 12 Combined)			
PM (lb/hr)	EPA M5	0.45	1.0
PM (tons/year)	EPA M5	2.0	4.4

[1] Permit limit obtained from Illinois EPA permit No. 96030189, ID number: 031600AFV.

Test Program Details

Parameters

The test program included the following measurements:

- filterable particulate matter (FPM)
- flue gas composition (e.g., O_2, CO_2, H_2O)
- flue gas temperature
- flue gas flow rate

Schedule

Testing was performed on November 15 and 16, 2017. The on-site schedule followed during the test program is outlined in Table 1-2.

Table 1-2:
Test Schedule

Run Number	Location	Method	Analyte	Date	Start Time	End Time
1	Baghouse BC-11B	USEPA Method 5	FPM	11/15/17	15:48	16:58
2	Baghouse BC-11B	USEPA Method 5	FPM	11/16/17	07:20	08:25
3	Baghouse BC-11B	USEPA Method 5	FPM	11/16/17	09:20	10:27
1	Baghouse BC-12	USEPA Method 5	FPM	11/16/17	13:55	15:25
2	Baghouse BC-12	USEPA Method 5	FPM	11/16/17	16:12	17:22
3	Baghouse BC-12	USEPA Method 5	FPM	11/16/17	18:16	19:20

Discussion

AZR recycles electric arc furnace (EAF) dust generated by mini-mill steel producers for the recovery of zinc. The C&B Building is used to blend and condition EAF dust delivered to the Facility by trucks and railcars. The C&B Building is vented by three baghouses: BC-11A, BC-11B, and BC-12. The AZR CAAPP ID No. 031600AFV, Condition 4.1.2.b.ii.D.I requires that "[i]nitial PM emission measurements of one of the Curing and Blending Building Bag Collectors (11A or 11B), and Bag Collector 12, shall be made no later than one year after the effective date of this Condition." FPM emissions from BC-11B and BC-12 were measured during this test program.

Baghouse BC-11B controls FPM emissions from the feed blending area within the C&B Building, the EB-5 belt (located inside the C&B Building blending area), and the railcar unloading process within the C&B Building.[1] Baghouse BC-12 controls PM emissions from the truck unloading process within the building.

Routine operations within the C&B Building consist of material offloading from trucks and railcars and movement of EAF dust inside the building using a crane to deposit material onto the process feed conveyor belt designated as EB-5. The specific type and scope of material-handling activities that occur within the C&B Building on a day-to-day basis are necessarily based on the amount of material received by the Facility from its customers. Because the quantity of EAF dust shipped to the Facility is determined by the availability of material from AZR's customers, the Facility can neither predict nor control the volume of material delivered to the Facility during any particular time period. Accordingly, the nature and extent of operations within the C&B Building must necessarily vary in response to the amount of EAF dust received by the Facility. Nevertheless, in general, trucks are typically offloaded within the C&B Building most weekdays, whereas railcars are offloaded within the building as needed, on a less-frequent and less-consistent basis. However, due to the physical configuration of the C&B Building, it is not possible for trucks and railcars to be unloaded simultaneously.

Consistent with Condition 4.2.b.ii.D of the Facility's CAAPP, the Facility was operated under normal, routine operating conditions during each of the six (6) 60-minute test runs. A record of all process activities occurring in the C&B Building during the test runs is presented in Appendix H of this report.

[1] Note, BC-11B works in tandem with BC-11A to control emissions from the feed blending area and the EB-5 belt.

Project Synopsis

US EPA Methods 1, 2, 3 and 4 of 40 CFR 60, Appendix A, were used to measure the average flue gas composition and volumetric flow rate. These methods determine several characteristics of the flue gas stream: velocity, moisture, flow rate, and the concentrations of oxygen (O_2) and carbon dioxide (CO_2). A cyclonic flow check was performed on each duct prior to starting any compliance testing in order to verify that the test locations meet EPA Method 1, Section 11.4 requirements. The cyclonic flow check results are presented in Appendix E of this report.

US EPA Method 5, "Determination of Particulate Emissions from Stationary Sources," was utilized for the FPM measurements. This method is contained in Appendix A of 40 CFR 60. Method 5 defines particulate matter as any material that is collected before or on the surface of a quartz fiber filter.

Stack gas was isokinetically withdrawn through a temperature-controlled probe and high-efficiency quartz fiber filter. A minimum of 30 dry standard cubic feet of sample gas was collected over each one-hour test run. The mass of particulate collected on the filter and in the sampling probe was then determined gravimetrically by CleanAir's Analytical Laboratory located in Palatine, Illinois.

Modifications to Test Methodology

The connection between the Method 5 particulate filter holder and the water-cooled condenser, which were knock-out jars rather than impingers, was a flexible Teflon line as allowed by the method.

The integrated gas sample (IGS) bags that were analyzed for O_2 and CO_2 content by EPA Method 3, as referenced in Method 5, were vinyl instead of Tedlar. The O_2 and CO_2 concentrations were measured using O_2 and CO_2 analyzers instead of an Orsat analyzer. The analyzers were calibrated on-site using certified calibration gases, as described in EPA Method 3A. A description of the analyzers that were used can be found in Appendix A of this report.

End of Section

2. RESULTS

This section summarizes the test program results. Additional results are available in the report appendices, specifically Appendix C Parameters.

Table 2-1:
Baghouse BC-11B – Particulate

Run No.		1	2	3	Average
Date (2017)		Nov 15	Nov 16	Nov 16	
Start Time (approx.)		15:48	07:20	09:20	
Stop Time (approx.)		16:58	08:25	10:27	
Gas Conditions					
O_2	Oxygen (dry volume %)	20.9	20.9	20.9	**20.9**
CO_2	Carbon dioxide (dry volume %)	0.1	0.0	0.1	**0.1**
T_s	Sample temperature (°F)	53	38	39	**43**
B_w	Actual water vapor in gas (% by volume)	1.4	0.8	0.8	**1.0**
Gas Flow Rate					
Q_a	Volumetric flow rate, actual (acfm)	69,900	70,600	70,000	**70,200**
Q_s	Volumetric flow rate, standard (scfm)	67,600	71,300	70,400	**69,800**
Q_{std}	Volumetric flow rate, dry standard (dscfm)	66,600	70,800	69,800	**69,100**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	43.03	46.44	45.60	**45.02**
%I	Isokinetic sampling (%)	98.4	99.9	99.4	**99.2**
Laboratory Data					
m_{filter}	Matter collected on filter(s) (g)	0.00000	0.00000	0.00000	
m_s	Matter collected in solvent rinse(s) (g)	0.00312	0.00108	0.00093	
m_n	Total FPM (g)	0.00312	0.00108	0.00093	
n_{MDL}	Number of non-detectable fractions	1 out of 2	1 out of 2	1 out of 2	
DLC	Detection level classification	DLL	DLL	DLL	
FPM Results					
C_{sd}	Particulate Concentration (lb/dscf)	1.6E-07	5.1E-08	4.5E-08	**8.5E-08**
C_{sd}	Particulate Concentration (gr/dscf)	0.0011	0.00036	0.00031	**0.00060**
C_{sd}	Particulate Concentration (mg/dscm)	2.6	0.82	0.72	**1.4**
$E_{lb/hr}$	Particulate Rate (lb/hr)	0.64	0.22	0.19	**0.35**
$E_{T/yr}$	Particulate Rate (Ton/yr)	2.8	0.95	0.83	**1.5**

Average includes 3 runs.

Detection level classifications are defined as follows:

ADL = Above Detection Level - all fractions are above detection limit

DLL = Detection Level Limited - some fractions are below detection limit

BDL = Below Detection Limit - all fractions are below detection limit

Table 2-2:
Baghouse BC-12 – Particulate

Run No.		1	2	3	Average
Date (2017)		Nov 16	Nov 16	Nov 16	
Start Time (approx.)		13:55	16:12	18:16	
Stop Time (approx.)		15:25	17:22	19:20	
Gas Conditions					
O_2	Oxygen (dry volume %)	20.9	20.9	20.9	**20.9**
CO_2	Carbon dioxide (dry volume %)	0.0	0.0	0.0	**0.0**
T_s	Sample temperature (°F)	41	41	41	**41**
B_w	Actual water vapor in gas (% by volume)	0.9	0.9	0.9	**0.9**
Gas Flow Rate					
Q_a	Volumetric flow rate, actual (acfm)	18,900	17,900	17,600	**18,100**
Q_s	Volumetric flow rate, standard (scfm)	18,700	17,800	17,400	**17,900**
Q_{std}	Volumetric flow rate, dry standard (dscfm)	18,500	17,600	17,300	**17,800**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	37.18	35.10	32.53	**34.94**
%I	Isokinetic sampling (%)	99.7	98.8	93.4	**97.3**
Laboratory Data					
m_{filter}	Matter collected on filter(s) (g)	0.00000	0.00000	0.00000	
m_s	Matter collected in solvent rinse(s) (g)	0.00157	0.00129	0.00162	
m_n	Total FPM (g)	0.00157	0.00129	0.00162	
n_{MDL}	Number of non-detectable fractions	1 out of 2	1 out of 2	1 out of 2	
DLC	Detection level classification	DLL	DLL	DLL	
FPM Results					
C_{sd}	Particulate Concentration (lb/dscf)	9.3E-08	8.1E-08	1.1E-07	**9.5E-08**
C_{sd}	Particulate Concentration (gr/dscf)	0.00065	0.00057	0.00077	**0.00066**
C_{sd}	Particulate Concentration (mg/dscm)	1.5	1.3	1.8	**1.5**
$E_{lb/hr}$	Particulate Rate (lb/hr)	0.10	0.086	0.11	**0.10**
$E_{T/yr}$	Particulate Rate (Ton/yr)	0.45	0.37	0.50	**0.44**

Average includes 3 runs.

Detection level classifications are defined as follows:

ADL = Above Detection Level - all fractions are above detection limit

DLL = Detection Level Limited - some fractions are below detection limit

BDL = Below Detection Limit - all fractions are below detection limit

End of Section

3. DESCRIPTION OF INSTALLATION

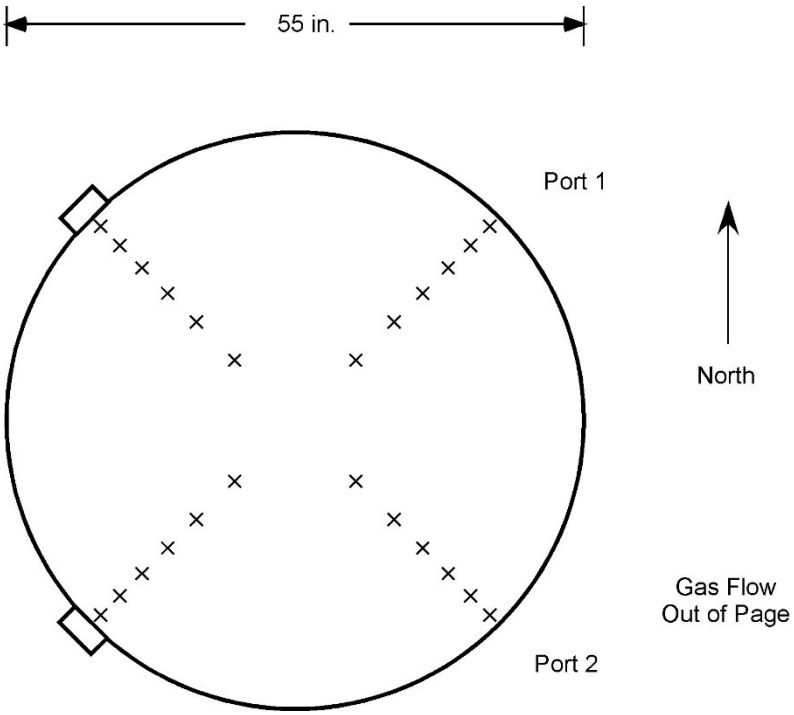
Test Locations

EPA Method 1 specifications determined the sample point locations. Table 3-1 presents the sampling information for the test locations. The figures shown on pages 7 and 8 represent the layout of the test location.

Table 3-1:
Sampling Information

Source Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
BC-11B Outlet							
PM	EPA M5	1-3	2	12	2.5	60	3-1
BC-12 Outlet							
PM	EPA M5	1-3	2	12	2.5	60	3-2

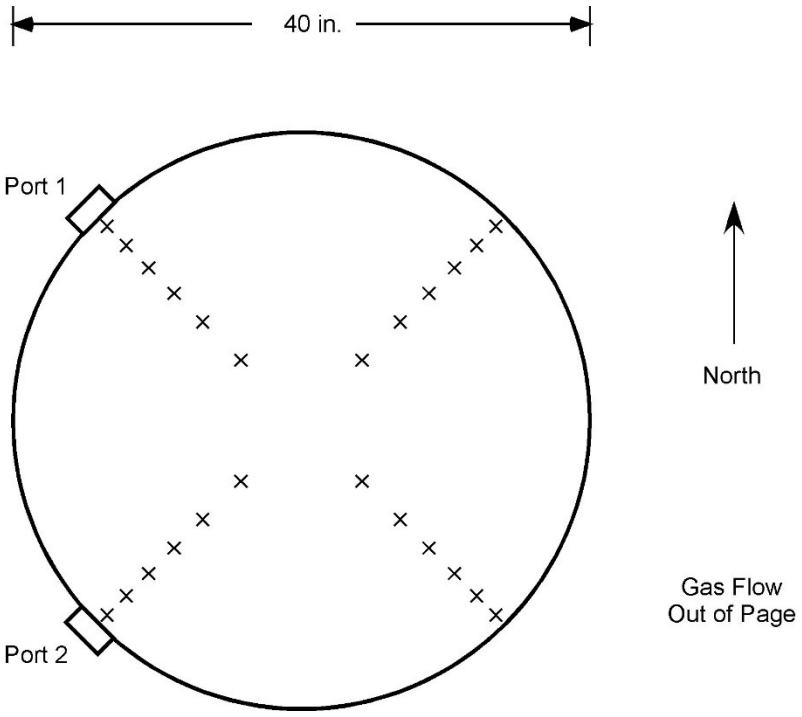
Figure 3-1:
Baghouse 11B Sample Point Layout (EPA Method 1)



SamplingPoint	% of Stack Diameter	Port to Point Distance (inches)
1	97.9	39.0
2	93.3	37.3
3	88.2	35.3
4	82.3	32.9
5	75.0	30.0
6	64.4	25.8
7	35.6	14.2
8	25.0	10.0
9	17.7	7.1
10	11.8	4.7
11	6.7	2.7
12	2.1	1.0

Duct diameters upstream from flow disturbance (A): 0.7 Limit: 0.5
Duct diameters downstream from flow disturbance (B): 2.7 Limit: 2.0

Figure 3-2:
Baghouse 12 Sample Point Layout (EPA Method 1)



SamplingPoint	% of Stack Diameter	Port to Point Distance (inches)
1	97.9	50.9
2	93.3	48.5
3	88.2	45.9
4	82.3	42.8
5	75.0	39.0
6	64.4	33.5
7	35.6	18.5
8	25.0	13.0
9	17.7	9.2
10	11.8	6.1
11	6.7	3.5
12	2.1	1.1

Duct diameters upstream from flow disturbance (A): 0.5 Limit: 0.5
Duct diameters downstream from flow disturbance (B): 3.0 Limit: 2.0

End of Section

4. METHODOLOGY

Procedures and Regulations

The test program sampling measurements followed procedures and regulations outlined by the United States Environmental Protection Agency (USEPA) and the Illinois Environmental Protection Agency (IEPA). These methods appear in detail in Title 40 of the CFR and at https://www.epa.gov/emc. Appendix A includes diagrams of the sampling apparatus, as well as specifications for sampling, recovery and analytical procedures.

CleanAir follows specific QA/QC procedures outlined in the individual methods and in USEPA "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III Stationary Source-Specific Methods," EPA/600/R-94/038C. Appendix D contains additional QA/QC measures, as outlined in CleanAir's internal Quality Manual.

Title 40 CFR Part 60, Appendix A

Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 3A	"Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 5	"Determination of Particulate Matter Emissions from Stationary Sources"

End of Section

5. APPENDIX

Appendix A: Test Method Specifications

Appendix B: Sample Calculations

Appendix C: Parameters

Appendix D: QA/QC Data

Appendix E: Field Data

Appendix F: Field Data Printouts

Appendix G: Laboratory Data

Appendix H: Facility Operating Data

Appendix I: CleanAir Resumes and Certifications

EXHIBIT F

Pittsburgh Mineral & Environmental Technology, Inc.

October 24, 2018

Ms. Shannon Andrews
American Zinc Recycling-Calumet Plant
2701 East 114th Street
Chicago, IL. 60617

Dear Ms. Andrews:

This report summarizes the results of semi-quantitative mineral phase analysis of your IRM sample. The sample was received at PMET's laboratory on October 16, 2018. A chain of custody document accompanied the sample. A telephonic request for analysis was received from Mr. Rege Zagrocki prior to receipt of samples.

The purpose of the analysis was to determine the mode of occurrence of manganese in the sample.

The as-received sample was removed into a tared pan and dried at 70°C overnight in a vented 3M oven to determine moisture (Table 1). Temperature was measured using a calibrated thermometer traceable to a NIST standard thermometer. The as-received sample was then stage crushed to 100% -70 mesh (210µ). The coarse metal fractions were retained on the sieves and weighed.

The -70 mesh split was then split on a rotary splitter to obtain an analytical aliquot (~3g.) The -70m reject was labeled and returned to the original containers. The analytical aliquot was then pulverized to 100% -325 mesh (44 µ) for x-ray diffraction analysis.

The results of XRD phase analysis reflect the composition of the dried demetallized portion of the sample.

The metal flakes were analyzed using SEM-EDX analysis.

700 Fifth Avenue
New Brighton, PA 15066
(724) 843-5000
FAX: (724) 843-5353
www.pmet-inc.com

X-ray Diffraction Analysis

X-ray powder diffraction (XRD) and Rietveld quantification analyses were used to determine the mineralogical composition of the samples. XRD sample preparation included grinding 3 g of sample using the BICO Model VP-1989 mill with a 3.5 inch ring and puck. The amorphous content of the sample was not determined.

Step-scanned XRD data were collected by the Siemens D500 computer-automated diffractometer using Bragg-Brentano geometry. Cu radiation was produced at a power of 45kV and 30 mA. The diffracted beam was collimated by a 0.05° receiving slit. The data was collected in the 2θ range of 4.9°–66.1° with a step size of 0.015° and a dwell time of 1 sec/step using a Sol-X solid state energy-dispersive X-ray detector.

Qualitative analysis of the XRD patterns was performed using proprietary Bruker AXS software Diffrac Plus EVA (v. 7001, 2001) peak search algorithm. The reference database for the crystal pattern search/match is the International Center for Diffraction Data database (ICDD, 2001). A chemical screen using the XRF and ICP data was used to narrow the search.

Semi-quantitative analysis was performed using the whole pattern fitting function of Diffrac Plus Topas R, a proprietary Bruker AXS software (v. 2.0, 2000), which is based on the Rietveld method (Rietveld 1969). The reference database for quantitative analysis of crystal structures is the Inorganic Crystal Structure Database (NIST ICSD, 2010, v.2). The analysis results reflect the relative amount of the crystalline phases normalized to 100% (Table 2). The amorphous fraction was not measured.

SEM-EDX Analysis

The metal flakes retained during the stage crushing were immersed in soapy water and treated in an ultrasonic bath to remove slag fines that adhered to the metal surface during the pulverizing stage. An Amray 1600T Scanning Electron Microscope with a Tracor energy-dispersive x-ray detector was used to analyze clean areas of the metal flakes to determine the Mn content of the metal (Table 3). A backscattered electron image was recorded to show the areas analyzed (Figure 1).

Discussion of Results

The SEM-EDX results were consistent across several areas of the metal flake. The iron contained around 1.2 (+/- 0.5)% Mn. This is likely a metallic occurrence of Mn in metallic Fe. XRD analysis of the fines (-44µ) showed a considerable amount of metallic Fe that is also likely to contain a similar concentration of metallic Mn.

There is also a considerable amount of iron oxides in the sample that may contain manganese oxide in substitution based on the previously determined Mn content of the Fe metal. A small amount of braunite, a manganese silicate, is a tentative match in the XRD

pattern due to some peak overlap by the major phases.

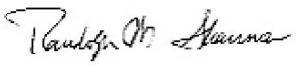
QA/QC

Samples are logged, identified, prepared, and analyzed according to PMET's Standard Operating Procedures. All sample preparation work and standard measurements are recorded in a lab notebook. SEM and XRD data are captured and recorded as digital data and backed using a daily cloud backup.

PMET is certified for XRD and SEM analysis by the State of Nevada DCNR Division of Environmental Protection, having met the requirement of NV Code NAC 445A. PMET's Certificate Number PA050012018-1 expires July 31, 2018.

Ms. Andrews, please email or call me if you would like to discuss these results. Thank you for using PMET's laboratory services on this project. We look forward to working with you in the future.

Sincerely,



Randolph W. Shannon
Laboratory Manager

RFA 6950

Table 1
Sample Identification, As-received Weight,
Percent Moisture (water mass/total mass),
Metal Flake Weight

PMET I.D.	Phoenix Description	As-received Wt. (g)	Wt. % Moisture	Wt. % Coarse Metal (>74μ)
6950-1	AZR IRM	440.32	10.68	0.25

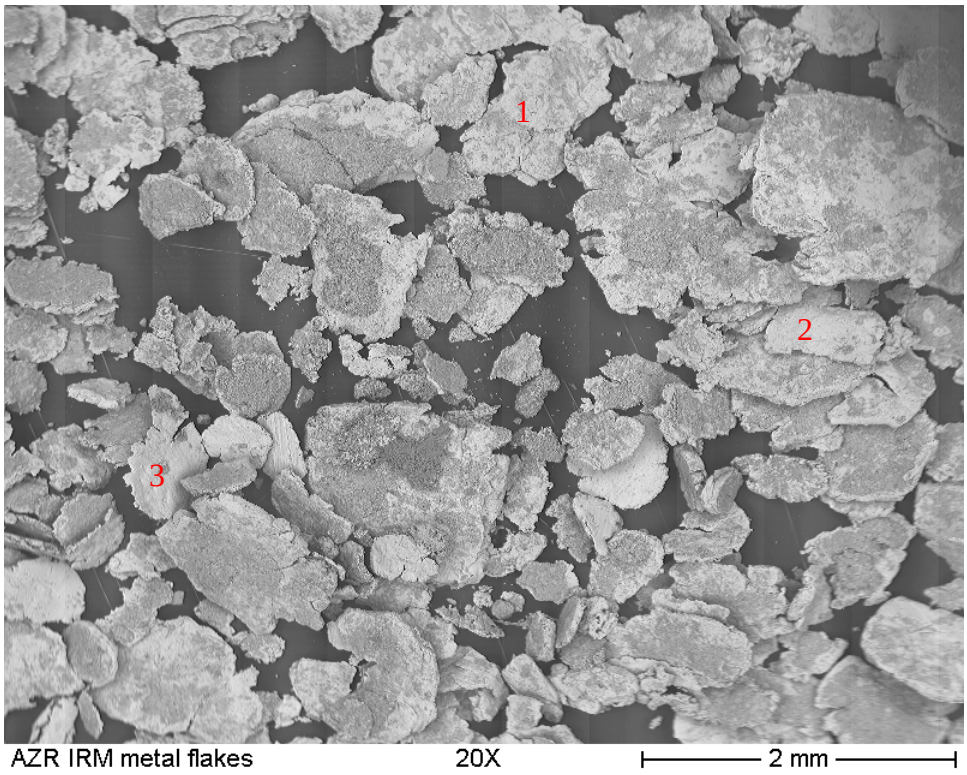
Table 2
Phase Composition
Wt.%

Phase	Nominal Atomic Formula	Wt.%
iron	Fe	5.1
wuestite	FeO	34.2
magnetite	Fe_3O_4	9.8
magnesioferrite	$MgFe_2O_4$	4.4
hercynite	$FeAl_2O_4$	3.7
larnite	Ca_2SiO_4	6.5
bredigite	$Ca_{14}Mg_2(SiO_4)_8$	5.1
quartz	SiO_2	3.5
braunite	Mn_7SiO_4	1.5
rutile	TiO_2	0.4
dolomite	$CaMg(CO_3)_2$	2.4
calcite	$CaCO_3$	2.2
gypsum	$CaSO_4$-$2H_2O$	1.2
amorphous	non-crystalline	20*

*estimate

Table 3
Average Composition of 3 Metal Flakes
Approximate Wt.%

Element	Wt.%
SiO_2	0.4
CaO	0.4
Cr	0.8
Mn	1.2
Fe	97.2



Coarse metal flakes
Figure 1

AZR IRM 10/3/18

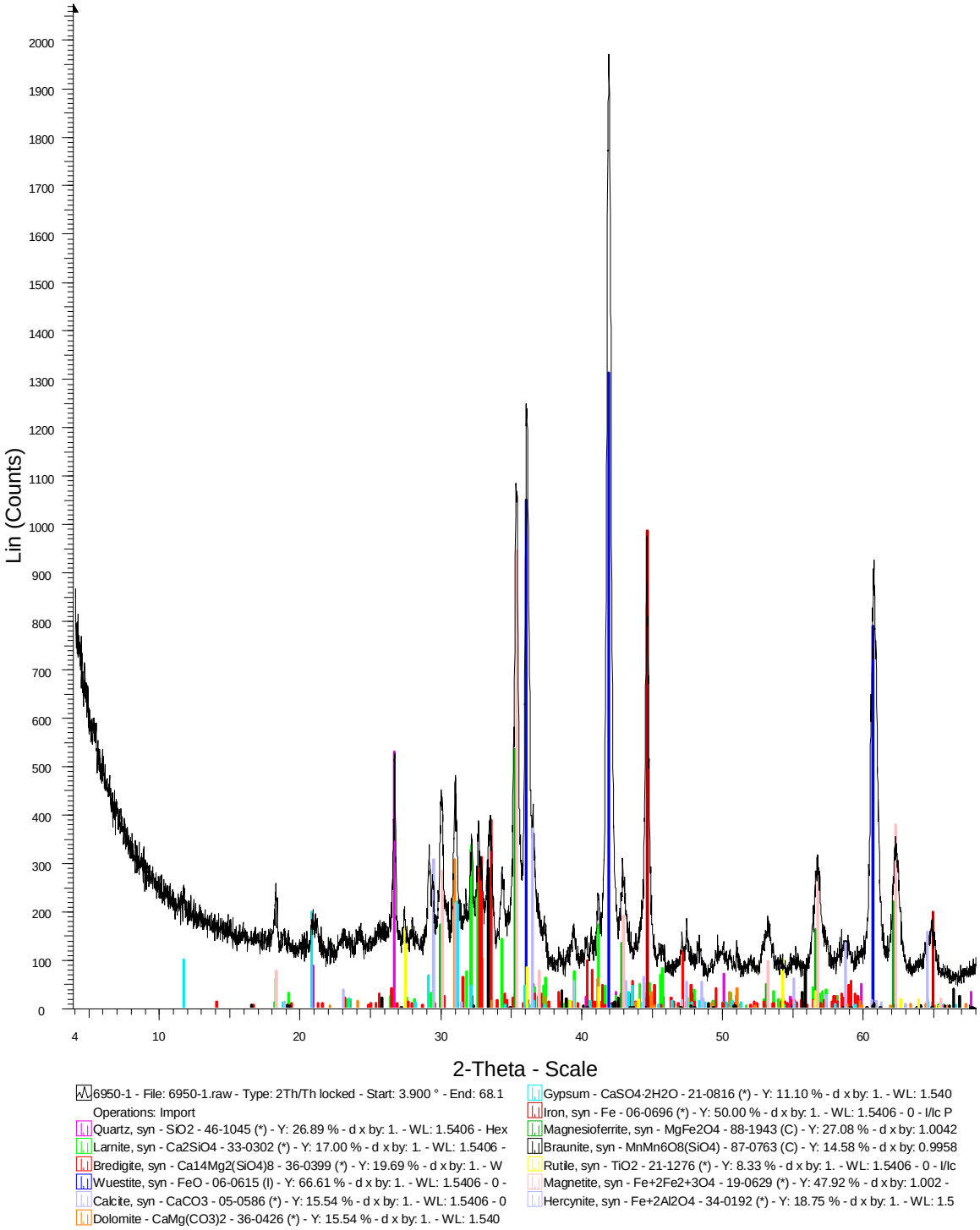


EXHIBIT G

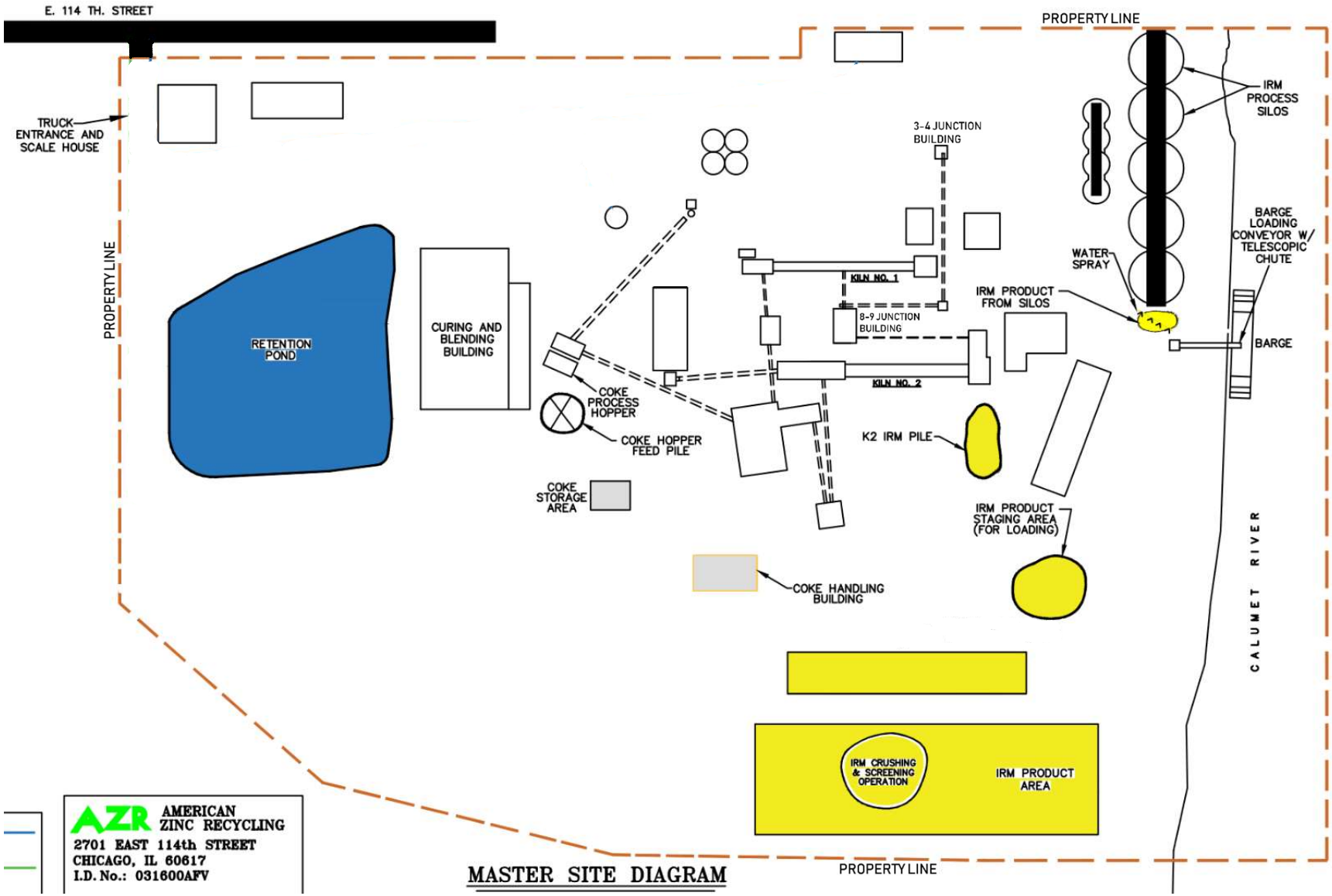

E. 114 TH. STREET
PROPERTY LINE
TRUCK ENTRANCE AND SCALE HOUSE
IRM PROCESS SILOS
3-4 JUNCTION BUILDING
BARGE LOADING CONVEYOR W/ TELESCOPIC CHUTE
WATER SPRAY
KILN NO. 1
IRM PRODUCT FROM SILOS
8-9 JUNCTION BUILDING
BARGE
RETENTION POND
CURING AND BLENDING BUILDING
KILN NO. 2
COKE PROCESS HOPPER
COKE HOPPER FEED PILE
K2 IRM PILE
COKE STORAGE AREA
IRM PRODUCT STAGING AREA (FOR LOADING)
COKE HANDLING BUILDING
CALUMET RIVER
IRM CRUSHING & SCREENING OPERATION
IRM PRODUCT AREA
PROPERTY LINE
AZR AMERICAN ZINC RECYCLING
2701 EAST 114th STREET
CHICAGO, IL 60617
I.D. No.: 031600AFV
MASTER SITE DIAGRAM

EXHIBIT H


CBFX

EXHIBIT I

Critical Evaluation of EPA's Risk Assessment in the Proposed HTMR Slag Product Rulemaking

(Fed. Reg. 59:67256; December 29, 1994)

Prepared for
Horsehead Resource Development Company, Inc.
110 E. 59th Street, 34th Floor
New York, NY 10022

Prepared by
Gradient Corporation
44 Brattle Street
Cambridge, MA 02138

Revised April 26 1995[1]

[1]Subsequent to issuing the original Critical Evaluation of EPA's Risk Assessment in the Proposed HTMR Slag Product Rulemaking dated April 1995 ("Report"), Gradient identified minor typographical, transcriptional, formatting, and numerical corrections in the Report. Consequently Gradient has reissued this Report to include these minor changes. These corrections do not in any way modify, change, or otherwise affect the methodology, analytical interpretations, or conclusions in the April 1995 Report.

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Executive Summary

Introduction

On December 29, 1994, the U.S. Environmental Protection Agency (EPA) proposed regulations governing the management and product applications of HTMR slags (*e.g.*, road subbase, top grade) resulting from the High Temperature Metals Recovery (HTMR) processing of electric arc furnace (EAF) steelmaking dusts (K061), as well as spent pickle liquor sludge (K062) and electroplating wastes (F006) (*Fed. Reg.* 59:67256; December 29, 1994). EPA evaluated the potential risks that may arise from the application of these HTMR slag products, and determined based on their assessment that "... HTMR slags pose little or no risk to human health or the environment" (*Fed. Reg.* 59:67261; December 29, 1994). The EPA went on to propose that HTMR slag products must meet modified "generic exclusion limits" (GELs) based upon Toxicity Characteristic Leaching Procedure (TCLP) results before these products could be used for the applications covered by the proposed regulation.

Since this proposed rulemaking could have a significant impact on the HTMR industry and recycling in general, Horsehead Resource Development Co., Inc. (HRD) requested that Gradient Corporation (Gradient or we) perform a complete evaluation of EPA's risk assessment, including EPA's methodology, assumptions and conclusions, and in addition, derive health-based leach test concentrations as a benchmark to compare with the proposed GELs and the current Best Demonstrated Available Technology (BDAT) treatment standards.

Gradient concludes that EPA is correct in its determination that, based upon the use of the proposed GELs and the HTMR slag product composition (1988 BDAT Background Document for K061, 95% upper confidence limit to the mean (UCLM)), use of HTMR slag products as described in the proposed rulemaking[1] poses "little or no risk to human health or the environment." Gradient also concludes that EPA's risk assessment was generally thorough and usually employed conventional modeling techniques. However, EPA was generally conservative in its fate and transport modeling

[1] Gradient's referral to "HTMR slag product" throughout this document, unless otherwise specified, refers specifically to those applications evaluated by Gradient and EPA in this proposed rulemaking, namely management and use of HTMR slag products, including storage wastepile, road subbase, additives in cement or concrete/asphalt mixtures, top grade, anti-skid/deicing agent, disposal in landfill.

assumptions used to predict media concentrations and in its assumptions for deriving health-based reference concentrations.

Gradient's major conclusions are as follows:

- The five scenarios described by EPA (*e.g.*, top grade, road subbase), which represent the mechanism for release of HTMR slag constituents into the environment, were either reasonable or, in some cases, conservative and not very likely. Gradient also performed an assessment of release scenarios for HTMR slag product applications not considered by EPA (*e.g.*, railroad ballast, wastewater treatment). Gradient concludes that these additional product uses would pose less risk than one or more of the five scenarios evaluated by EPA. Thus, these additional uses also pose insignificant risks to human health and the environment.

- EPA's own risk assessment demonstrates that the use of the proposed GELs and the 1988 BDAT treatment standards for K061 both pose insignificant risks to human health and the environment, generally with a large margin of safety. That is, the "risk ratios" (predicted constituent concentration in relevant medium / health-based reference concentration) were all less than 1, satisfying EPA's risk management criteria.

- For the ground water direct exposure pathway, after correcting for EPA's conservative assumptions to produce adjusted risk ratios, maximum safe health-based leach test levels were calculated. Comparing these levels to the proposed rulemaking's GELs and also to existing 1988 BDAT treatment standards shows that the GELs are unnecessarily stringent, and that the BDAT standards, while somewhat less stringent, are fully protective of human health and the environment. Furthermore, the Synthetic Precipitation Leaching Procedure (SPLP) is a more realistic assay for evaluating potential release from HTMR slag than the Toxicity Characteristic Leaching Procedure (TCLP).

- Regarding the surface water ingestion, soil ingestion, air deposition to soil and ingestion, and air inhalation direct exposure pathways whose risks assessments are based on HTMR slag composition (1988 BDAT study, 95% UCLM), Gradient recalculated risk ratios for

these pathways after correcting for EPA's conservative assumptions. Gradient determined that these revised ratios are all less than 1, confirming the safety of the HTMR slag product applications.

- Gradient also considered an additional direct pathway of public concern today, the tracking of exterior dust into the house and subsequent ingestion as a constituent of house dust. Gradient determined that this pathway also poses insignificant risks to human health, because EPA implicitly accounted for it in their soil ingestion analysis.

- While EPA performed no quantitative analysis on the indirect pathways, Gradient considered it important to perform a comprehensive analysis of these pathways. Risk ratios were calculated for soil containing HTMR slag constituents, considering ingestion of vegetables and ingestion of animal products (*i.e.*, beef and dairy). Gradient used highly conservative EPA methodology, primarily derived from sources described in EPA's Hazardous Waste Identification Rule (HWIR) documentation (November 1994). All of the calculated risk ratios were found to be less than 1, demonstrating that the uses of HTMR slag products covered in this rulemaking pose insignificant risks to human health and the environment *via* indirect exposure pathways.

Analysis of EPA's Risk Assessment

Gradient reviewed and analyzed EPA's risk assessment methodology, and found it to generally follow established conventions. First, EPA performed a life-cycle analysis of the HTMR slag products, and on that basis selected constituent pathways and release scenarios. Next, EPA modeled the transfer of HTMR slag product constituents (BDAT list metals) from the source of release through the relevant pathway and to the receptor medium, generally using appropriate mathematical models. Then, additional assumptions and modeling were used to determine the predicted concentration of the constituents in the medium for purposes of comparison to health-based reference concentrations. The health-based reference concentrations were developed by EPA from EPA-derived media intake values and toxicity criteria, and represent receptor location concentrations for the different constituents in the relevant media (air, water, and soil) that meet EPA's risk management criteria. For these calculations, EPA relied on existing reference doses (RfDs), cancer slope factors (CSFs), maximum contaminant limits for drinking water

(MCLs), and media intake assumptions from other EPA regulations and independent health-effects studies. Finally, EPA calculated constituent risk ratios by dividing the predicted concentration by the reference concentration. A risk ratio of 1 or less means that the exposure is at or below EPA's permissible risk level. In every case, the risk ratios were all less than 1. Therefore, EPA demonstrated that all of these scenarios for HTMR slag product uses meet EPA's risk management criteria for protecting human health and the environment. The following paragraphs provide more detail on EPA's approach to the analysis.

EPA selected five direct exposure pathways for analysis: 1) ground water ingestion, 2) soil ingestion, 3) surface water ingestion, 4) particulate inhalation, and 5) air deposition to soil and ingestion. For each of these pathways, EPA assumed one or more release scenario(s) for the HTMR slag product uses during a 200-year time horizon, including a storage wastepile, road top grade, anti-skid, road subbase, disposal in a landfill, and transportation/handling of material. For each release scenario / pathway combination, EPA performed separate calculations and produced a table of constituent risk ratios.

It should be noted that EPA's choice of release scenarios was not evaluated comprehensively for accuracy or plausibility in our direct pathway analysis. Nonetheless, while no detailed analytical review was performed, Gradient concludes that some scenarios were plausible, whereas others were unrealistically conservative. For example, use of HTMR slag as top grade product (*e.g.*, gravel surface for a dirt road), assumes: (1) 200 years of continuing use of HTMR slag on the same road in the same amount, (2) there are no mounds or ditches between the road and the receptor location which would impede the overland transport of slag constituents. This represents an implausible scenario.

For input data to the risk assessment, EPA utilized the 1988 BDAT treatment standards HTMR slag composition data (95% UCLM), plus the GELs derived in 1991 in a related BDAT treatment standards regulation.

EPA used release, fate, and transport models to predict media constituent concentrations. The models first estimated constituent releases (*e.g.*, from a specific pathway and scenario, such as the soil ingestion pathway and the top grade application) and then calculated the transfer of constituents to the pathway medium, such as soil. For example, an erosion model (the Universal Soil Loss Equation or

USLE) was used to project soil erosion to water run-off; this material in turn was used to calculate overland transport to soil, using an overland transport model.

EPA did not perform an analysis of indirect exposure pathways; their reasoning was that these pathways generally pose less risk than direct pathways. While we agreed in principle with EPA's reasons for not considering indirect exposure pathways, we considered it a critical part of this evaluation to consider a wide range of potential indirect pathways, which we ultimately narrowed down to two foodchain indirect exposure pathways and dust tracking for further analysis.

In the remainder of the Executive Summary, we divide our discussion into two main topics: Direct Pathway Analysis and Indirect Pathways Analysis.

Direct Pathway Analysis

Media Modeling Critical Evaluation

Our critical review of EPA's modeling of HTMR slag constituent transport to media included comparing EPA's release, fate and transport models and assumed conditions with the real physical situations, independently verifying model calculations, comparing model parameters with other known sources, and, in some cases, correcting computational or structural errors. These analyses generated "correction or adjustment factors" which could be divided into EPA's predicted media constituent concentrations to yield more realistic media constituent concentrations.

While we present a detailed critique of the models, assumptions, and data used by EPA in the main body of this report, some examples of the over-conservative and anti-conservative factors identified in this critical review are summarized below (in the report, over-conservative findings outweigh anti-conservative ones):

Conservative Correction Factors

- EPA's soil erodibility factor in the "Soil Ingestion" and the "Air Deposition to Soil and Ingestion" pathways is higher than for soils known to have similar physical properties to HTMR slag, thus inappropriately inflating predicted soil concentrations by a factor of 2.5.

- EPA assumed the most conservative meteorological parameters for each release scenario, *i.e.*, the parameters that produced the highest atmospheric constituent concentration, which inflated these concentrations by a factor of 1.2.

- The TCLP test used to assess compliance of HTMR slag material with GELs restricts particle size to <3/8", which overstates particle surface area, and therefore leaching rate, by a factor of 1.5 relative to the actual particle sizes for the HTMR slag products, such as top grade aggregate.

Anti-Conservative Correction Factors

- EPA assumes extremely high leaching rates for HTMR slag product deposited onto residential soil; correction to more realistic lower leaching rates results in higher predicted soil concentrations and lower ground water concentrations.

Overall, the adjustments to EPA's modeling resulted in generally lower predicted medium concentrations than those calculated by EPA in its risk assessment, and therefore lower risk ratios based solely on recalculated receptor location concentrations. That is, EPA's modeling results are, in general, conservative and overestimate the HTMR slag product constituent concentrations in relevant media.

Media Intake and Reference Dose Critical Evaluation

We evaluated the basis of EPA's reference concentrations. We critically reviewed EPA's constituent and media intake assumptions, plus the Maximum Contaminant Level (MCL) and toxicological values assigned to antimony and arsenic. We determined adjustment factors to the reference

concentrations for media intake for the direct exposure pathways, as a result of both over-conservative or anti-conservative assumptions used by EPA to estimate daily doses in their risk assessment. It should be noted that, since factors are not constituent-specific, they apply across several of the exposure pathways. Antimony was selected for the MCL evaluation, and arsenic and antimony were selected for the toxicological review, because these two metals yielded many of the risk ratios closest to 1 in EPA's direct pathways assessment.

Examples of the over-conservative and anti-conservative assumptions which lead to the necessary adjustment factors are presented below (in our report, the over-conservative findings outweigh the anti-conservative ones):

Over-Conservative Correction Factors

- EPA's estimates of carcinogen risks inflate the lifetime average dose for certain constituents by factors of approximately 5.0 for soil ingestion, 4.5 for water ingestion and 2.5 for particulate inhalation, based on corrections for body weight, intake rate and duration assumptions.

- The MCL for antimony is low by a factor of about 2.0 because EPA incorrectly assumes the relative source contribution (RSC) for drinking water and non-drinking water are always in the same proportion. EPA also applies several conservative uncertainty factors to develop the health-based reference dose, consideration of which would further deflate the MCL by at least a factor of 10. Overall, the MCL for antimony is conservative by a factor of at least 19.

- The carcinogenic toxicity criterion for arsenic is overestimated by EPA due to inaccurate estimates of typical intake of ingested arsenic in the Taiwan study used by EPA for its cancer slope factor, yielding a correction factor of 1.5.

Anti-Conservative Correction Factors

- EPA's non-carcinogen risk assessments for drinking water exposures may depress the chronic dose estimates by a factor of 1.5 for some, but not all, constituents due to the use of adults rather than children as the target population for the daily dose estimates.

In summary, our critical review of the media intake and toxicological reference values resulted in constituent-specific and intake adjustment factors that, in turn, produced risk ratios that were lower than EPA's risk ratios; that is, in general, EPA overstated the risks of exposure due to conservative assumptions about intake rates, exposure-related parameters and health-based reference doses.

Critical Review of Ecological Risks

Although EPA did not perform a rigorous assessment of the aquatic or other ecological risks of the HTMR slag product uses, we compared the predicted surface water metals concentrations with the Ambient Water Quality Concentration (AWQC) limits. This comparison showed, without the need for sophisticated modeling, that the predicted surface water concentrations resulting from the HTMR slag product risk analysis were all less than the acute and chronic AWQC values protective of aquatic life. Furthermore, we showed that the bases for setting the AWQC limits are conservative. Therefore, HTMR slag products pose insignificant ecological risk based on EPA's criteria for concern.

Summary of Direct Pathways Analysis

Gradient's correction factors for predicted media concentrations, media intake and health-effects assumptions are combined to yield overall adjustments to EPA's risk ratios. The revised constituent risk ratios are then used: 1) for the ground water pathway, to back-calculate the maximum acceptable health-based leach test levels for HTMR slag constituents, and 2) for the non-ground water pathways, to recalculate risk ratios. The major conclusions regarding HTMR slag product risk uses with respect to the direct pathways are:

1) Generic Exclusion Levels

Based upon our critical evaluation and a comparison of back-calculated maximum safe health-based leach test levels with the proposed GELs and existing BDAT treatment standards, the GELs are excessively conservative and also unrelated to HTMR slag product applications. Furthermore, existing BDAT treatment standards promulgated in 1991 are well below (*i.e.*, within) the maximum acceptable health-based levels for all constituents, demonstrating that the BDAT standards are completely sufficient for protecting human health and the environment. Furthermore, use of the more realistic (relative to the TCLP test) SPLP test results in an even larger margin of safety for the ground water/drinking water exposure pathway. Gradient recommends the use of the SPLP test in place of the TCLP test as the standard leach test for HTMR slag products.

2) Slag Constituent Concentrations

EPA's own risk assessment has shown that HTMR slag products whose composition is at or below the 95% UCLM of the 1988 BDAT composition data pose insignificant risks to human health and the environment for the non-ground water (soil ingestion, surface water ingestion, particulate inhalation, air deposition to soil and ingestion) direct exposure pathways. Accounting for all adjustment factors, Gradient calculated corrected risk ratios for these same pathways. Using the most restrictive corrected risk ratio across the four pathways for each constituent, Gradient demonstrated that even the highest risk ratios were all below 1. This provides strong evidence of a large margin of safety in the product uses and pathways considered in EPA's risk assessment.

Indirect Pathways Analysis

EPA considered indirect pathways and concluded that the "potential for risk from most indirect pathways (*e.g.*, foodchain pathways) would not be significant," (59 *Fed. Reg.* 67260; December 29, 1994), on which basis EPA performed no detailed analysis of these pathways. However, we believed a rigorous risk assessment was necessary to substantiate EPA's conclusions and we performed a highly conservative comprehensive analysis. We initially considered a wide range of potential pathways. The

foodchain pathways were determined to be the most relevant for metals, based on our own work and the highly conservative HWIR risk assessment, from which we derived our source material for the methodology for our indirect pathway analysis.

Foodchain Pathways

Two foodchain indirect pathways of human exposure (ingestion of vegetables and ingestion of animal products) which were identified as "relevant" in the HWIR, were considered for this HTMR slag product risk assessment. These included ingestion of:

1) Above Ground Plants
2) Below Ground Plants
3) Dairy Products
4) Beef Products

As input data for soil concentration, we used predicted agricultural soil concentrations calculated from Gradient's soil ingestion and air deposition to soil and ingestion direct pathway analysis. We adopted HWIR equations and, in many cases, EPA's highly conservative assumptions used in the HWIR. Assumptions and input data were obtained from several sources. In some cases, when using HWIR as a source for input assumptions and data, we found errors in the HWIR assumptions and input data which were corrected. Gradient's methodology included: (i) back-calculating the intake associated with the target risk from exposure parameters, (ii) back-calculating the concentration in the ingested medium from the intake, (iii) back-calculating the reference soil concentration from the medium concentration, and (iv) comparing the predicted soil concentration with this reference soil concentration as a risk ratio.

As a result of this assessment, we conclude that all of the risk ratios for the indirect foodchain pathways are less than 1. Therefore, on the basis of a detailed indirect pathway evaluation, we agree with EPA's conclusion that the indirect pathways pose insignificant risks to human health and the environment.

1 Introduction

The purpose of this report is to perform a complete critical evaluation of a risk assessment recently performed by EPA in support of its High Temperature Metals Recovery (HTMR) Slag Product Proposed Rulemaking (59 *Fed. Reg.* 67256). Since the proposed rulemaking could be significant to the HTMR recycling industry and other industries as well, Horsehead Resource Development Company, Inc. requested that Gradient Corporation (Gradient or "we") perform a complete critical evaluation of EPA's risk assessment.

1.A Regulatory Overview

On December 29, 1994, EPA proposed a potentially significant rulemaking called the proposed "HTMR slag product rulemaking" or the "proposed rulemaking" throughout this document, relevant to HTMR slags produced from K061, K062, and F006 listed hazardous wastes. The proposed rulemaking would require that HTMR slags first meet threshold standards (referred to by EPA as "generic exclusion limits" (GELs)) based upon EPA's Toxicity Characteristic Leaching Procedure (TCLP) before these slags could be exempted from hazardous waste regulation and therefore utilized for certain product applications (*e.g.*, road subbase, top grade).

For over a decade, EPA has exempted these HTMR slag products from Subtitle C regulation, provided they meet certain conditions under 40 CFR § 266.20(b). These conditions are: (1) the products containing the recyclable materials are produced for the general public; (2) the recyclable materials have undergone a chemical reaction in the course of production so as to become inseparable by physical means; and (3) the products meet the applicable Best Demonstrated Available Technology (BDAT) treatment standards (as measured by the TCLP test) for each BDAT constituent contained in the product.

The GELs in the proposed rulemaking are significantly more restrictive than the BDAT treatment standards, and are supported by a detailed risk assessment by EPA. Since the GELs as proposed could have an impact on the HTMR recycling industry and other industries as well, Horsehead Resource Development Company, Inc. requested that Gradient perform a complete evaluation of EPA's risk assessment, particularly with respect to: (a) the thoroughness and appropriateness of EPA's methodology

and assumptions in its risk assessment, and (b) using EPA risk management criteria, estimating actual health-based leach test results for purposes of providing a benchmark for comparison with the proposed GELs and the current BDAT treatment standards.

1.B Overview of EPA's Risk Assessment of the Proposed Rulemaking

EPA performed a comprehensive risk assessment of HTMR slag product uses. EPA first identified fourteen constituents of concern in HTMR slag (the 14 BDAT list metals). Next, EPA modeled the transfer of HTMR slag product constituents from the source of release through the relevant pathway and to the receptor medium, generally using appropriate mathematical models. Then, additional assumptions and modeling were used to determine the predicted concentration of the constituents in the medium for purposes of comparison to health-based reference concentrations. The health-based reference concentrations were developed by EPA from EPA-derived media intake values and toxicity criteria and represent exposure concentrations in the relevant media (air, water, and soil) that meet EPA's risk management criteria. For these calculations, EPA relied on existing reference doses (RfDs), cancer slope factors (CSFs), maximum contaminant limits for drinking water (MCLs), and media intake assumptions from other EPA regulations, EPA guidance documents, and independent health-effects studies. Finally, EPA characterized and quantified its risk assessment information in the form of "risk ratios", defined on a pathway-specific basis as the predicted concentration of a constituent in a particular media divided by the maximum allowable (EPA determined) health-based reference concentration in that same media, *i.e.*,

$$\textit{Risk Ratio} = \frac{\textit{Predicted Media Concentration}}{\textit{Health-Based Reference Concentration}} \qquad \text{(1.B-2)}$$

For carcinogens, a risk ratio of 1.0 or less indicates no significant risk to human health, based on a lifetime cancer probability of one in one million per person exposed. For non-carcinogens, a risk ratio (also called the "hazard quotient" for non-carcinogens) of 1.0 or less indicates exposures are less than EPA's reference dose set to protect against risk of non-carcinogenic health effects.

Regarding the choice of relevant exposure pathways, EPA concluded that the potential risk from most indirect pathways (*e.g.*, foodchain pathways) would not be significant, based on the reasoning that

a comparison of risks associated with direct and indirect exposure pathways for metals suggested that the direct pathways typically present higher risks due to the: (1) weak uptake of soil-bound metals in plants, (2) limited ability of metals to bioaccumulate on a whole-body basis, and (3) tendency of metals to remain bound in the slag matrix in a form that further reduces their bioavailability.

Ultimately, EPA identified four direct pathway and one indirect pathway as being relevant based on the presence of HTMR constituents and the uses of the material. Each exposure pathway was evaluated by EPA for relevant HTMR slag release scenarios. These pathways and relevant release scenarios are summarized below in Table 1.B-1, (which is also Table 2 in EPA's proposed rulemaking.)

Table 1.B-1
Exposure Pathways Evaluated for Release Scenarios Associated with the Use or Disposal of HTMR Slag[1]

Exposure Pathway	Release Scenario				
	Storage Wastepile	Top Grade and Anti-Skid	Slag Landfill	Subbase	Transportation
Ground Water Ingestion	X	X	X[2]	X	
Surface Water	X	X	X		
Soil Ingestion	X	X	X		
Air Deposition to Soil and Ingestion	X	X	X		
Particulate Inhalation	X	X	X		X

Sources:

(1) Adapted for USEPA, 1994h, Table 2.

(2) Evaluated previously (see 57 Fed. Reg. 37194, August 18, 1992).

A brief description of EPA's chosen direct pathways follows:

1. Ground Water Ingestion - Release of constituents to subsurface soils, subsequent leaching into ground water, followed by ingestion as drinking water,

2. Surface Water Ingestion - Overland transport, *via* runoff and soil erosion, of HTMR slag constituents to surface water, followed by ingestion by humans and exposure to aquatic life,

3. Soil Ingestion - Overland transport of HTMR slag constituents via erosion to off-site residential soils, followed by ingestion by humans,

4. Particulate Inhalation - Air emission and dispersion of respirable particulates (10 microns in size), followed by inhalation,

EPA also identified one indirect exposure pathway (which Gradient has chosen, for reasons to be discussed later, to evaluate as a direct exposure pathway):

5. Air Deposition to Soil and Ingestion - emission and dispersion of non-respirable particulates ($\leq$ 30 microns in size) followed by deposition to residential soil and subsequent ingestion.

EPA considered the relevance of these exposure pathways across five release scenarios of HTMR slags; these are shown in the table and briefly described below:

1. Storage Wastepile - this source includes outdoor storage of an uncovered slag pile and adding/removing material to/from a storage pile,

2. Top Grade and Anti-Skid - Top Grade denotes the use of the HTMR slag as surface material for unpaved roads. Anti-Skid denotes the use of the HTMR slag as a traction control and deicing agent on ice and/or snow-covered roads,

3. Slag Landfill - Disposal of HTMR slag in solid waste landfill,

4. Road Subbase - The use of HTMR slag as a foundation material in road construction,

5. Transportation - The loading/unloading operations associated with transport of slag, and the transport of slag from the manufacturing facility to points of use or storage.

EPA concluded, in what it called a "very conservative risk assessment", that its identified constituents of concern in HTMR slags pose "little or no risk to human health and the environment." Specifically, "... no significant risks were found for storage, transport, disposal, and encapsulated uses of HTMR slags (use as road subbase, as an ingredient in cement or concrete/asphalt) that meet the generic exclusion limits" which are based on TCLP testing (59 *Fed. Reg.* 67258,67261). EPA also concluded that non-encapsulated applications of HTMR slag products pose no significant risk to human health or the environment. (EPA did report that two release scenarios, non-encapsulated uses of HTMR slag products [top grade and anti-skid] for the particulate inhalation and air deposition to soil and ingestion pathways, were shown to pose a slight cancer risk above EPA's target probability of 1 case per 1 million per person exposed, due only to one constituent [arsenic]. Because EPA used conservative assumptions, however, EPA dismissed the minor calculated risk as insignificant. Note that this report confirms EPA's conclusion by demonstrating no significant risks for these two release scenarios.)

1.C Objectives of this Evaluation

The purpose of this study is to conduct a complete critical evaluation the risk assessment described above and completed by EPA on the proposed HTMR slag product rulemaking. The specific objectives of this report are described in the following sections.

1.C.1 Direct Exposure Pathways

Regarding the direct exposure pathways, Gradient critically evaluates, to the extent possible, all key factors involved in EPA's risk assessment, including: (a) EPA's methodology and assumptions used to model the transfer of HTMR constituents to media, and the resulting media concentrations, for each of the exposure pathways, and (b) EPA's methodology and assumptions used to model constituent intake and the carcinogenic and non-carcinogenic toxicological criteria. On the basis of the critical analysis Gradient provides adjustment factors to modify, to the extent possible, EPA's predicted media constituent concentrations and EPA's health-based reference values, such that resulting risk ratios can be commensurately adjusted. Furthermore, Gradient combines the results of all correction factors to

calculate corrected risk ratios for all pathways and release scenarios. With this information, Gradient estimates maximum acceptable health-based leach test limits for the ground water pathway and compares them with the proposed GELs and existing BDAT treatment standards. For the non-ground water pathways, Gradient utilizes the corrected risk ratios to evaluate the potential risks of HTMR slag product uses based upon HTMR slag composition data (95% UCLM) from 1988 BDAT documentation.

1.C.2 Indirect Exposure Pathways

Notwithstanding the fact that EPA chose not to evaluate indirect exposure pathways, Gradient performed a highly conservative analysis to assess the relevance of these pathways with respect to their effect on human health and the environment. Specifically, Gradient: (a) evaluated the universe of relevant pathways in EPA's Phase III HWIR document (USEPA, 1994e), (b) determined which pathways were limiting for metals in HWIR Phase III for contaminated soil and water use (the two sources most relevant to HTMR slag products), and (c) evaluated the risks associated with the targeted pathways using standard risk assessment methodology. (It should be noted that by utilizing the comprehensive HWIR work as a starting point, Gradient implicitly considered a widely inclusive list of 150 pathways.) The targeted indirect pathways evaluated in this analysis are: (1) the ingestion of vegetables by humans, and (2) the ingestion of animal products by humans. These two foodchain pathways encompass the following evaluations:

- Ingestion by humans of leafy and root vegetables grown in soil containing HTMR slag constituents,
- Ingestion by humans of beef, raised on forage and grain grown in soil containing HTMR slag constituents, and
- Ingestion by humans of dairy products from cows raised on forage grown in soil containing HTMR slag constituents.

Gradient used the same risk ratio approach that was used in the direct pathway analysis for the indirect pathway analysis. Basically, soil concentrations were obtained from Gradient's analysis of the soil pathway and the air deposition to soil pathway in the direct pathway section of this report. The

predicted soil concentrations were compared with Gradient health-based reference concentrations aimed at protecting humans from foodchain exposures as described above. Gradient used the same EPA risk management criteria for the indirect pathways (cancer risk of 1 in 1 million, hazard quotient of 1) as was used for the direct pathways.

1.D Summary of Gradient's Overall Conclusions and Recommendations

Gradient concludes that EPA is correct but overconservative in its determination that based upon the use of the proposed generic exclusion limits (GELs), product applications of HTMR slags pose "little or no risk to human health or the environment". Gradient's major conclusions and recommendations are:

- The five scenarios described by EPA (*e.g.*, top grade, road subbase), which represent the mechanism for release of HTMR slag constituents into the environment, were either reasonable or, in some cases, conservative and not very likely. Gradient also performed an assessment of release scenarios for HTMR slag product applications not considered by EPA (*e.g.*, railroad ballast, wastewater treatment). Gradient concludes that these additional product uses would pose less risk than one or more of the five scenarios evaluated by EPA. Thus, these additional uses also pose insignificant risks to human health and the environment.

- EPA's own risk assessment demonstrates that the use of the proposed GELs and the 1988 BDAT treatment standards for K061 both pose insignificant risks to human health and the environment, generally with a large margin of safety. That is, the "risk ratios" (predicted constituent concentration in relevant medium / health-based reference concentration) were all less than 1, satisfying EPA's risk management criteria.

- For the ground water direct exposure pathway, after correcting for EPA's conservative assumptions to produce adjusted risk ratios, maximum safe health-based leach test levels were calculated. Comparing these levels to the proposed rulemaking's GELs and also to existing 1988 BDAT treatment standards shows that the GELs are unnecessarily stringent, and that the BDAT standards, while somewhat less stringent, are fully protective of human health and the environment. Furthermore, the Synthetic

Precipitation Leaching Procedure (SPLP) is a more realistic test for evaluating potential release from HTMR slag than the Toxicity Characteristic Leaching Procedure (TCLP).

- Regarding the surface water ingestion, soil ingestion, air deposition to soil and ingestion, and air inhalation direct exposure pathways whose risks assessments are based on HTMR slag composition (1988 BDAT study, 95% UCLM), Gradient recalculated risk ratios for these pathways after correcting for EPA's conservative assumptions. Gradient determined that these revised ratios are all less than 1, confirming the safety of the HTMR slag product applications.

- Gradient also considered an additional direct pathway of public concern today, the tracking of exterior dust into the house and subsequent ingestion as a constituent of house dust. Gradient determined that this pathway also poses insignificant risks to human health, because EPA implicitly accounted for it in their soil ingestion analysis.

- While EPA performed no quantitative analysis on the indirect pathways, Gradient considered it important to perform a comprehensive analysis of these pathways. Risk ratios were calculated for soil containing HTMR slag constituents, considering ingestion of vegetables and ingestion of animal products (*i.e.*, beef and dairy). Gradient used highly conservative EPA methodology, primarily derived from sources described in EPA's Hazardous Waste Identification Rule (HWIR) documentation (November 1994). All of the calculated risk ratios were found to be less than 1, demonstrating that the uses of HTMR slag products covered in this rulemaking pose insignificant risks to human health and the environment *via* indirect exposure pathways.

EXHIBIT J

QUARTERLY VISIBLE EMISSION AND OPACITY REPORT

American Zinc Recycling Corp. > Chicago Plant

4th Quarter 2018 Report

Prepared By:

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January 2019

Project 181401.0074

Trinity Consultants

Environmental solutions delivered uncommonly well

1. EXECUTIVE SUMMARY

On December 6, 11, and 19, 2018, Trinity Consultants (Trinity) performed visible emission observations at the American Zinc Recycling Corp. (AZR) facility located in Chicago, Illinois (Chicago Plant). These observations were conducted to comply with the City of Chicago Department of Public Health (CDPH) Rules and Regulations for Bulk Materials Storage (CDPH Bulk Storage Rules)[1]. Sections 3.0(2)(d) and 3.0(3)(f)(ii) of the CDPH Bulk Storage Rules require that any facility that processes, handles on-site, transfers, loads, unloads, stockpiles, or stores bulk solid materials conduct quarterly testing to demonstrate compliance with the prohibition on fugitive dust set forth in Section 3.0(2)(b). The quarterly testing followed the protocol established in section 3.1.7.1 – Quarterly Visible Emissions and Opacity Testing of the Consolidated Fugitive Dust Control Plan and Operating program for Fugitive Particulate Matter for American Zinc Recycling Corp. (Chicago Plant), January 25, 2018.[2] The opacity observations were conducted in accordance with the requirements of 40 Code of Federal Regulations (CFR) 60, Appendix A, Method 9 (USEPA Method 9) and the visible emission observations were conducted in accordance with the requirements of 40 CFR 60, Appendix A, Method 22 (USEPA Method 22).[3]

Supporting information for the report is included in the appendices. The visible emission and opacity observations for the fourth quarter report were conducted by Mr. Matt Sloan of Trinity. A copy of Mr. Sloan's current Method 9 certification is included in Appendix A.[4] A site plan of the Chicago Plant, denoting the locations of fugitive dust emission sources, is included in Appendix B. The visible emission and opacity observation data sheets are included in Appendix C. Meteorological data from December 6, 11, and 19, 2018 for the AZR Chicago Plant are included in Appendix D, which indicates that the observations were performed over a range of weather conditions occurring over this period.[5] Data in Appendix D is from AZR's onsite weather monitoring station and summarizes the weather conditions on the dates of observation.[6]

The results of the December 6, 11, and 19, 2018 tests demonstrated that there were no instances of visible dust beyond the property line of the facility and that affected sources were below the applicable opacity limit of 10% pursuant to CDPH Bulk Storage Rules Section 3.0(2)(a) and (b), respectively. A summary of the results is included in Section 2 of this report.

[1] Article II. Air Pollution Control Rules and Regulations, Part B: Bulk Solid Material Facilities.
[2] While AZR originally submitted the Consolidated Fugitive Dust Control Plan and Operating Program for Fugitive Particulate Matter for AZR (Chicago Plant) to the City of Chicago on June 11, 2014, and has since submitted required annual updates, most recently on January 25, 2018, there has been no formal approval of such plan from the City of Chicago to AZR.
[3] Visible emissions and opacity observation methods used as specified in CDPH Bulk Storage Rules Section 3.0(3)(f)(ii)(a).
[4] Per CDPH Bulk Storage Rules Section 3.0(3)(f)(ii)(a) a professional trained and certified to read opacity in accordance with 40 CFR 60, Appendix A, Method 9 shall conduct the opacity observations.
[5] Per CDPH Bulk Storage Rules Section 3.0(3)(f)(ii)(b), observations were included over a range of weather conditions.
[6] AZR installed the weather monitoring station to comply with the wind monitoring requirements per CDPH Bulk Storage Rules Section 3.0(5) in accordance with the variance request submitted to the City of Chicago dated June 13, 2014.

2. VISIBLE EMISSIONS AND OPACITY OBSERVATIONS RESULTS SUMMARY

The following table summarizes the results of the visible emission and opacity observations conducted at the Chicago Plant for the fourth quarter of 2018. As previously discussed, all observations of opacity for fugitive dust emission sources were conducted in accordance with USEPA Method 9, and all of the property line visible emission observations were conducted in accordance with USEPA Method 22.[7] Observation points were selected to comply with the requirement of CDPH Bulk Storage Rules Section 3.0(2)(a) to verify that there was no fugitive dust that is visible beyond the property line and with CDPH Bulk Storage Rules Section 3.0(2)(b) to verify that any bulk solid material storage pile, transfer point, roadway, or parking area does not exceed the applicable opacity limit.[8] The Temp. IRM Storage Pile (Outlet of Kiln #2), Off Spec Coke Pile, the Main IRM Storage Pile, the Coke Loading Pile, and the Main IRM Storage Bunkers were not disturbed during their respective observation periods. During the observations of the Screened IRM Pile, screened IRM was conveyed onto the pile.

[7] Visible emission and opacity observation methods used as specified in CDPH Bulk Storage Rules Section 3.0(3)(f)(ii)(a).

[8] CDPH Bulk Storage Rules Section 2.0 an Internal Road is defined as, any route within a facility that is not located in an area normally used for staging or storage of material and that has evidence of repeated prior travel by, or is otherwise regularly used by vehicles for transporting materials to, from or, or within the facility. A Transfer Point is the location at or within a facility where material being moved, carried, or conveyed is dropped or deposited.

Table 1. AZR (Chicago Plant) 4th Quarter 2018 Visible Emissions and Opacity Summary

Location (Date Observed)	Type of Fugitive Emissions Source	Duration of Observation (Minutes)	Average Opacity (%)
Coke Hopper[1] (12/19)	Transfer Point	4:00	0
Off Spec Coke Pile (12/6)	Material Storage Pile	20	0
Coke Loading Pile (12/6)	Material Storage Pile	20	0
Temp. IRM Storage Pile (Outlet of Kiln #2) (12/6)	Material Storage Pile	20	0
Main IRM Storage Pile (12/6)	Material Storage Pile	20	0
Main IRM Storage Bunkers (12/6)	Material Storage Pile	20	0
IRM Truck Loading[2] (12/6)	Transfer Point	6:00	0
IRM Screener and Conveyors (12/6)	Transfer Points	20	0
Screened IRM Pile (12/6)	Material Storage Pile and Transfer Point	20	0
Paved Road – Main Truck Road (12/11)	Roadway	4 Vehicle Passes	0
Parking Lot (12/11)	Roadway	4 Vehicle Passes	0
Paved Road – To IRM Truck Loading (12/11)	Roadway	4 Vehicle Passes	0
Unpaved Road – Section of 114th Street (12/6)	Roadway	4 Vehicle Passes	0
Property Line Locations (Method 22)[3] (12/11)	Property Line	7 x 10 minutes	No visible emissions
IRM Barge Loading Hopper [4]	Transfer Point	n/a	n/a
IRM Barge Loading Conveyor/Chute [4]	Transfer Point	n/a	n/a

1. Observations were taken over the course of 1 bucket of coke being loaded into the hopper. The coke loading process observed spanned a total of 4:00 minutes.
2. Observations were taken over the course of 2 trucks being loaded with IRM. The loading process observed spanned a total of 6:00 minutes.
3. There were 7 property line observations conducted using EPA Method 22: North property line looking east and west, east property line looking north and south, south property line looking west, southwest property line looking southeast, and the west property line looking north.
4. IRM Barge Loading does not occur during the colder winter months. Therefore the IRM Barge Loading Hopper and IRM Barge Loading Conveyor/Chute were not able to be observed.

The Method 9 opacity observation results for the coke storage areas, coke pile material handling, IRM storage piles, IRM pile handling, IRM truck loading, IRM screening and conveying, paved roadways, and unpaved roadways were all below the applicable opacity standard per the CDPH's Bulk Storage Rules. Note that since IRM Barge Loading does not occur during the colder winter months, the IRM Barge Loading Hopper and IRM Barge Loading Conveyor/Chute were not able to be observed. The Method 22 observations of visible emissions at the property boundaries showed no visible emissions crossing the plant property lines.

As discussed in the executive summary, supporting information for the report is included in the appendices. A copy of Mr. Sloan's current Method 9 certification is included in Appendix A. A site plan of the Chicago Plant, denoting the locations of fugitive dust emission sources, is included in Appendix B. The visible emission and opacity observation data sheets are included in Appendix C. Meteorological data from December 6, 11, and 19, 2018 for the AZR Chicago Plant is included in Appendix D.

APPENDIX A: METHOD 9 VISIBLE EMISSIONS OBSERVER CERTIFICATION

AeroMet
Engineering, Inc.
Solutions for a Changing Environment

Certification of Visible Opacity Reading

Matt Sloan

qualified to conduct EPA Method 9 Tests for visible opacity in accordance with the methods established for such qualification in 40 CFR Part 60 Appendix A.

Certification Date: April 11, 2018

Expiration Date: October 11, 2018

AeroMet Instructor: Nathan Neely

APPENDIX B: FACILITY SITE DIAGRAM

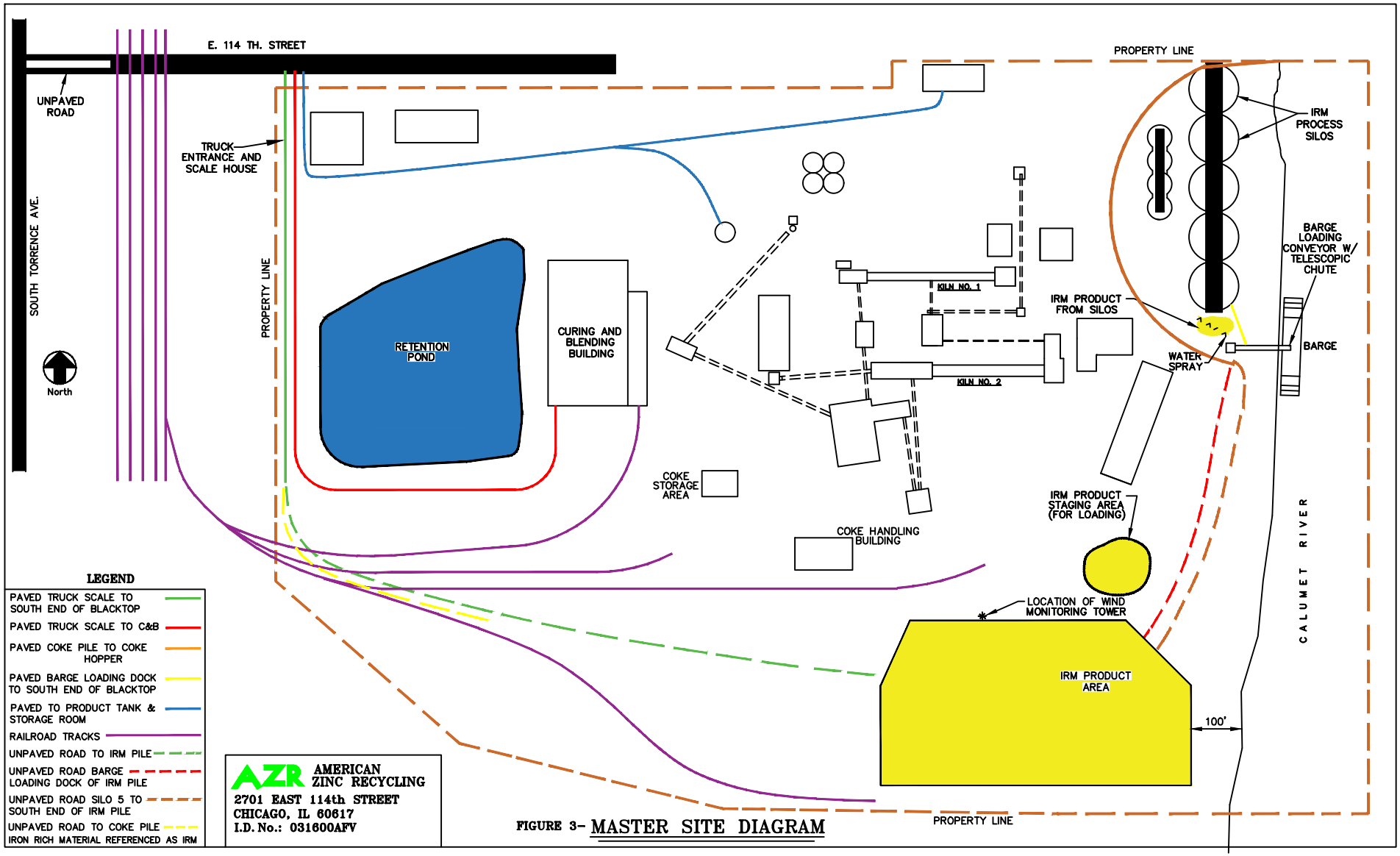
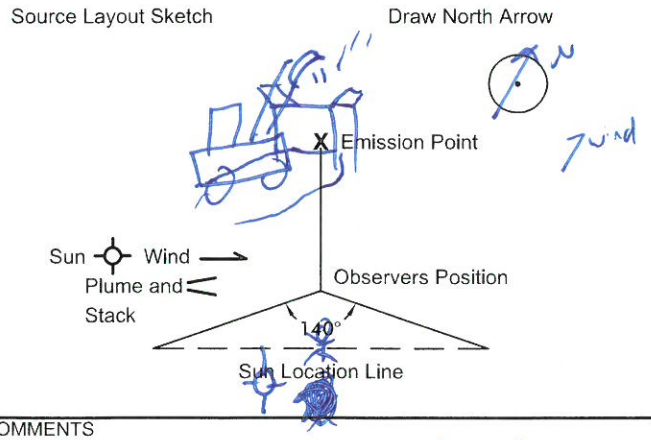


FIGURE 3- MASTER SITE DIAGRAM

APPENDIX C: VISIBLE EMISSIONS AND OPACITY OBSERVATIONS DATA SHEETS

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY / STATE / ZIP	Chicago / IL / 60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	coke hopper
OPERATING MODE	loading
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	coke loading hopper
HEIGHT ABOVE GROUND LEVEL	20 ft
HEIGHT RELATIVE TO OBSERVER START / STOP	20ft / 20ft
DISTANCE FROM OBSERVER START / STOP	100 ft / 100ft
DIRECTION FROM OBSERVER START / STOP	NW / NW
DESCRIBE EMISSIONS START / STOP	— / —
EMISSION COLOR START / STOP	— / —
PLUME TYPE	CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐
WATER DROPLETS PRESENT	NO ☒ YES ☐
IF WATER DROPLET PLUME	ATTACHED ☐ DETACHED ☐ N/A
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START / STOP	3ft above / 3
DESCRIBE BACKGROUND START / STOP	building / building
BACKGROUND COLOR START / STOP	Brown / Brown
SKY CONDITIONS START / STOP	clear / clear
WIND SPEED START / STOP	5-10 / 5-10
WIND DIRECTION START / STOP	N / N
AMBIENT TEMP START / STOP	40 / 40
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/19/18	12:06	12:09

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5					35				
6					36				
7					37				
8					38				
9					39				
10					40				
11					41				
12					42				
13					43				
14					44				
15					45				
16					46				
17					47				
18					48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				
30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD	0 %
NUMBER OF READINGS ABOVE	0 % WERE 0
RANGE OF OPACITY READINGS MINIMUM	0 % MAXIMUM 0 %
OBSERVER'S NAME (PRINT)	Matt Slota
OBSERVER'S SIGNATURE	
DATE	12/19/18
ORGANIZATION	Trinity Consultants
CERTIFIED BY:	Accumet Engineering
DATE	10/10/18
VERIFIED BY:	
DATE	
COMMENTS	no emissions, one load performed
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	
DATE	

SOURCE NAME: American Zinc Recycling Corp. (Chicago Plant)

ADDRESS: 2701 East 114th Street

CITY: Chicago | STATE: IL | ZIP: 60617

PHONE: 773-933-9260 | SOURCE ID NUMBER: 031600AFV

PROCESS EQUIPMENT: off spec coke pile | OPERATING MODE: —

CONTROL EQUIPMENT: — | OPERATING MODE: —

DESCRIBE EMISSION POINT: START pile

HEIGHT ABOVE GROUND LEVEL: 20 ft | HEIGHT RELATIVE TO OBSERVER: START 20ft STOP 20ft

DISTANCE FROM OBSERVER: START 5 ~~0~~ ft STOP 5 ~~0~~ ft | DIRECTION FROM OBSERVER: START W STOP W

DESCRIBE EMISSIONS: START — STOP —

EMISSION COLOR: START — STOP — | PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: N/A ATTACHED ☐ DETACHED ☐

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START 3ft above STOP 3 ft above

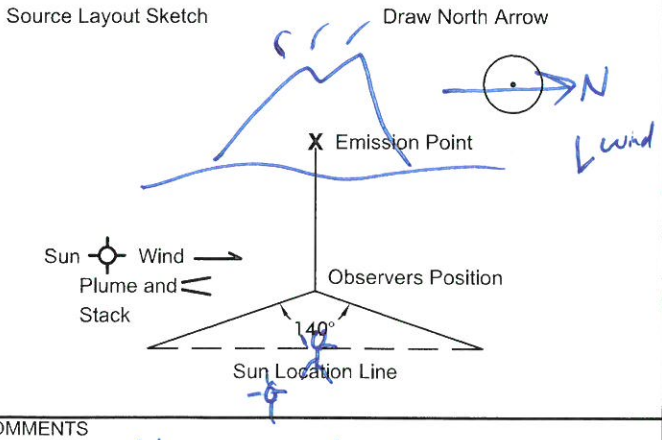
DESCRIBE BACKGROUND: START trees STOP trees

BACKGROUND COLOR: START dark STOP dark | SKY CONDITIONS: START overcast STOP overcast

WIND SPEED: START 5-10 STOP 5-10 | WIND DIRECTION: START E STOP E

AMBIENT TEMP: START 30 STOP 30 | WET BULB TEMP: — | RH.percent: —

Source Layout Sketch



OBSERVATION DATE: 12/6/18 | START TIME: 9:46 | STOP TIME: 10:06

MIN	SEC 0	15	30	45	MIN	SEC 0	15	30	45
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30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0 | NUMBER OF READINGS ABOVE: 10 % WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 % MAXIMUM 0 %

OBSERVER'S NAME (PRINT): Matt Sloan

COMMENTS: No emissions

OBSERVER'S SIGNATURE: [signature] | DATE: 12/6/18

ORGANIZATION: Trinity Consultants

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE

CERTIFIED BY: Aeromet Engineering | DATE: 10/10/18

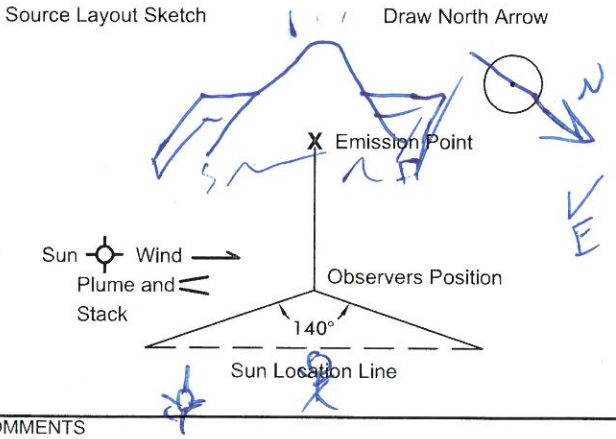
TITLE | DATE

VERIFIED BY: | DATE

Visible Emissions Observations Form

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	coke loading pile
OPERATING MODE	stagnant
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	pile
HEIGHT ABOVE GROUND LEVEL	25ft
HEIGHT RELATIVE TO OBSERVER START	23 ft STOP 23 ft
DISTANCE FROM OBSERVER START	60ft STOP 60ft
DIRECTION FROM OBSERVER START	SW STOP SW
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	N/A
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	3ft above STOP 3ft above
DESCRIBE BACKGROUND START	sky STOP sky
BACKGROUND COLOR START	grey STOP grey
SKY CONDITIONS START	overcast STOP overcast
WIND SPEED START	0-5 STOP 5-10
WIND DIRECTION START	E STOP E
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	10:30	10:50

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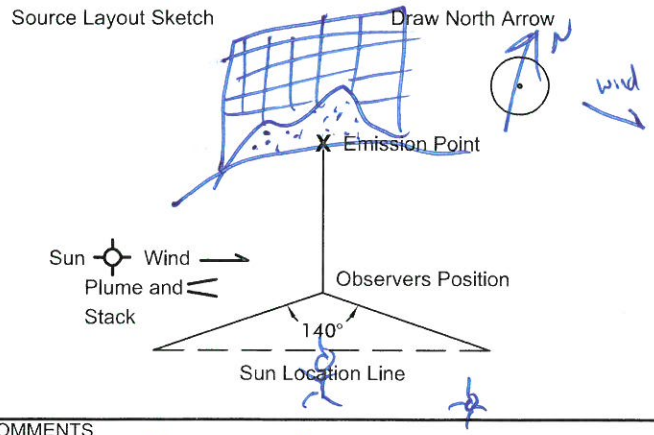
30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE	10 % WERE 0
RANGE OF OPACITY READINGS MINIMUM	0% MAXIMUM 0%
OBSERVER'S NAME (PRINT)	Matt Sloan
OBSERVER'S SIGNATURE	
DATE	12/6/18
ORGANIZATION	Trinity Consultants
CERTIFIED BY:	Accurate Engineering
DATE	10/10/18
VERIFIED BY:	
DATE	
COMMENTS	No emissions
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	
DATE	

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	Temp IRM storage Pile (kiln #2)
OPERATING MODE	stagnant
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	pile
HEIGHT ABOVE GROUND LEVEL	10 ft
HEIGHT RELATIVE TO OBSERVER START	10 ft STOP 10 ft
DISTANCE FROM OBSERVER START	40 ft STOP 40 ft
DIRECTION FROM OBSERVER START	NNE STOP NNE
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☑	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	N/A
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	3 ft above STOP 3 ft above
DESCRIBE BACKGROUND START	building STOP building
BACKGROUND COLOR START	tan STOP tan
SKY CONDITIONS START	overcast STOP overcast
WIND SPEED START	0-5 STOP 0-5
WIND DIRECTION START	E STOP E
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	10:52	11:12

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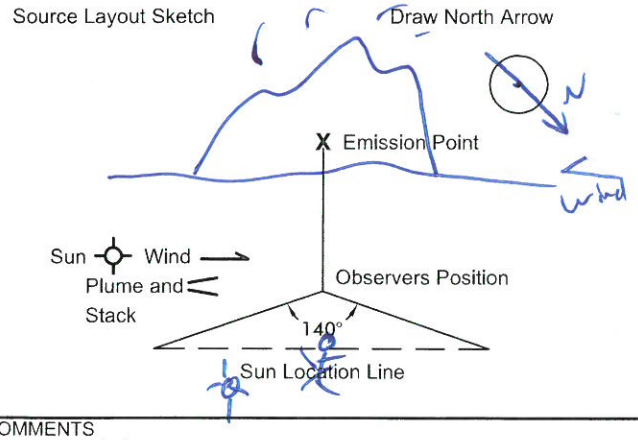
AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE 10 % WERE	0
RANGE OF OPACITY READINGS MINIMUM	0 %
MAXIMUM	0 %
OBSERVER'S NAME (PRINT)	Matt Sloan
OBSERVER'S SIGNATURE	Matthew
DATE	12/6/18
ORGANIZATION	Trinity Consultants
CERTIFIED BY:	Acrument Engineering
DATE	10/10/18
VERIFIED BY:	
DATE	
COMMENTS	No emissions
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	
DATE	

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	Main IRm Pile.
OPERATING MODE	Stagnant
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	Pile
HEIGHT ABOVE GROUND LEVEL	26 ft
HEIGHT RELATIVE TO OBSERVER START	10ft STOP 10ft
DISTANCE FROM OBSERVER START	100ft STOP 100ft
DIRECTION FROM OBSERVER START	SW STOP SW
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	
IF WATER DROPLET PLUME: N/A ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	3ft above STOP 2ft above
DESCRIBE BACKGROUND START	Sky STOP Sky
BACKGROUND COLOR START	Grey STOP Grey
SKY CONDITIONS START	overcast STOP overcast
WIND SPEED START	5-10 STOP 5-10
WIND DIRECTION START	SE STOP SE
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	11:14	11:34

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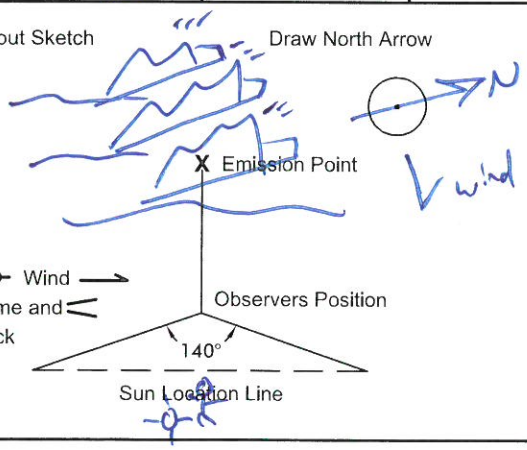
AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE	10 % WERE 0
RANGE OF OPACITY READINGS MINIMUM	0% MAXIMUM 0%
OBSERVER'S NAME (PRINT)	Matt Sloan
COMMENTS	No emissions
OBSERVER'S SIGNATURE	[signature] DATE 12/6/18
ORGANIZATION	Trinity Consultants
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	CERTIFIED BY: Aeromet Engineering DATE 12/10/18
TITLE / DATE	VERIFIED BY: / DATE

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	RM storage Bunkers
OPERATING MODE	stagnant
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	storage piles
HEIGHT ABOVE GROUND LEVEL	7 ft
HEIGHT RELATIVE TO OBSERVER START	7ft STOP 7ft
DISTANCE FROM OBSERVER START	30 ft STOP 30 ft
DIRECTION FROM OBSERVER START	NW STOP NW
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☒	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	N/A
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	3 ft above STOP 3 ft above
DESCRIBE BACKGROUND START	trees/sky STOP trees/sky
BACKGROUND COLOR START	grey STOP grey
SKY CONDITIONS START	overcast STOP overcast
WIND SPEED START	5-10 STOP 5-10
WIND DIRECTION START	E STOP E
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	9:29	9:44

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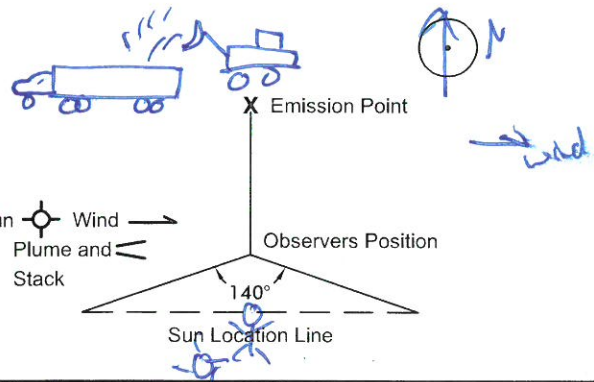
AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE	0 % WERE 0
RANGE OF OPACITY READINGS MINIMUM	0% MAXIMUM 0%
OBSERVER'S NAME (PRINT)	Matt Slica
OBSERVER'S SIGNATURE	[signature]
DATE	12/6/18
ORGANIZATION	Trinity Consultants
CERTIFIED BY:	Assistant Engineer
DATE	12/10/18
VERIFIED BY:	
DATE	
COMMENTS	No emissions
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	
DATE	

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	IRM Truck Loading
OPERATING MODE	
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	truck being loaded
HEIGHT ABOVE GROUND LEVEL	15ft
HEIGHT RELATIVE TO OBSERVER START	10ft STOP 10ft
DISTANCE FROM OBSERVER START	100ft STOP
DIRECTION FROM OBSERVER START	N STOP N
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☒	
IF WATER DROPLET PLUME: N/A ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	2ft above STOP 3ft above
DESCRIBE BACKGROUND START	building STOP building
BACKGROUND COLOR START	brown STOP brown
SKY CONDITIONS START	overast STOP overcast
WIND SPEED START	5-10 STOP 5-10
WIND DIRECTION START	E STOP E
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	8:56	9:02

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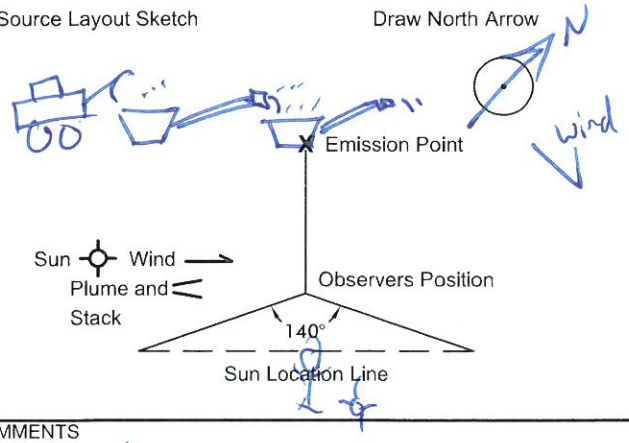
AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE	0 % WERE 0
RANGE OF OPACITY READINGS MINIMUM	0% MAXIMUM 0%
OBSERVER'S NAME (PRINT)	Matt Sloan
OBSERVER'S SIGNATURE	
DATE	12/6/18
ORGANIZATION	Trinity Consultants
CERTIFIED BY:	Aerumet Engineering
DATE	10/10/18
VERIFIED BY:	
DATE	
COMMENTS	No emissions, 2 trucks loaded
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	
DATE	

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	IRM Screener + Conveyor
OPERATING MODE	Operating
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	Series of Screeners + Conveyors
HEIGHT ABOVE GROUND LEVEL	15 ft
HEIGHT RELATIVE TO OBSERVER START	10 ft STOP 10 ft
DISTANCE FROM OBSERVER START	75 ft STOP 75 ft
DIRECTION FROM OBSERVER START	NW STOP NW
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☑	IF WATER DROPLET PLUME: N/A ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	3 ft above STOP 3 ft above
DESCRIBE BACKGROUND START	sky / trees STOP sky / trees
BACKGROUND COLOR START	grey STOP grey
SKY CONDITIONS START	cloudy STOP cloudy
WIND SPEED START	0-5 STOP 0-5
WIND DIRECTION START	E STOP E
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch

Draw North Arrow



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	8:36	8:56

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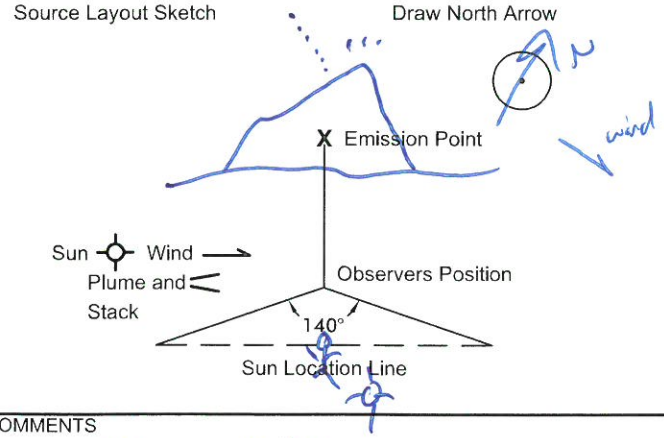
30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD	0 %
NUMBER OF READINGS ABOVE	10 % WERE 0 %
RANGE OF OPACITY READINGS	MINIMUM 0 % MAXIMUM 0 %
OBSERVER'S NAME (PRINT)	Matt Sloan
COMMENTS	No Emissions
OBSERVER'S SIGNATURE	[signature] DATE 12/6/18
ORGANIZATION	Trinity Consultants
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	CERTIFIED BY: Accurate Engineering DATE 12/10/18
TITLE / DATE	VERIFIED BY: / DATE

SOURCE NAME	American Zinc Recycling Corp. (Chicago Plant)
ADDRESS	2701 East 114th Street
CITY	Chicago
STATE	IL
ZIP	60617
PHONE	773-933-9260
SOURCE ID NUMBER	031600AFV
PROCESS EQUIPMENT	Screened IPM Pile
OPERATING MODE	Operating
CONTROL EQUIPMENT	—
OPERATING MODE	—
DESCRIBE EMISSION POINT START	Pile
HEIGHT ABOVE GROUND LEVEL	17 ft
HEIGHT RELATIVE TO OBSERVER START	16 ft STOP 11 ft
DISTANCE FROM OBSERVER START	60 ft STOP 60 ft
DIRECTION FROM OBSERVER START	NW STOP NW
DESCRIBE EMISSIONS START	— STOP —
EMISSION COLOR START	— STOP —
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☒	
IF WATER DROPLET PLUME: N/A ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	3 ft above STOP 3 ft above
DESCRIBE BACKGROUND START	Sky STOP Sky
BACKGROUND COLOR START	Gray STOP Grey
SKY CONDITIONS START	Overcast STOP Overcast
WIND SPEED START	5-16 STOP 5-10
WIND DIRECTION START	E STOP E
AMBIENT TEMP START	30 STOP 30
WET BULB TEMP	—
RH.percent	—

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
12/6/18	9:03	9:23

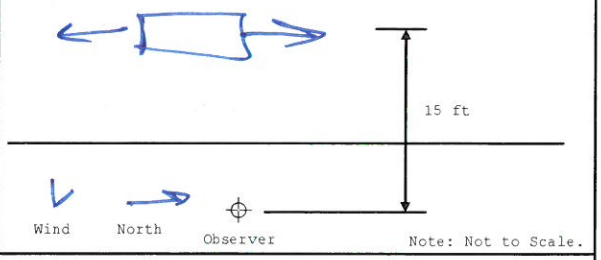
SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	0	0	35				
6	0	0	0	0	36				
7	0	0	0	0	37				
8	0	0	0	0	38				
9	0	0	0	0	39				
10	0	0	0	0	40				
11	0	0	0	0	41				
12	0	0	0	0	42				
13	0	0	0	0	43				
14	0	0	0	0	44				
15	0	0	0	0	45				
16	0	0	0	0	46				
17	0	0	0	0	47				
18	0	0	0	0	48				
19	0	0	0	0	49				
20	0	0	0	0	50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				
30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE	10 % WERE 0
RANGE OF OPACITY READINGS MINIMUM	0 % MAXIMUM 0 %
OBSERVER'S NAME (PRINT)	Matt Sloan
OBSERVER'S SIGNATURE	[signature]
DATE	12/6/18
ORGANIZATION	Trinity Consultants
CERTIFIED BY:	Account Engineer
DATE	10/10/18
VERIFIED BY:	
DATE	
COMMENTS	no emissions
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	
DATE	

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways

Company: American Zinc Recycling Corp Chicago	Provide sketch of observer's position relative to the source:
Address: 2701 E 114th St Chicago IL 60617	
Facility ID: 031600 AFV	
Date: 12/11/18	
Location Description: Paved Road - Main Truck Road	
Control Device: watering / sweeping	
Hours of Observation: < 0.5 hrs	
Observer's Name: Matt Slowey	
Certification Date of Observer: 10/10/18	Observer's Affiliation: Trinity
Point of Emissions: **Roadway/Tire Interface**	Height of Discharge Point: **0 ft**



CLOCK TIME	Initial	8:37	Final	8:50
OBSERVER LOCATION				
Distance to discharge	15 ft		15 ft	
Direction from discharge	90 degrees		90 degrees	
Height of observation point	4 ft		4 ft	
BACKGROUND DESCRIPTION	Reeds		Reeds	
WEATHER CONDITIONS				
Wind Direction	From the W		From the W	
Wind Speed	0-5 mph		0-5 mph	
Ambient Temperature	35 F		35 F	
SKY CONDITIONS (e.g., clear, overcast, % clouds, etc.)	clear		clear	
PLUME DESCRIPTION				
Color	N/A		N/A	
Distance Visible	0 miles		0 miles	
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start - End	Opacity (%) Sum	Opacity (%) Average
1	8:37:30 - 8:37:45	0	0
2	8:43:45 - 8:44:00	0	0
3	8:45:15 - 8:45:30	0	0
4	8:50:30 - 8:50:45	0	0

Readings ranged from 0 to 0 % opacity.

Average of 12 readings: 0 %.

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways (Cont.)

Company America Zinc Recycling Observer Matt Sloan

Location Paved Road - Main Truck Road Facility Type _____

Point of emissions **Roadway/Tire Interface**

Vehicle Pass #	Seconds			Vehicle Type
	0	5	10	
1 8:37:30 - 8:37:45	C	C	C	Forklift
2 8:43:45 - 8:44:00	C	C	C	Truck
3 8:45:15 - 8:45:30	C	C	C	Fork lift
4 8:50:30 - 8:51:45	C	C	C	Forklift.

Description of Road (Paved/Unpaved, Dry/Wet): Paved, Damp

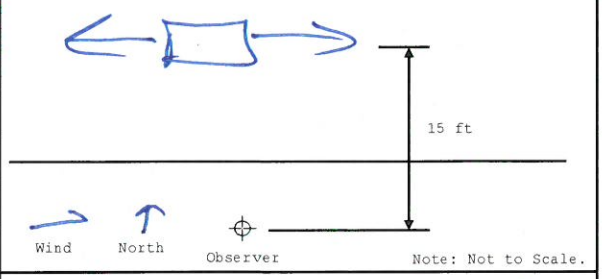
Observer Signature

12/11/18
Date

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways

Company: American Zinc Recycling Corp Chicago	Provide sketch of observer's position relative to the source:
Address: 2701 E 114th St. Chicago IL 60617	
Facility ID: 031600AFV	
Date: 12/11/18	
Location Description: Parking Lot	
Control Device: watering / sweeping	
Hours of Observation: < 0.5 hrs	
Observer's Name: Matt Sloan	
Certification Date of Observer: 10/10/18	Observer's Affiliation: Trinity
Point of Emissions: **Roadway/Tire Interface**	Height of Discharge Point: **0 ft**



CLOCK TIME	Initial	8:23	Final	8:33
OBSERVER LOCATION				
Distance to discharge	**15 ft**		**15 ft**	
Direction from discharge	**90 degrees**		**90 degrees**	
Height of observation point	**4 ft**		**4 ft**	
BACKGROUND DESCRIPTION	cars, plants		cars, plants	
WEATHER CONDITIONS				
Wind Direction	**From the** W		**From the** W	
Wind Speed	0-5 **mph**		0-5 **mph**	
Ambient Temperature	35 **F**		35 **F**	
SKY CONDITIONS (e.g., clear, overcast, % clouds, etc.)	clear		clear	
PLUME DESCRIPTION				
Color	N/A		N/A	
Distance Visible	0 **miles**		0 **miles**	
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start - End	Opacity (%) Sum	Average
1	8:23:45 - 8:24:00	0	0
2	8:28:15 - 8:28:30	0	0
3	8:28:30 - 8:28:45	0	0
4	8:33:00 - 8:33:15	0	0

Readings ranged from 0 to 0 % opacity.

Average of 12 readings: 0 %

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways (Cont.)

Company American Zinc Recycling. Observer Matt Sloan

Location Parking Lot. Facility Type

Point of emissions **Roadway/Tire Interface**

Vehicle Pass #	Seconds			Vehicle Type
	0	5	10	
1 8:23:45 - 8:24:00	0	0	0	car
2 8:28:15 - 8:28:30	0	0	0	car
3 8:28:30 - 8:28:45	0	0	0	truck
4 8:33:00 - 8:33:15	0	0	0	car

Description of Road (Paved/Unpaved, Dry/Wet): paved, damp.

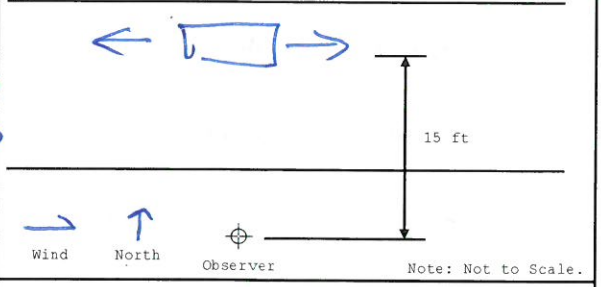
Observer Signature

12/11/18
Date

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways

Company: American Zinc Recycling Corp (Chicago)	Provide sketch of observer's position relative to the source:
Address: 2701 E. 114th St Chicago IL 60617	
Facility ID: 031600AFV	
Date: 12/11/18	
Location Description: Paved Road - To 12th Truck Loading	
Control Device: watering/sweeping	
Hours of Observation: < 0.5 hrs	
Observer's Name: Matt Sloan	
Certification Date of Observer: 10/10/18	Observer's Affiliation: Trinity
Point of Emissions: **Roadway/Tire Interface**	Height of Discharge Point: **0 ft**



CLOCK TIME	Initial	9:09	Final	9:21
OBSERVER LOCATION				
Distance to discharge	**15 ft**		**15 ft**	
Direction from discharge	**90 degrees**		**90 degrees**	
Height of observation point	**4 ft**		**4 ft**	
BACKGROUND DESCRIPTION	rail cars		rail cars	
WEATHER CONDITIONS				
Wind Direction	**From the** W		**From the** W	
Wind Speed	0-5 **mph**		0-5 **mph**	
Ambient Temperature	35 **F**		35 **F**	
SKY CONDITIONS (e.g., clear, overcast, % clouds, etc.)	clear		clear	
PLUME DESCRIPTION				
Color	N/A		N/A	
Distance Visible	0 **miles**		0 **miles**	
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start - End	Opacity (%) Sum	Opacity (%) Average
1	9:09:30 - 9:09:45	0	0
2	9:14:30 - 9:14:45	0	0
3	9:20:00 - 9:20:15	0	0
4	9:20:45 - 9:21:00	0	0

Readings ranged from 0 to 0 % opacity.

Average of 12 readings: 0 %.

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways (Cont.)

Company American Zinc Recycling Observer Matt Sloan

Location Paved Road – To IRM Truck Loading Facility Type

Point of emissions **Roadway/Tire Interface**

Vehicle Pass #	Seconds			Vehicle Type
	0	5	10	
1 9:09:30 – 9:09:45	0	0	0	Truck
2 9:14:30 – 9:14:45	0	0	0	Truck
3 9:20:00 – 9:20:15	0	0	0	Truck
4 9:20:45 – 9:21:00	0	0	0	Truck

Description of Road (Paved/Unpaved, Dry/Wet): paved, damp

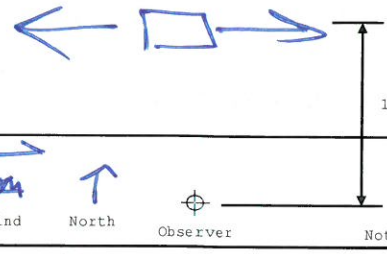
Observer Signature

12/14/18
Date

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways

Company: American Zinc Recycling Corp (Chicago)	Provide sketch of observer's position relative to the source:
Address: 2701 East 114th St. Chicago, IL 60617	
Facility ID: 031600AFV	
Date: 12/6/18	
Location Description: Unpaved Road - Section of 114th St	
Control Device: watering / sweeping	
Hours of Observation: < 0.5 hrs.	
Observer's Name: Matt Sloan	
Certification Date of Observer: 10/10/18	Observer's Affiliation: Trinity
Point of Emissions: **Roadway/Tire Interface**	Height of Discharge Point: **0 ft**



CLOCK TIME	Initial 8:16	Final 8:22
OBSERVER LOCATION		
Distance to discharge	**15 ft**	**15 ft**
Direction from discharge	**90 degrees**	**90 degrees**
Height of observation point	**4 ft**	**4 ft**
BACKGROUND DESCRIPTION	grasses	grasses
WEATHER CONDITIONS		
Wind Direction	**From the** W	**From the** W
Wind Speed	5-10 **mph**	5-10 **mph**
Ambient Temperature	30 **F**	30 **F**
SKY CONDITIONS (e.g., clear, overcast, % clouds, etc.)	overcast	overcast
PLUME DESCRIPTION		
Color	N/A	N/A
Distance Visible	0 **miles**	0 **miles**
OTHER INFORMATION		

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start - End	Opacity (%) Sum	Opacity (%) Average
1	8:16:45 - 8:17:00	0	0
2	8:20:45 - 8:21:00	0	0
3	8:21:15 - 8:21:30	0	0
4	8:21:45 - 8:22:00	0	0

Readings ranged from 0 to 0 % opacity.

Average of 12 readings: 0 %

40 CFR 60, App. A, Method 9

Method 9 Visual Emissions Observation Record Form

Paved and Unpaved Roadways (Cont.)

Company American Zinc Recycling Observer Matt Sloan

Location Unpaved Road - Section of 114th Facility Type

Point of emissions **Roadway/Tire Interface**

Vehicle Pass #	Seconds			Vehicle Type
	0	5	10	
1 8:16:45 - 8:17:00	C	C	C	Truck
2 8:20:45 - 8:21:00	C	C	C	car
3 8:21:15 - 8:21:30	C	C	C	Truck
4 8:21:45 - 8:22:00	C	C	C	Truck

Description of Road (Paved/Unpaved, Dry/Wet): unpaved, damp

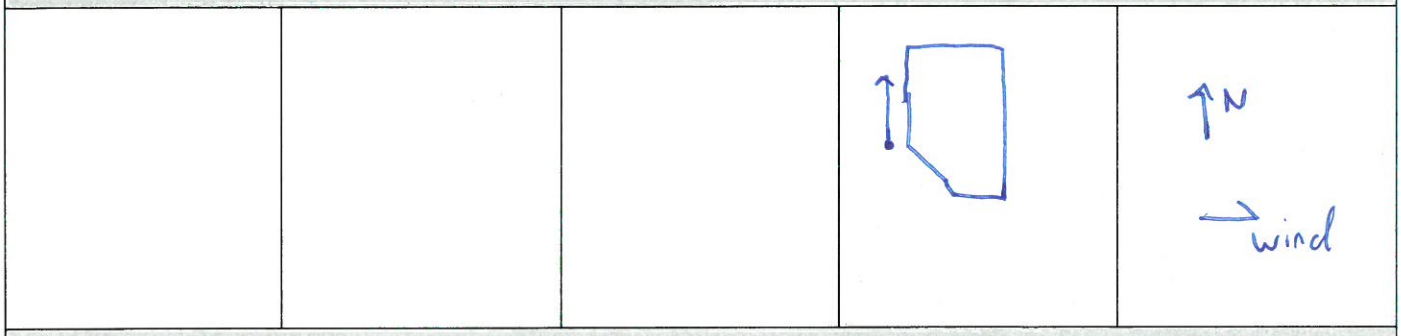
Observer Signature

12/6/18
Date

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Sloan
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity Consultants
Company Rep. Ruth Grissman	**Date** 12/11/18
Sky Conditions clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 0-5
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** Western Foundry

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

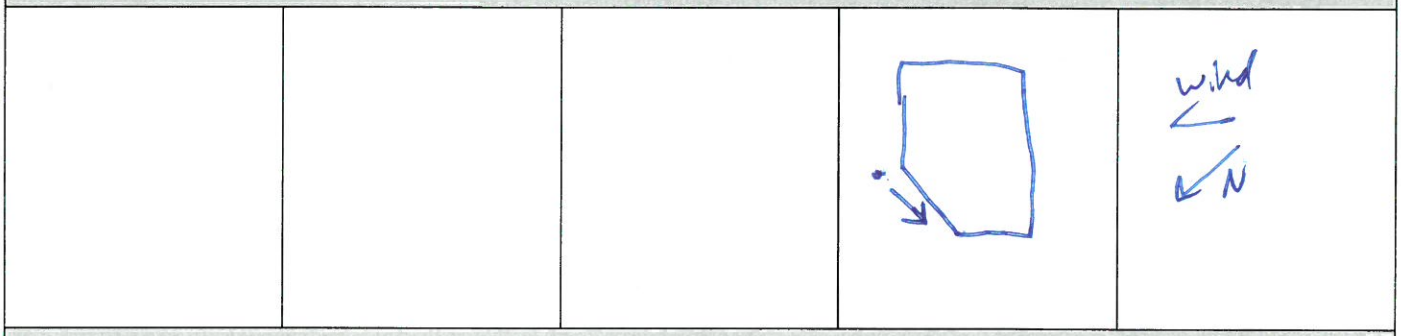
	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	8:52		
		2:00	0:00
	8:54		
		2:00	0:00
	8:56		
		2:00	0:00
	8:58		
		2:00	0:00
	9:00		
End Observation	9:12	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0%

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Sloan
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity Consultants
Company Rep. Ruth Grissman	**Date** 12/11/18
Sky Conditions clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 5-10
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** SW Boundary

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

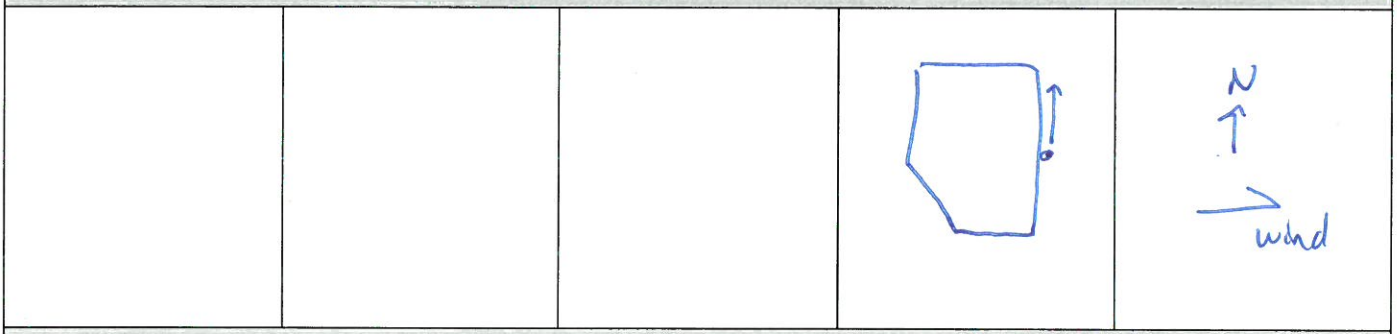
	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	9:23		
		~~5~~ 2:00	0:00
	9:25		
		2:00	0:00
	9:27		
		2:00	0:00
	9:29		
		2:00	0:00
	9:31		
End Observation	9:33	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0 %

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Sloan
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity Consultants
Company Rep. Ruth Grissman	**Date** 12/4/18
Sky Conditions Clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 5-10
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** E Boundary, looking N

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

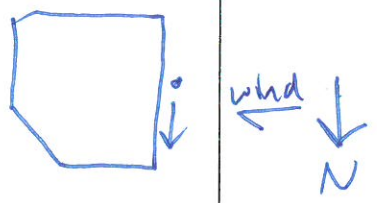
	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	9:36		
		2:00	0:00
	9:38		
		2:00	0:00
	9:40		
		2:00	0:00
	9:42		
		2:00	0:00
	9:44		
End Observation	9:46	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0 %

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Slon
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity consultants
Company Rep. Ruth Grissman	**Date** 12/11/18
Sky Conditions clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 5-10
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** E Boundary, Looking S

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

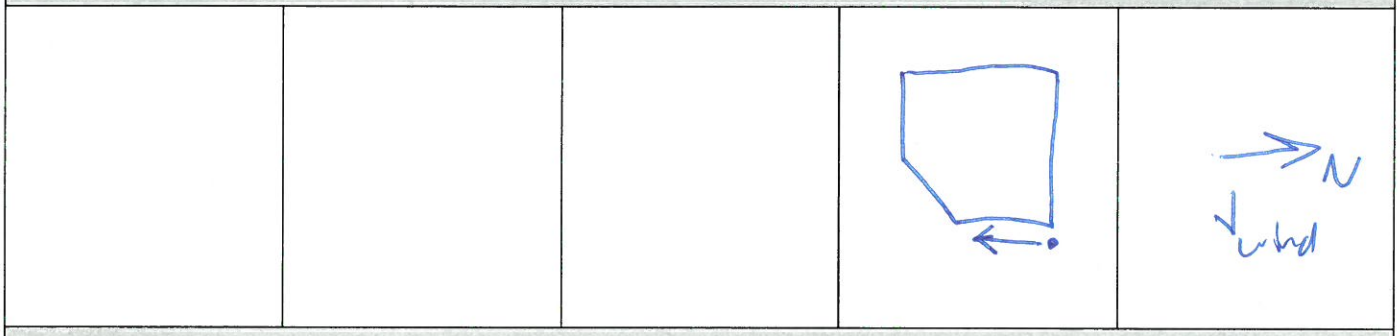
	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	9:47		
		2:00	0:00
	9:49		
		2:00	0:00
	9:51		
		2:00	0:00
	9:53		
		2:00	0:00
	9:55		
End Observation	9:57	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0 %

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Slan
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity Consultants
Company Rep. Ruth Grissman	**Date** 12/11/18
Sky Conditions clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 5-10
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** S Boundary

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

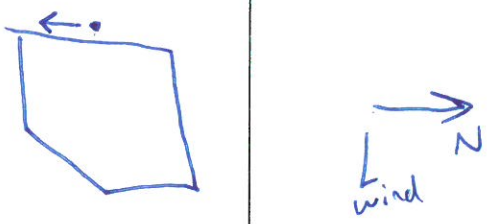
	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	9:59		
		2:00	0:06
	10:01		
		2:00	0:00
	~~10:03~~ 10:03		
		2:00	0:00
	10:05		
		2:00	0:00
	10:07		
End Observation	10:09	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0 %

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Sloan
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity Consultants
Company Rep. Ruth Grissman	**Date** 12/11/18
Sky Conditions Clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 0-5
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** N boundary looking W

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

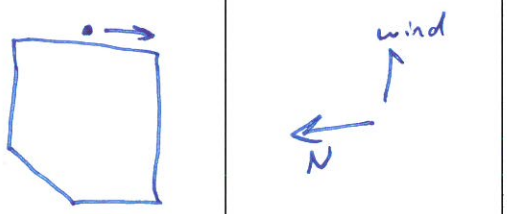
	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	10:15		
		2:00	0:00
	10:17		
		2:00	0:00
	10:19		
		2:00	0:00
	10:21		
		2:00	0:00
	10:23		
End Observation	10:25	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0%

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTSIDE LOCATION – METHOD 22

Company American Zinc Recycling Corp. (Chicago Plant)	**Observer** Matt Sloan
Location Chicago Plant, 2701 E. 114th St, Chicago, IL 60617	**Affiliation** Trinity Consultants
Company Rep. Ruth Grissman	**Date** 12/11/18
Sky Conditions clear	**Wind Direction** E
Precipitation 0	**Wind Speed** 0-5
Industry Secondary Refining of Non Ferrous Metals	**Process Unit** N boundary looking E

Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)
Begin Observation	10:26		
		2:00	0:00
	10:28		
		2:00	0:00
	10:30		
		2:00	0:00
	10:32		
		2:00	0:00
	10:34		
End Observation	10:36	2:00	0:00

Total Sample Time:	10:00
Total Emission Time:	0:00
Emission Frequency: (Total Emission Time/Total Sample Time) x 100%	0%

APPENDIX D: METEOROLOGICAL DATA

AZR - Chicago Plant

December 6, 2018 Meteorological Data from AZR Weather Monitor

Time (CDT)	Average Wind Speed (mph)	Gust Speed (mph)	Average Wind Direction	Variance in Wind Direction	Average Air Temp. (F)	Rain During Averaging Period (inches)	Total Rain for Day
12:00 AM	5.17	17.53	231.7	10.16	30.8	0	0
12:15 AM	5.167	20.87	230.4	10.76	30.92	0	0
12:30 AM	4.715	21.74	235.6	7.778	31.02	0	0
12:45 AM	4.972	19.19	230.8	9.56	31.27	0	0
1:00 AM	4.35	17.91	229.8	8.97	31.44	0	0
1:15 AM	5.105	20.26	224.3	10.76	31.97	0	0
1:30 AM	6.251	18.43	233.4	10.76	32.11	0	0
1:45 AM	6.867	22.23	235.5	12.54	32.22	0	0
2:00 AM	7.393	20.14	237.7	14.93	32.23	0	0
2:15 AM	6.982	19.64	235.1	13.14	32.14	0	0
2:30 AM	7.516	18.94	237.3	14.33	32.11	0	0
2:45 AM	7.444	16.01	241.2	11.95	32.09	0	0
3:00 AM	7.842	19.74	241	13.14	32.18	0	0
3:15 AM	8.79	17.93	251.4	13.14	32.34	0	0
3:30 AM	8.74	16.16	253.2	14.93	32.26	0	0
3:45 AM	7.44	15.94	255.7	14.33	32.38	0	0
4:00 AM	7.593	14.59	257.6	13.14	32.44	0	0
4:15 AM	7.031	17.27	251.4	11.35	32.41	0	0
4:30 AM	6.777	14.34	258.5	11.95	32.4	0	0
4:45 AM	6.15	14.46	254.4	10.16	32.23	0	0
5:00 AM	6.164	14.22	260.8	10.76	32.16	0	0
5:15 AM	6.082	16.36	270	10.16	32.23	0	0
5:30 AM	6.372	13.59	290.1	9.56	32.16	0	0
5:45 AM	7.488	12.81	294.9	11.95	32.22	0	0
6:00 AM	8.58	11.66	298.1	14.33	32.51	0	0
6:15 AM	8.28	12.36	302.3	13.73	32.39	0	0
6:30 AM	8.01	13.76	307.3	12.54	32.31	0	0
6:45 AM	6.767	14.52	308.8	11.95	32.11	0	0
7:00 AM	7.641	18.77	314.5	16.71	32.09	0	0
7:15 AM	6.69	17.41	326.4	11.35	32.08	0	0
7:30 AM	5.733	18.81	316.2	11.95	32	0	0
7:45 AM	5.87	17.12	320.9	10.16	31.97	0	0
8:00 AM	6.062	15.66	322.7	10.76	31.98	0	0
8:15 AM	7.5	18.02	326.2	13.73	32.02	0	0
8:30 AM	7.409	19.39	331	13.73	32.01	0	0
8:45 AM	7.824	28.14	335.1	13.73	31.77	0	0
9:00 AM	8.19	24.14	332.7	16.71	31.27	0	0
9:15 AM	9.48	18.79	332.5	15.52	30.86	0	0
9:30 AM	9.65	20.48	331	17.9	30.53	0	0
9:45 AM	9.76	19.81	332.3	17.9	30.44	0	0
10:00 AM	8.08	17.64	328	13.73	30.48	0	0
10:15 AM	9.01	15.95	330.2	14.33	30.35	0	0
10:30 AM	7.373	17.75	326.3	11.95	30.42	0	0
10:45 AM	7.395	18.72	330	13.14	30.68	0	0
11:00 AM	7.691	17.17	329.4	12.54	30.6	0	0
11:15 AM	8.97	20.52	329.4	15.52	29.95	0	0
11:30 AM	9.17	15.23	330.8	13.14	29.26	0	0
11:45 AM	8.72	18.68	324.2	15.52	29.04	0	0
12:00 PM	8.26	16.73	327.5	14.33	28.93	0	0
12:15 PM	8.46	17.32	326.6	13.73	28.77	0	0

AZR - Chicago Plant

December 6, 2018 Meteorological Data from AZR Weather Monitor

Time (CDT)	Average Wind Speed (mph)	Gust Speed (mph)	Average Wind Direction	Variance in Wind Direction	Average Air Temp. (F)	Rain During Averaging Period (inches)	Total Rain for Day
12:30 PM	8.79	18.28	329.1	13.14	28.65	0	0
12:45 PM	8.87	18.64	327.3	13.73	28.81	0	0
1:00 PM	7.742	20.92	319.5	13.14	29.39	0	0
1:15 PM	7.17	20.62	318.3	12.54	29.62	0	0
1:30 PM	7.012	19.34	322.2	11.95	29.95	0	0
1:45 PM	6.237	20.48	318.9	11.35	30.37	0	0
2:00 PM	7.619	16.22	324.5	13.14	30.57	0	0
2:15 PM	7.393	16.78	326.3	13.14	30.5	0	0
2:30 PM	6.62	18.76	317.6	11.95	30.87	0	0
2:45 PM	7.168	17.8	315.9	13.14	31.04	0	0
3:00 PM	7.232	18.53	318.9	11.95	31.21	0	0
3:15 PM	7.826	17.19	326.1	12.54	31.13	0	0
3:30 PM	6.944	18.1	312.3	11.95	31.12	0	0
3:45 PM	6.879	18.21	316.8	11.35	30.82	0	0
4:00 PM	6.39	18.18	323.8	10.16	30.4	0	0
4:15 PM	6.133	19.24	319.7	10.16	29.75	0	0
4:30 PM	6.732	17.11	323.5	10.76	29.09	0	0
4:45 PM	6.738	13.44	324	10.76	28.91	0	0
5:00 PM	6.297	15.27	321.8	11.35	28.52	0	0
5:15 PM	6.857	14.97	326	11.95	28.23	0	0
5:30 PM	6.954	13.68	326.1	12.54	28.01	0	0
5:45 PM	6.13	14.44	322.4	10.16	27.81	0	0
6:00 PM	5.634	11.83	322.9	9.56	27.53	0	0
6:15 PM	5.195	15.05	320.4	8.97	27.25	0	0
6:30 PM	5.598	16.14	317.4	9.56	27.04	0	0
6:45 PM	4.778	16.71	314.5	8.97	26.74	0	0
7:00 PM	5.43	18.21	326.2	9.56	26.62	0	0
7:15 PM	6.005	19.05	327.2	10.76	26.43	0	0
7:30 PM	6.946	14.44	326.9	11.95	26.06	0	0
7:45 PM	5.45	23.72	323.1	11.35	25.84	0	0
8:00 PM	6.656	11.69	326.4	9.56	25.42	0	0
8:15 PM	5.246	19.23	321.7	9.56	25.28	0	0
8:30 PM	4.861	19.93	325.9	10.16	25.07	0	0
8:45 PM	6.64	12.19	328.2	10.16	24.86	0	0
9:00 PM	5.84	11.03	323.1	8.97	24.62	0	0
9:15 PM	5.489	18.21	326.3	8.97	24.46	0	0
9:30 PM	6.364	10.88	325.7	8.97	24.15	0	0
9:45 PM	4.988	15.03	316	8.97	23.59	0	0
10:00 PM	5.556	12.26	322	8.37	23.61	0	0
10:15 PM	4.023	14.51	313.6	7.182	23.22	0	0
10:30 PM	5.286	12.08	320.7	8.97	23.08	0	0
10:45 PM	5.113	9.78	320.1	7.778	22.92	0	0
11:00 PM	4.915	9.93	318.6	7.182	22.63	0	0
11:15 PM	4.436	12.89	308.7	6.587	22.34	0	0
11:30 PM	4.27	12.8	314.3	6.587	22.15	0	0
11:45 PM	4.192	12.36	315.4	7.182	21.96	0	0
12:00 AM	3.768	13.03	311.7	5.395	21.76	0	0

AZR - Chicago Plant

December 11, 2018 Meteorological Data from AZR Weather Monitor

Time (CDT)	Average Wind Speed (mph)	Gust Speed (mph)	Average Wind Direction	Variance in Wind Direction	Average Air Temp. (F)	Rain During Averaging Period (inches)	Total Rain for Day
12:00 AM	6.787	16.09	248.1	11.95	26.34	0	0
12:15 AM	7.389	16.64	249.2	12.54	26.38	0	0
12:30 AM	6.19	16.74	250	11.95	26.32	0	0
12:45 AM	6.38	16.37	246.1	11.95	26.24	0	0
1:00 AM	7.49	15.01	251.9	13.14	26.07	0	0
1:15 AM	6.904	16.84	248.4	11.35	25.92	0	0
1:30 AM	6.215	16.4	250.3	10.76	25.83	0	0
1:45 AM	5.828	15.46	247	10.76	25.7	0	0
2:00 AM	6.13	15.32	242.8	11.95	25.68	0	0
2:15 AM	7.069	15.23	244.3	11.35	25.66	0	0
2:30 AM	7.194	15.6	245.8	13.14	25.71	0	0
2:45 AM	7.075	16.03	243.7	13.14	25.83	0	0
3:00 AM	6.877	16.03	247.4	11.95	25.95	0	0
3:15 AM	7.393	14.35	250	11.95	26.16	0	0
3:30 AM	6.323	15.7	247	10.76	26.16	0	0
3:45 AM	6.408	17.74	252.6	11.35	26.02	0	0
4:00 AM	6.805	15.76	246.9	12.54	25.84	0	0
4:15 AM	5.973	19.97	250	11.35	25.58	0	0
4:30 AM	5.725	14.39	261.2	10.76	25.52	0	0
4:45 AM	5.884	16.06	245.4	10.16	25.65	0	0
5:00 AM	5.536	16.74	234.2	9.56	25.55	0	0
5:15 AM	4.911	18.19	236	8.37	25.5	0	0
5:30 AM	5.318	15.29	242.9	10.16	25.51	0	0
5:45 AM	5.89	15.58	243.7	10.16	25.49	0	0
6:00 AM	6.464	15.15	244.7	11.35	25.36	0	0
6:15 AM	6.257	16.24	248.7	10.76	25.13	0	0
6:30 AM	6.442	15.24	253.7	10.76	25.04	0	0
6:45 AM	7.059	15.84	253.2	11.95	25.06	0	0
7:00 AM	7.538	14.65	253.6	14.93	25.09	0	0
7:15 AM	6.676	15.36	254.2	13.14	25.17	0	0
7:30 AM	7.556	15.36	257.5	13.73	25.52	0	0
7:45 AM	7.041	15.45	259.1	13.14	25.93	0	0
8:00 AM	7.436	14.73	258.3	12.54	26.34	0	0
8:15 AM	7.627	14.45	258.2	13.14	26.78	0	0
8:30 AM	7.081	15.53	261.7	13.14	27.37	0	0
8:45 AM	8.23	15.55	261.7	13.73	28.06	0	0
9:00 AM	7.697	15.28	267.8	13.14	28.57	0	0
9:15 AM	8.18	15.97	270.5	15.52	29.27	0	0
9:30 AM	7.937	16.92	282.4	14.33	30.27	0	0
9:45 AM	9.21	12.89	287.6	13.73	30.89	0	0
10:00 AM	9.7	14.02	288.5	16.12	31.15	0	0
10:15 AM	8.74	13.9	291.2	13.14	31.72	0	0
10:30 AM	7.718	16.77	284.3	13.73	32.38	0	0
10:45 AM	8.93	17.75	295.9	14.33	33.02	0	0
11:00 AM	7.734	19.33	285.5	11.95	33.29	0	0
11:15 AM	7.309	18.33	289.9	11.35	33.93	0	0
11:30 AM	8.27	15.28	291.7	12.54	34.16	0	0
11:45 AM	8.61	15.76	287.5	14.93	34.69	0	0
12:00 PM	9.03	12.83	288.1	14.93	35	0	0
12:15 PM	8.89	15.5	281.7	14.33	35.37	0	0

AZR - Chicago Plant

December 11, 2018 Meteorological Data from AZR Weather Monitor

Time (CDT)	Average Wind Speed (mph)	Gust Speed (mph)	Average Wind Direction	Variance in Wind Direction	Average Air Temp. (F)	Rain During Averaging Period (inches)	Total Rain for Day
12:30 PM	7.802	15.93	282.7	12.54	35.75	0	0
12:45 PM	7.476	19.2	277.7	11.35	36.2	0	0
1:00 PM	7.208	15.72	292	11.35	36.47	0	0
1:15 PM	6.384	21.54	285.4	10.16	37.46	0	0
1:30 PM	7.554	21.11	271.4	12.54	37.37	0	0
1:45 PM	6.545	22.93	263.5	10.76	38.21	0	0
2:00 PM	6.247	22.18	282.4	9.56	38.49	0	0
2:15 PM	5.735	17.29	283.3	10.16	38.64	0	0
2:30 PM	5.448	24.96	269.2	8.37	38.74	0	0
2:45 PM	5.862	18.06	273.3	9.56	38.9	0	0
3:00 PM	4.561	21.68	275.3	7.778	39.04	0	0
3:15 PM	4.381	17.33	282.6	6.587	38.8	0	0
3:30 PM	3.625	16.29	275.3	5.991	38.77	0	0
3:45 PM	2.998	18.79	256.3	4.8	37.85	0	0
4:00 PM	2.381	11.36	243.9	3.608	37.3	0	0
4:15 PM	2.088	14.62	246.8	4.204	36.79	0	0
4:30 PM	2.513	10.36	257.8	4.204	36.31	0	0
4:45 PM	1.513	11.3	243.8	3.013	35.83	0	0
5:00 PM	0.387	32.73	255	1.611	35.81	0	0
5:15 PM	4.226	17.31	77.02	6.587	34.95	0	0
5:30 PM	3.501	10.79	91	5.395	34.33	0	0
5:45 PM	3.267	14.01	115.6	5.395	34.26	0	0
6:00 PM	3.135	13.26	131.1	4.8	34.24	0	0
6:15 PM	2.953	12.09	152.6	4.204	33.85	0	0
6:30 PM	2.056	17.96	133.9	4.204	33.64	0	0
6:45 PM	2.864	17.5	104.8	4.204	33.23	0	0
7:00 PM	3.163	8.25	124.5	4.204	33.01	0	0
7:15 PM	3.016	12.89	119.4	4.8	33.24	0	0
7:30 PM	3.87	15.82	120.7	5.395	32.91	0	0
7:45 PM	4.927	15.05	161.2	7.182	33.29	0	0
8:00 PM	4.397	12.44	135.3	6.587	32.98	0	0
8:15 PM	3.612	20.68	140.7	5.395	32.48	0	0
8:30 PM	2.967	27.9	164	5.991	32.07	0	0
8:45 PM	3.929	15.71	153	5.991	31.69	0	0
9:00 PM	4.227	11.58	160.2	7.182	31.49	0	0
9:15 PM	3.63	17.96	148.3	5.991	31.28	0	0
9:30 PM	4.492	14.56	143.5	7.182	31.41	0	0
9:45 PM	4.067	10.93	130.1	5.395	31.32	0	0
10:00 PM	4.841	10.42	133.4	6.587	31.34	0	0
10:15 PM	4.873	12.9	141.7	7.778	31.4	0	0
10:30 PM	5.673	13.35	152.4	8.97	31.41	0	0
10:45 PM	5.761	14.7	153.5	9.56	31.09	0	0
11:00 PM	5.765	11.17	146.8	8.37	31.05	0	0
11:15 PM	4.77	10.2	138	7.182	31.11	0	0
11:30 PM	5.659	11.65	148.7	8.97	31.08	0	0
11:45 PM	5.012	16.1	153.9	7.778	30.99	0	0
12:00 AM	5.075	18.72	152.9	8.37	30.85	0	0

AZR - Chicago Plant

December 19, 2018 Meteorological Data from AZR Weather Monitor

Time (CDT)	Average Wind Speed (mph)	Gust Speed (mph)	Average Wind Direction	Variance in Wind Direction	Average Air Temp. (F)	Rain During Averaging Period (inches)	Total Rain for Day
12:00 AM	4.652	19.68	180.2	10.16	35.19	0	0
12:15 AM	6.196	18.48	174.4	11.95	35.14	0	0
12:30 AM	5.912	20.36	176.3	11.35	34.71	0	0
12:45 AM	5.157	21.48	184.5	10.16	34.55	0	0
1:00 AM	5.721	20.29	201.4	14.33	34.68	0	0
1:15 AM	5.769	18.15	200.8	11.95	34.97	0	0
1:30 AM	5.636	18.79	194.9	10.16	35.18	0	0
1:45 AM	5.032	22.06	191.6	9.56	35.54	0	0
2:00 AM	4.019	23.76	180.9	8.97	35.39	0	0
2:15 AM	4.843	22.57	196	9.56	35.14	0	0
2:30 AM	5.286	19.06	193.1	10.16	34.97	0	0
2:45 AM	5.035	25.07	189.7	10.16	34.98	0	0
3:00 AM	4.885	19.59	182.9	10.76	34.77	0	0
3:15 AM	4.619	22.78	191.3	11.95	34.74	0	0
3:30 AM	4.737	21.4	189.3	11.35	34.8	0	0
3:45 AM	4.708	17.82	176.7	9.56	34.76	0	0
4:00 AM	5.094	16.92	174.2	8.37	34.83	0	0
4:15 AM	6.122	15.93	171.6	14.33	35.22	0	0
4:30 AM	6.358	15.81	165.5	10.16	35.41	0	0
4:45 AM	6.342	18.51	169.3	10.76	35.62	0	0
5:00 AM	6.039	18.06	165.5	11.95	35.54	0	0
5:15 AM	4.647	20.14	176.2	7.778	35.47	0	0
5:30 AM	5.018	21.62	193.5	9.56	35.97	0	0
5:45 AM	5.201	24.36	192.1	10.76	36.75	0	0
6:00 AM	5.763	19.48	198.5	11.35	37.47	0	0
6:15 AM	5.64	19.57	185.9	11.95	37.79	0	0
6:30 AM	5.919	23.15	186	12.54	37.91	0	0
6:45 AM	5.949	22.4	195.4	12.54	37.87	0	0
7:00 AM	6.213	21.73	196.8	13.14	37.78	0	0
7:15 AM	5.711	20.11	187.8	14.33	37.5	0	0
7:30 AM	5.862	19.81	175.5	10.76	37.19	0	0
7:45 AM	5.832	23.2	181.8	12.54	37.01	0	0
8:00 AM	5.783	18.46	164.8	10.16	37.34	0	0
8:15 AM	5.965	18.6	170.8	12.54	37.37	0	0
8:30 AM	5.314	18.14	174.4	10.16	37.51	0	0
8:45 AM	5.689	18.71	168.1	10.76	37.9	0	0
9:00 AM	5.939	16.58	170.2	10.16	38.05	0	0
9:15 AM	6.873	17.2	171.5	13.14	38.52	0	0
9:30 AM	6.251	19.41	177.2	10.16	39.93	0	0
9:45 AM	7.244	18.31	169.2	13.14	39.91	0	0
10:00 AM	7.496	20.46	168.3	13.73	39.59	0	0
10:15 AM	8.88	16.89	170.5	14.93	40.21	0	0
10:30 AM	8.51	18.56	174.5	16.71	41.07	0	0
10:45 AM	7.109	25.18	186.9	17.9	42.88	0	0
11:00 AM	7.591	21.52	187.4	13.14	44.06	0	0
11:15 AM	7.322	22.64	191	14.93	45.11	0	0
11:30 AM	7.915	22.46	198.7	14.93	46.02	0	0
11:45 AM	8.6	22.34	198.1	17.31	46.1	0	0
12:00 PM	8.43	20.82	193.3	16.12	46.49	0	0
12:15 PM	8.24	22.58	198.2	14.33	46.98	0	0

AZR - Chicago Plant

December 19, 2018 Meteorological Data from AZR Weather Monitor

Time (CDT)	Average Wind Speed (mph)	Gust Speed (mph)	Average Wind Direction	Variance in Wind Direction	Average Air Temp. (F)	Rain During Averaging Period (inches)	Total Rain for Day
12:30 PM	8.65	24.81	191	14.33	47.37	0	0
12:45 PM	8.33	23.54	191.7	15.52	47.87	0	0
1:00 PM	7.869	25.44	185.1	16.71	47.87	0	0
1:15 PM	7.927	22.88	199.4	14.33	48.41	0	0
1:30 PM	8.1	23.58	186.5	17.9	49.09	0	0
1:45 PM	9.39	18.9	175.4	16.12	49.25	0	0
2:00 PM	8.7	20.75	182.6	16.12	49.39	0	0
2:15 PM	10.09	18.55	170.7	19.1	49.18	0	0
2:30 PM	10.06	22.02	183.2	19.1	48.79	0	0
2:45 PM	9.23	23.74	190.9	19.1	48.54	0	0
3:00 PM	8.84	21.89	179.6	16.12	48.34	0	0
3:15 PM	10.33	21.69	185.2	20.29	48.75	0	0
3:30 PM	9.29	19.39	173.8	16.12	48.86	0	0
3:45 PM	8.95	21.73	179.6	16.71	48.81	0	0
4:00 PM	6.418	25.19	186	17.31	48.3	0	0
4:15 PM	7.194	19.41	177.8	13.73	47.81	0	0
4:30 PM	6.305	20.89	173.4	9.56	47.35	0	0
4:45 PM	7.292	19.19	169.2	13.14	46.92	0	0
5:00 PM	7.438	20.07	181.9	14.33	46.41	0	0
5:15 PM	7.411	19.96	175.6	13.73	45.92	0	0
5:30 PM	6.952	19.15	176.3	12.54	45.46	0	0
5:45 PM	7.049	21.04	177.3	14.93	45.19	0	0
6:00 PM	5.66	22.06	173.7	11.35	44.86	0	0
6:15 PM	6.309	21.74	173.5	11.35	44.77	0	0
6:30 PM	6.354	19.69	171.3	11.35	44.55	0	0
6:45 PM	6.954	20.64	167.5	14.33	44.48	0	0
7:00 PM	8.95	18.78	166.5	17.31	44.72	0	0
7:15 PM	7.558	20.35	165.7	16.12	45.04	0	0
7:30 PM	6.636	21.82	178.3	14.33	45.18	0	0
7:45 PM	6.45	20.61	178.6	11.35	45.19	0	0
8:00 PM	6.515	22.05	182.5	12.54	45.1	0	0
8:15 PM	6.894	21.45	177.8	13.73	44.83	0	0
8:30 PM	8.22	18.79	179.8	18.5	44.84	0	0
8:45 PM	6.412	24.28	179.1	11.95	44.68	0	0
9:00 PM	8.28	18.95	180.1	16.71	45	0	0
9:15 PM	7.393	22.4	196.3	15.52	44.91	0	0
9:30 PM	5.167	20.16	207.9	11.35	44.18	0	0
9:45 PM	5.511	22.53	203.1	10.16	43.79	0	0
10:00 PM	4.744	19.9	209	7.778	43.7	0	0
10:15 PM	5.161	18.57	212.7	8.97	43.72	0	0
10:30 PM	5.588	20.06	201.4	10.16	44.08	0	0
10:45 PM	6.148	20.82	207	12.54	44.41	0	0
11:00 PM	4.531	19.44	210.1	7.778	44.16	0	0
11:15 PM	4.911	19.77	205.3	8.97	44.22	0	0
11:30 PM	4.285	21.48	197.7	7.778	44.11	0	0
11:45 PM	5.068	21.06	194.5	10.16	44.37	0	0
12:00 AM	4.299	20.72	178.7	8.97	44.53	0	0