Statement of Basis

Permit to Construct No. P-2009.0139
Project ID 61440

Real Alloy Recycling, Inc.
Post Falls, Idaho

Facility ID 055-00031

Final

May 6, 2015
Kelli Wetzel KW
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
D/F	dioxins and furans
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAP	hazardous air pollutants
HCl	hydrogen chloride
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
OM&M	operation, maintenance, and monitoring
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
RF3	Rotary Furnace #3
RF6	Rotary Furnace #6
RSI	recycled scrap ingots
Rules	*Rules for the Control of Air Pollution in Idaho*
SKSG	Salt Cake Staging
SO_2	sulfur dioxide
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
Trona	trisodium hydrogendicarbonate dihydrate
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Real Alloy Recycling, Inc. is a secondary aluminum production facility (SIC 3341) which produces recycled scrap ingots (RSI) from the melting and recovery of aluminum and aluminum dross and beverage containers. The recovery of aluminum from scrap aluminum and aluminum dross and the subsequent production of aluminum ingot have been defined by EPA as secondary aluminum production process. This facility is an area source as defined by 40 CFR 63.2 (Subpart A General Provisions) for hazardous air pollutants (HAP) and therefore subject to the requirements of 40 CFR 63, Subpart RRR.

The facility operates two rotary furnaces and associated environmental control equipment. The rotary furnaces are used to melt and extract aluminum from aluminum scrap and aluminum dross. Dross is slag from the aluminum melting and refining operations consisting of fluxing agents, impurities, oxidized and non-oxidized aluminum and/or pre-consumer aluminum scrap. These are defined as Group 1 furnaces (40 CFR 63 Subpart RRR) and all emissions are directed to Trona-injected baghouses. The baghouses are equipped with a bag leak detection system. The regulated pollutants from the emission units include criteria pollutants, dioxins and furans (D/F) and fluoride.

Dross and scrap aluminum come to the facility from several sources. Dross is brought to the dross recovery facility by dump trucks and stored inside buildings until needed. Dross is transferred from storage piles located inside the dross recovery building to the rotary furnace where it is smelted. Scrap aluminum is brought to the facility by dump trucks and stored in outdoor piles until needed. Scrap aluminum is transferred from outdoor storage piles to the rotary furnace where it is melted. The furnace is fired by natural gas. Salt flux is added into the furnaces via mobile equipment. Once the melting cycle is complete, the molten metal is poured by rotary furnaces into sow molds where it is cast, or is transported in crucibles as molten aluminum for direct product shipment.

After the aluminum is tapped, the salt cake is poured out of the furnace into salt cake pans and placed under a hood adjacent to the furnace. After cooling, the salt cake is moved to under roof storage bins and/or loaded into tubs that are used to load dump trucks where it is trucked to an approved landfill for disposal.

The facility currently operates a 158 horsepower (HP) diesel-fired emergency generator used to power an electric fire pump. The engine is exempt from state permitting requirements pursuant to IDAPA 58.01.01.222.01.d. The engine is subject to the area source requirements of 40 CFR 63, Subpart ZZZZ.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

Table 1 SUMMARY OF PERMITTING HISTORY

Issue Date	Permit Number	Project	Status	History Explanation
September 2, 1988	086-0031	Initial Permit for facility formerly named International Mill Services Inc.	S	Initial permit.
November 15, 1994	055-00031	Modification to add saltcake process and change furnace testing schedule.	S	Revised 086-0031.
February 3, 1995	055-00031	Amendment for correction.	S	Revised 055-00031 (11/15/94).
December 21, 1995	055-00031	Amendment.	S	Revised 055-00031 (2/03/95).
November 27, 1998	055-00031	Modification to replace Furnace #3.	S	Revised 055-00031 (12/21/95).
February 14, 2000	055-00031	Revision to modify delacquering system and UBC pollution control system, to install delacquering system baghouse, and to increase Furnace #3 heat input.	S	Revised 055-00031 (11/27/98).
April 10, 2001	055-00031	Revision to re-instate Furnace #6 limits, remove testing requirements for formaldehyde, acetaldehyde and acrolein, and to increase HCl emissions.	S	Revised 055-00031 (2/14/00).
June 4, 2002	055-00031	Modification to increase fluoride emissions from rotary furnace.	S	Revised 055-00031 (4/10/01).
March 27, 2007	P-2007.0004	Modification to increase VOC emissions in rotary Furnace #6 and remove several emission units. Addition of 40 CFR 63, Subpart RRR – NESHAP for Secondary Aluminum Production.	S	Revised 055-00031 (6/04/02).
April 25, 2007	P-2007.0050	Revision to update condition 2.9 and fix typographical errors.	S	Revised P-2007.0004 (3/27/07).
December 31, 2009	P-2009.0139	Revision to revise frequency of source testing.	S	Revised P-2007.0050 (4/25/07).
May 28, 2010	P-2009.0139 PROJ 0140	Revision to change facility name.	S	Revised P-2009.0139 (12/31/09).
January 23, 2013	P-2009.0139 PROJ 61123	Revision to remove salt cake staging baghouse.	S	Revised P-2009.0139 PROJ 0140 (5/28/10).
May 6, 2015	P-2009.0139 PROJ 61440	Modification to add Furnace #6, saltcake handling and crucible cleaning operations, and comply with consent decree requirements.	A	Revised P-2009.0139 PROJ 61123 (1/23/13).

Application Scope

This PTC is a revision of an existing PTC.

The applicant has proposed a name change and a permit modification to add a second process line, which will produce molten aluminum and sow mold products for direct shipment:

- Name change from Aleris Recycling, Inc. to Real Alloy Recycling, Inc.
- Add a natural gas-fired rotary furnace (Rotary Furnace #6), which will operate in a manner similar to the existing furnace (Rotary Furnace #3). Emissions will be controlled by a separate trona-injected baghouse with a bag leak detection system. Emissions will be discharged through Stack #7 exiting through the baghouse.
- Construct two natural gas-fired crucible heaters rated at 1.5 MMBtu/hr each.
- Add a salt cake handling baghouse to control particulate emissions associated with salt cake handling from the proposed rotary furnace, including emissions from crucible cleaning. Crucible cleaning will be conducted approximately 60 times per year.
- Replace the permitted maximum charge rate of 150 tons per hour for Furnace #3 to a maximum annual charge rate of 54,750 tons per year and 150 tons per day on a monthly average. Furnace #6 shall be limited to a maximum annual charge rate of 36,500 tons per year and 100 tons per day on a monthly average.
- Establish salt cake production limits of 4,108 pounds per hour on a monthly average and 17,994.95 tons per year for Furnace #3 and 2,629 pounds per hour on a monthly average and 11,516.20 tons per year for Furnace #6.

Application Chronology

Table 2 APPLICATION CHRONOLOGY

Date	Description
October 17, 2014	DEQ received an application and an application fee from Aleris Recycling.
October 24, 2014	DEQ determined that the application was incomplete (2014AAG1755).
December 17, 2014	DEQ received supplemental information from the applicant, which addressed items identified in the incompleteness letter.
October 27 – November 12, 2014	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
January 12, 2015	DEQ determined that the application was complete.
March 3, 2015	DEQ received a name change request to Real Alloy Recycling, Inc.
March 4, 2015	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 7, 2015	DEQ received supplemental information from the applicant
April 22, 2015	DEQ made available the draft permit and statement of basis for applicant review.
May 1, 2015	DEQ received the processing fee
May 6, 2015	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 3 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source Description (Emission Unit Identification Number)	Control Equipment (Identification Number)
Rotary Furnace #3 (RF3)[b] Manufacturer: IMSAMET of Idaho Maximum capacity: 300,000 lb feed charge/day Date of construction: 1999	Rotary Furnace #3 Baghouse (RFB3)
Rotary Furnace #6 (RF6) Manufacturer: TBD [a] Maximum capacity: 300,000 lb feed charge/day Date of construction: TBD [a]	Rotary Furnace #6 Baghouse (RFB6) 98% control of PM/PM10
Salt Cake Staging and Handling (SKSG) – Rotary Furnace #3 Maximum capacity: 100,000 lb feed charge/day Date of construction: 1999	Existing Salt Cake Cooler Baghouse – Baghouse #9 (BH9)
Salt Cake Staging and Handling (SKSG) – Rotary Furnace #6 Maximum capacity: 100,000 lb feed charge/day Date of construction: TBD	Baghouse #8 (BH8)
Crucible Cleaning Maximum Operation: 60 operations per year Date of construction: TBD [a]	Baghouse #8 (BH8)
Fugitive Emission Sources These include: • Scrap receiving and hauling to storage • Dross receiving and associated handling to storage	Reasonable controls

a) TBD = to be determined.
b) Furnace #3 used to be referred to as Furnance #1 for a period of time prior to issuance of this 2015 permit revision.

Emission Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the operations at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutant, GHG, HAP, and TAP PTE were based on emission factors from AP-42, operation of 8,760 hours per year, and process information specific to the facility for this proposed project.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria and GHG pollutants from all emissions units at the facility/for the one unit being modified as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 4 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_x		CO		VOC		CO_2e	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]
Rotary Furnace #3	2.89	12.66	0.00	0.00	6.16	26.98	0.00	0.00	0.00	0.00	0.00	0.00
Salt Cake Handling (for Furnace #3)	0.61	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Engine	0.02	0.09	0.02	0.08	0.28	1.22	0.06	0.27	0.02	0.10	0.00	0.00
Pre-Project Totals	**3.52**	**15.42**	**0.02**	**0.08**	**6.44**	**28.20**	**0.06**	**0.27**	**0.02**	**0.10**	**0.00**	**0.00**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria and GHG pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 5 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_x		CO		VOC		CO_2e	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]
Rotary Furnace #3	1.74	7.60	0.02	0.07	3.66	16.03	6.88	30.11	0.38	1.64	3162	13848
Rotary Furnace #6	1.16	5.07	0.02	0.07	2.44	10.68	4.58	20.08	0.25	1.10	3162	13848
Salt Cake Handling (for Furnace #3)	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salt Cake Handling (for Furnace #6)	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crucible Heater #1	0.01	0.05	0.001	0.004	0.15	0.64	0.12	0.54	0.01	0.04	177	774
Crucible Heater #2	0.01	0.05	0.0001	0.004	0.15	0.64	0.12	0.54	0.01	0.04	177	774
Diesel Engine	0.02	0.09	0.02	0.08	0.28	1.22	0.06	0.27	0.02	0.10	0.00	0.00
Post Project Totals	**2.97**	**12.96**	**0.06**	**0.23**	**6.67**	**29.22**	**11.77**	**51.54**	**0.67**	**2.92**	**6678.0**	**29244**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 6 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_x		CO		VOC		CO_2e	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	3.52	15.42	0.02	0.08	6.44	28.20	0.06	0.27	0.02	0.10	0.00	0.00
Post Project Potential to Emit	2.97	12.96	0.06	0.23	6.67	29.22	11.77	51.54	0.67	2.92	6678.0	29244
Changes in Potential to Emit	**-0.55**	**-2.46**	**0.04**	**0.15**	**0.23**	**1.02**	**11.71**	**51.27**	**0.65**	**2.82**	**6678.0**	**29244**

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table.

Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

Table 7 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
3-Methylchloranthrene	4.76E-08	1.01E-07	5.29E-08	2.50E-06	No
Acrolein	3.80E-04	3.80E-04	0.00	1.70E-02	No
Cobalt	2.22E-06	4.69E-06	2.47E-06	3.30E-03	No
Copper	2.25E-05	4.75E-05	2.50E-05	1.30E-02	No
Hexane	4.76E-02	1.01E-01	5.29E-02	1.20E+01	No
HF	2.20E-01	3.60E-01	1.41E-01	1.67E-01	No
HCl	1.31E+00	2.15E+00	8.38E-01	5.00E-02	Yes
Manganese	1.01E-05	2.12E-05	1.12E-05	6.70E-02	No
Molybdenum	2.91E-05	6.15E-05	3.24E-05	3.33E-01	No
Naphthalene	3.65E-04	3.83E-04	1.79E-05	3.33E+00	No
Selenium	6.35E-07	1.34E-06	7.06E-07	1.30E-02	No
Toluene	1.77E-03	1.87E-03	1.00E-04	2.50E+01	No
Vanadium	6.09E-05	1.29E-04	6.76E-05	3.00E-03	No
Xylene	1.17E-03	1.17E-03	0.00	2.90E+01	No
Zinc	7.68E-04	1.62E-03	8.53E-04	6.67E-01	No

One of the PTEs for non-carcinogenic TAP was exceeded as a result of this project. Emissions of HCl from the project exceeds the EL listed in Rule 585. However, the facility is covered under federal standards in 40 CFR Part 63 Subpart RRR. Therefore, per IDAPA 58.01.01.210.20, the applicant is not required to meet the ELs in Rule 585 and 586 for emission units that are subject to 40 CFR Part 60, Part 61, or Part 63. Therefore, modeling is not required for HCl.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 8 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
1, 2 Butadiene	1.61E-04	1.61E-04	0.00	2.40E-05	No
2,3,7,8-TCDD	1.74E-07	2.85E-07	1.11E-07	1.50E-10	Yes
Acetaldehyde	3.15E-03	3.15E-03	0.00	3.00E-03	No
Arsenic	5.29E-06	1.12E-05	5.88E-06	1.50E-06	Yes
Benzene	3.89E-03	3.95E-03	6.18E-05	8.00E-04	No
Beryllium	3.18E-07	6.71E-07	3.53E-07	2.80E-05	No
Cadmium	2.91E-05	6.15E-05	3.24E-05	3.70E-06	Yes
Chromium	3.71E-05	7.82E-05	4.12E-05	3.30E-02	No
Formaldehyde	6.84E-03	9.04E-03	2.21E-03	5.10E-04	Yes
Nickel	5.56E-05	1.17E-04	6.18E-05	2.70E-05	Yes
POM[a]	3.02E-07	6.37E-07	3.35E-07	2.00E-06	No

a) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

Some of the PTEs for carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is required for arsenic, cadmium, formaldehyde, and nickel because the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded. Emissions of 2,3,7,8-TCDD from the project exceeds the EL listed in Rule 586. However, the facility is covered under federal standards in 40 CFR Part 63 Subpart RRR. Therefore, per IDAPA 58.01.01.210.20, the applicant is not required to meet the ELs in Rule 585 and 586 for emission units that are subject to 40 CFR Part 60, Part 61, or Part 63. Therefore, modeling is not required for 2,3,7,8-TCDD.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM_{10}, $PM_{2.5}$, NO_x, and TAP from this project exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline[1]. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix B.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

[1] Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Kootenai County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

"Synthetic Minor" classification for criteria pollutants is defined as the uncontrolled Potential to Emit for criteria pollutants are above the applicable major source thresholds and the Potential to Emit for criteria pollutants fall below the applicable major source thresholds.

There has been no increase in permitted emissions. Therefore, there is no change in the facility classification.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 .... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the modified emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 .... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701 .... Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979 and for equipment operating prior to October 1, 1979, respectively.

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following four equations:

IDAPA 58.01.01.701.01.a: If PW is $< 9{,}250$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.701.01.b: If PW is $\geq 9{,}250$ lb/hr; $E = 1.10\ (PW)^{0.25}$

For equipment that commenced prior to October 1, 1979, the PM allowable emission rate is based on one of the following equations:

IDAPA 58.01.01.702.01.a: If PW is $< 17{,}000$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.702.01.b: If PW is $\geq 17{,}000$ lb/hr; $E = 1.12\ (PW)^{0.27}$

For the addition of rotary furnace #6 with a proposed throughput of 100 T/day, E is calculated as follows:

Proposed throughput = 100 T/day x 1/24 day/hr x 2,000 lb/1 T = 8333.33 lb/hr

Therefore, E is calculated as:

$E = 0.045 \times PW^{0.60} = 0.045 \times (8333.33)^{0.60} = 10.13$ lb-PM/hr

For the salt cake handling for rotary furnace #6 with a proposed throughput of 2629 lb/hr, E is calculated as follows:

$E = 0.045 \times PW^{0.60} = 0.045 \times (2629)^{0.60} = 5.07$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for rotary furnace #6 is 3.98 lb-PM_{10}/hr and for the salt cake handling the PTE is 0.02 lb/hr. It was assumed that all PM was PM_{10}. Therefore, compliance with this requirement has been demonstrated.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 .... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM_{10}, SO_2, NO_x, CO, and VOC, or 10 tons per year for any one HAP or 25 tons per year for all HAP combined. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 .... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

The facility is not subject to any NSPS requirements 40 CFR Part 60.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

The facility has proposed to operate as a minor source of hazardous air pollutant (HAP) emissions and is subject to the requirements of 40 CFR 63, Subpart RRR – National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production.

40 CFR 63, Subpart RRR **National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production**

§63.1500 Applicability.

(a) The requirements of this subpart apply to the owner or operator of each secondary aluminum production facility as defined in §63.1503.

(b) The requirements of this subpart apply to the following affected sources, located at a secondary aluminum production facility that is a major source of hazardous air pollutants (HAPs) as defined in §63.2:

(1) Each new and existing aluminum scrap shredder;

(2) Each new and existing thermal chip dryer;

(3) Each new and existing scrap dryer/delacquering kiln/decoating kiln;

(4) Each new and existing group 2 furnace;

(5) Each new and existing sweat furnace;

(6) Each new and existing dross-only furnace;

(7) Each new and existing rotary dross cooler; and

(8) Each new and existing secondary aluminum processing unit.

(c) The requirements of this subpart pertaining to dioxin and furan (D/F) emissions and associated operating, monitoring, reporting and recordkeeping requirements apply to the following affected sources, located at a secondary aluminum production facility that is an area source of HAPs as defined in §63.2:

(1) Each new and existing thermal chip dryer;

(2) Each new and existing scrap dryer/delacquering kiln/decoating kiln;

(3) Each new and existing sweat furnace;

(4) Each new and existing secondary aluminum processing unit, containing one or more group 1 furnace emission units processing other than clean charge.

(d) The requirements of this subpart do not apply to facilities and equipment used for research and development that are not used to produce a saleable product.

(e) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart applicable to area sources.

(f) An aluminum die casting facility, aluminum foundry, or aluminum extrusion facility shall be considered to be an area source if it does not emit, or have the potential to emit considering controls, 10 tons per year or more of any single listed HAP or 25 tons per year of any combination of listed HAP from all emission sources which are located in a contiguous area and under common control, without regard to whether or not such sources are regulated under this subpart or any other subpart. In the case of an aluminum die casting facility, aluminum foundry, or aluminum extrusion facility which is an area source and is subject to regulation under this subpart only because it operates a thermal chip dryer, no furnace operated by such a facility shall be deemed to be subject to the requirements of this subpart if it melts only clean charge, internal scrap, or customer returns.

Real Alloy Recycling is proposing to construct a new rotary furnace with associated air pollution equipment at their existing Secondary Aluminum Production Facility with is currently subject to this subpart.

§63.1501 Dates.

(a) The owner or operator of an existing affected source must comply with the requirements of this subpart by March 24, 2003.

(b) Except as provided in paragraph (c) of this section, the owner or operator of a new affected source that commences construction or reconstruction after February 11, 1999 must comply with the requirements of this subpart by March 24, 2000 or upon startup, whichever is later.

(c) The owner or operator of any affected source which is constructed or reconstructed at any existing aluminum die casting facility, aluminum foundry, or aluminum extrusion facility which otherwise meets the applicability criteria set forth in §63.1500 must comply with the requirements of this subpart by March 24, 2003 or upon startup, whichever is later.

Real Alloy Recycling is proposing to construct one new rotary furnace after March 24, 2003 at their existing Secondary Aluminum Production Facility with is currently subject to this subpart.

§63.1505 Emission standards for affected sources and emission units.

(a) Summary. The owner or operator of a new or existing affected source must comply with each applicable limit in this section. Table 1 to this subpart summarizes the emission standards for each type of source.

(b) Aluminum scrap shredder. On and after the compliance date established by §63.1501, the owner or operator of an aluminum scrap shredder at a secondary aluminum production facility that is a major source must not discharge or cause to be discharged to the atmosphere:

(c) Thermal chip dryer. On and after the compliance date established by §63.1501, the owner or operator of a thermal chip dryer must not discharge or cause to be discharged to the atmosphere emissions in excess of:

(d) Scrap dryer/delacquering kiln/decoating kiln. On and after the compliance date established by §63.1501:

(e) Scrap dryer/delacquering kiln/decoating kiln: alternative limits. The owner or operator of a scrap dryer/ delacquering kiln/decoating kiln may choose to comply with the emission limits in this paragraph (e) as an alternative to the limits in paragraph (d) of this section if the scrap dryer/delacquering kiln/decoating kiln is equipped with an afterburner having a design residence time of at least 1 second and the afterburner is operated at a temperature of at least 760 °C (1400 °F) at all times. On and after the compliance date established by §63.1501:

(f) Sweat furnace. The owner or operator of a sweat furnace shall comply with the emission standard of paragraph (f)(2) of this section.

(g) Dross-only furnace. On and after the compliance date established by §63.1501, the owner or operator of a dross-only furnace at a secondary aluminum production facility that is a major source must not discharge or cause to be discharged to the atmosphere:

(h) Rotary dross cooler. On and after the compliance date established by §63.1501, the owner or operator of a rotary dross cooler at a secondary aluminum production facility that is a major source must not discharge or cause to be discharged to the atmosphere:

Real Alloy Recycling is not subject to the above requirements because the facility is not operating these types of equipment.

(i) Group 1 furnace. The owner or operator of a group 1 furnace must use the limits in this paragraph to determine the emission standards for a SAPU.

(3) 15 µg of D/F TEQ per Mg (2.1×10^{-4} gr of D/F TEQ per ton) of feed/charge from a group 1 furnace at a secondary aluminum production facility that is a major or area source. This limit does not apply if the furnace processes only clean charge;

The facility is subject to this dioxin furan limit.

(j) In-line fluxer. Except as provided in paragraph (j)(3) of this section for an in-line fluxer using no reactive flux material, the owner or operator of an in-line fluxer must use the limits in this paragraph to determine the emission standards for a SAPU.

Real Alloy Recycling is not subject to the above requirement because the facility is not operating this type of equipment.

(k) Secondary aluminum processing unit. On and after the compliance date established by §63.1501, the owner or operator must comply with the emission limits calculated using the equations for PM and HCl in paragraphs (k)(1) and (2) of this section for each secondary aluminum processing unit at a secondary aluminum production facility that is a major source. The owner or operator must comply with the emission limit calculated using the equation for D/F in paragraph (k)(3) of this section for each secondary aluminum processing unit at a secondary aluminum production facility that is a major or area source.

(3) The owner or operator must not discharge or allow to be discharged to the atmosphere any 3-day, 24-hour rolling average emissions of D/F in excess of:

$$L_{C_{D/F}} = \frac{\sum_{i=1}^{n} \left(L_{ti_{D/F}} \times T_{ti} \right)}{\sum_{i=1}^{n} \left(T_{ti} \right)} \qquad (Eq.\ 3)$$

Where,

$L_{tiD/F}$ = The D/F emission limit for individual emission unit i in paragraph (i)(3) of this section for a group 1 furnace; and

$L_{cD/F}$ = The D/F emission limit for the secondary aluminum processing unit.

Note: Clean charge furnaces cannot be included in this calculation since they are not subject to the D/F limit.

(5) The owner or operator of a SAPU at a secondary aluminum production facility that is an area source may demonstrate compliance with the emission limits of paragraph (k)(3) of this section by demonstrating that each emission unit within the SAPU is in compliance with the emission limit of paragraph (i)(3) of this section.

The facility is an area source and must comply with the above emission limit.

§63.1506 Operating requirements.

(a) Summary. On and after the compliance date established by §63.1501, the owner or operator must operate all new and existing affected sources and control equipment according to the requirements in this section.

b) Labeling. The owner or operator must provide and maintain easily visible labels posted at each group 1 furnace, group 2 furnace, in-line fluxer and scrap dryer/delacquering kiln/decoating kiln that identifies the applicable emission limits and means of compliance, including:

(1) The type of affected source or emission unit (e.g., scrap dryer/delacquering kiln/decoating kiln, group 1 furnace, group 2 furnace, in-line fluxer).

(2) The applicable operational standard(s) and control method(s) (work practice or control device). This includes, but is not limited to, the type of charge to be used for a furnace (e.g., clean scrap only, all scrap, etc.), flux materials and addition practices, and the applicable operating parameter ranges and requirements as incorporated in the OM&M plan.

(c) Capture/collection systems. For each affected source or emission unit equipped with an add-on air pollution control device, the owner or operator must:

(1) Design and install a system for the capture and collection of emissions to meet the engineering standards for minimum exhaust rates as published by the American Conference of Governmental Industrial Hygienists in chapters 3 and 5 of "Industrial Ventilation: A Manual of Recommended Practice" (incorporated by reference in §63.1502 of this subpart);

(2) Vent captured emissions through a closed system, except that dilution air may be added to emission streams for the purpose of controlling temperature at the inlet to a fabric filter; and

(3) Operate each capture/collection system according to the procedures and requirements in the OM&M plan.

(d) Feed/charge weight. The owner or operator of each affected source or emission unit subject to an emission limit in kg/Mg (lb/ton) or µg/Mg (gr/ton) of feed/charge must:

(1) Except as provided in paragraph (d)(3) of this section, install and operate a device that measures and records or otherwise determine the weight of feed/charge (or throughput) for each operating cycle or time period used in the performance test; and

(2) Operate each weight measurement system or other weight determination procedure in accordance with the OM&M plan.

(3) The owner or operator may choose to measure and record aluminum production weight from an affected source or emission unit rather than feed/charge weight to an affected source or emission unit, provided that:

(i) The aluminum production weight, rather than feed/charge weight is measured and recorded for all emission units within a SAPU; and

(ii) All calculations to demonstrate compliance with the emission limits for SAPUs are based on aluminum production weight rather than feed/charge weight.

The facility is subject to the above operating requirements.

(m) Group 1 furnace with add-on air pollution control devices. The owner or operator of a group 1 furnace with emissions controlled by a lime-injected fabric filter must:

(1) If a bag leak detection system is used to meet the monitoring requirements in §63.1510, the owner or operator must:

(i) Initiate corrective action within 1 hour of a bag leak detection system alarm.

(ii) Complete the corrective action procedures in accordance with the OM&M plan.

(iii) Operate each fabric filter system such that the bag leak detection system alarm does not sound more than 5 percent of the operating time during a 6-month block reporting period. In calculating this operating time fraction, if inspection of the fabric filter demonstrates that no corrective action is required, no alarm time is counted. If corrective action is required, each alarm shall be counted as a minimum of 1 hour. If the owner or operator takes longer than 1 hour to initiate corrective action, the alarm time shall be counted as the actual amount of time taken by the owner or operator to initiate corrective action.

(2) If a continuous opacity monitoring system is used to meet the monitoring requirements in §63.1510, the owner or operator must:

(i) Initiate corrective action within 1 hour of any 6-minute average reading of 5 percent or more opacity; and

(ii) Complete the corrective action procedures in accordance with the OM&M plan.

(3) Maintain the 3-hour block average inlet temperature for each fabric filter at or below the average temperature established during the performance test, plus 14 °C (plus 25 °F).

(4) For a continuous lime injection system, maintain free-flowing lime in the hopper to the feed device at all times and maintain the lime feeder setting at the same level established during the performance test.

(5) Maintain the total reactive chlorine flux injection rate for each operating cycle or time period used in the performance test at or below the average rate established during the performance test.

(6) Operate each sidewell furnace such that:

(i) The level of molten metal remains above the top of the passage between the sidewell and hearth during reactive flux injection, unless emissions from both the sidewell and the hearth are included in demonstrating compliance with all applicable emission limits.

(ii) Reactive flux is added only in the sidewell, unless emissions from both the sidewell and the hearth are included in demonstrating compliance with all applicable emission limits.

(p) Corrective action. When a process parameter or add-on air pollution control device operating parameter deviates from the value or range established during the performance test and incorporated in the OM&M plan, the owner or operator must initiate corrective action. Corrective action must restore operation of the affected source or emission unit (including the process or control device) to its normal or usual mode of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. Corrective actions taken must include follow-up actions necessary to return the process or control device parameter level(s) to the value or range of values established during the performance test and steps to prevent the likely recurrence of the cause of a deviation.

The facility is subject to the above operating requirements.

§63.1510 Monitoring requirements.

(a) Summary. On and after the compliance date established by §63.1501, the owner or operator of a new or existing affected source or emission unit must monitor all control equipment and processes according to the requirements in this section. Monitoring requirements for each type of affected source and emission unit are summarized in Table 3 to this subpart.

(b) Operation, maintenance, and monitoring (OM&M) plan. The owner or operator must prepare and implement for each new or existing affected source and emission unit, a written operation, maintenance, and monitoring (OM&M) plan. The owner or operator of an existing affected source must submit the OM&M plan to the responsible permitting authority no later than the compliance date established by §63.1501(a). The owner or operator of any new affected source must submit the OM&M plan to the responsible permitting authority within 90 days after a successful initial performance test under §63.1511(b), or within 90 days after the compliance date established by §63.1501(b) if no initial performance test is required. The plan must be accompanied by a written certification by the owner or operator that the OM&M plan satisfies all requirements of this section and is otherwise consistent with the requirements of this subpart. The owner or operator must comply with all of the provisions of the OM&M plan as submitted to the permitting authority, unless and until the plan is revised in accordance with the following procedures. If the permitting authority determines at any time after receipt of the OM&M plan that any revisions of the plan are necessary to satisfy the requirements of this section or this subpart, the owner or operator must promptly make all necessary revisions and resubmit the revised plan. If the owner or operator determines that any other revisions of the OM&M plan are necessary, such revisions will not become effective until the owner or operator submits a description of the changes and a revised plan incorporating them to the permitting authority. Each plan must contain the following information:

(1) Process and control device parameters to be monitored to determine compliance, along with established operating levels or ranges, as applicable, for each process and control device.

(2) A monitoring schedule for each affected source and emission unit.

(3) Procedures for the proper operation and maintenance of each process unit and add-on control device used to meet the applicable emission limits or standards in §63.1505.

(4) Procedures for the proper operation and maintenance of monitoring devices or systems used to determine compliance, including:

(i) Calibration and certification of accuracy of each monitoring device, at least once every 6 months, according to the manufacturer's instructions; and

(ii) Procedures for the quality control and quality assurance of continuous emission or opacity monitoring systems as required by the general provisions in subpart A of this part.

(5) Procedures for monitoring process and control device parameters, including procedures for annual inspections of afterburners, and if applicable, the procedure to be used for determining charge/feed (or throughput) weight if a measurement device is not used.

(6) Corrective actions to be taken when process or operating parameters or add-on control device parameters deviate from the value or range established in paragraph (b)(1) of this section, including:

(i) Procedures to determine and record the cause of any deviation or excursion, and the time the deviation or excursion began and ended; and

(ii) Procedures for recording the corrective action taken, the time corrective action was initiated, and the time/date corrective action was completed.

(7) A maintenance schedule for each process and control device that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance.

(8) Documentation of the work practice and pollution prevention measures used to achieve compliance with the applicable emission limits and a site-specific monitoring plan as required in paragraph (o) of this section for each group 1 furnace not equipped with an add-on air pollution control device.

(c) Labeling. The owner or operator must inspect the labels for each group 1 furnace, group 2 furnace, in-line fluxer and scrap dryer/delacquering kiln/decoating kiln at least once per calendar month to confirm that posted labels as required by the operational standard in §63.1506(b) are intact and legible.

(d) Capture/collection system. The owner or operator must:

(1) Install, operate, and maintain a capture/collection system for each affected source and emission unit equipped with an add-on air pollution control device; and

(2) Inspect each capture/collection and closed vent system at least once each calendar year to ensure that each system is operating in accordance with the operating requirements in §63.1506(c) and record the results of each inspection.

(e) Feed/charge weight. The owner or operator of an affected source or emission unit subject to an emission limit in kg/Mg (lb/ton) or µg/Mg (gr/ton) of feed/charge must install, calibrate, operate, and maintain a device to measure and record the total weight of feed/charge to, or the aluminum production from, the affected source or emission unit over the same operating cycle or time period used in the performance test. Feed/charge or aluminum production within SAPUs must be measured and recorded on an emission unit-by-emission unit basis. As an alternative to a measurement device, the owner or operator may use a procedure acceptable to the applicable permitting authority to determine the total weight of feed/charge or aluminum production to the affected source or emission unit.

(1) The accuracy of the weight measurement device or procedure must be ±1 percent of the weight being measured. The owner or operator may apply to the permitting agency for approval to use a device of alternative accuracy if the required accuracy cannot be achieved as a result of equipment layout or charging practices. A device of alternative accuracy will not be approved unless the owner or operator provides assurance through data and information that the affected source will meet the relevant emission standard.

(2) The owner or operator must verify the calibration of the weight measurement device in accordance with the schedule specified by the manufacturer, or if no calibration schedule is specified, at least once every 6 months.

(f) Fabric filters and lime-injected fabric filters. The owner or operator of an affected source or emission unit using a fabric filter or lime-injected fabric filter to comply with the requirements of this subpart must install, calibrate, maintain, and continuously operate a bag leak detection system as required in paragraph (f)(1) of this section or a continuous opacity monitoring system as required in paragraph (f)(2) of this section. The owner or operator of an aluminum scrap shredder must install and operate a bag leak detection system as required in paragraph (f)(1) of this section, install and operate a continuous opacity monitoring system as required in paragraph (f)(2) of this section, or conduct visible emission observations as required in paragraph (f)(3) of this section.

(1) These requirements apply to the owner or operator of a new or existing affected source or existing emission unit using a bag leak detection system.

(i) The owner or operator must install and operate a bag leak detection system for each exhaust stack of a fabric filter.

(ii) Each triboelectric bag leak detection system must be installed, calibrated, operated, and maintained according to the "Fabric Filter Bag Leak Detection Guidance," (September 1997). This document is available from the U.S. Environmental Protection Agency; Office of Air Quality Planning and Standards; Emissions, Monitoring and Analysis Division; Emission Measurement Center (MD-19), Research Triangle Park, NC 27711. This document also is available on the Technology Transfer Network (TTN) under Emission Measurement Technical Information (EMTIC), Continuous Emission Monitoring. Other bag leak detection systems must be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's written specifications and recommendations.

(iii) The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

(iv) The bag leak detection system sensor must provide output of relative or absolute PM loadings.

(v) The bag leak detection system must be equipped with a device to continuously record the output signal from the sensor.

(vi) The bag leak detection system must be equipped with an alarm system that will sound automatically when an increase in relative PM emissions over a preset level is detected. The alarm must be located where it is easily heard by plant operating personnel.

(vii) For positive pressure fabric filter systems, a bag leak detection system must be installed in each baghouse compartment or cell. For negative pressure or induced air fabric filters, the bag leak detector must be installed downstream of the fabric filter.

(viii) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(ix) The baseline output must be established by adjusting the range and the averaging period of the device and establishing the alarm set points and the alarm delay time.

(x) Following initial adjustment of the system, the owner or operator must not adjust the sensitivity or range, averaging period, alarm set points, or alarm delay time except as detailed in the OM&M plan. In no case may the sensitivity be increased by more than 100 percent or decreased more than 50 percent over a 365-day period unless such adjustment follows a complete fabric filter inspection which demonstrates that the fabric filter is in good operating condition.

(2) These requirements apply to the owner or operator of a new or existing affected source or an existing emission unit using a continuous opacity monitoring system.

(i) The owner or operator must install, calibrate, maintain, and operate a continuous opacity monitoring system to measure and record the opacity of emissions exiting each exhaust stack.

(ii) Each continuous opacity monitoring system must meet the design and installation requirements of Performance Specification 1 in appendix B to 40 CFR part 60.

(3) These requirements apply to the owner or operator of a new or existing aluminum scrap shredder who conducts visible emission observations. The owner or operator must:

(i) Perform a visible emissions test for each aluminum scrap shredder using a certified observer at least once a day according to the requirements of Method 9 in appendix A to 40 CFR part 60. Each Method 9 test must consist of five 6-minute observations in a 30-minute period; and

(ii) Record the results of each test.

(h) Fabric filter inlet temperature. These requirements apply to the owner or operator of a scrap dryer/delacquering kiln/decoating kiln or a group 1 furnace using a lime-injected fabric filter to comply with the requirements of this subpart.

(1) The owner or operator must install, calibrate, maintain, and operate a device to continuously monitor and record the temperature of the fabric filter inlet gases consistent with the requirements for continuous monitoring systems in subpart A of this part.

(2) The temperature monitoring device must meet each of these performance and equipment specifications:

(i) The monitoring system must record the temperature in 15-minute block averages and calculate and record the average temperature for each 3-hour block period.

(ii) The recorder response range must include zero and 1.5 times the average temperature established according to the requirements in §63.1512(n).

(iii) The reference method must be a National Institute of Standards and Technology calibrated reference thermocouple-potentiometer system or alternate reference, subject to approval by the Administrator.

(i) Lime injection. These requirements apply to the owner or operator of an affected source or emission unit using a lime-injected fabric filter to comply with the requirements of this subpart.

(1) The owner or operator of a continuous lime injection system must verify that lime is always free-flowing by either:

(i) Inspecting each feed hopper or silo at least once each 8-hour period and recording the results of each inspection. If lime is found not to be free-flowing during any of the 8-hour periods, the owner or operator must increase the frequency of inspections to at least once every 4-hour period for the next 3 days. The owner or operator may return to inspections at least once every 8 hour period if corrective action results in no further blockages of lime during the 3-day period; or

(ii) Subject to the approval of the permitting agency, installing, operating and maintaining a load cell, carrier gas/lime flow indicator, carrier gas pressure drop measurement system or other system to confirm that lime is free-flowing. If lime is found not to be free-flowing, the owner or operator must promptly initiate and complete corrective action, or

(iii) Subject to the approval of the permitting agency, installing, operating and maintaining a device to monitor the concentration of HCl at the outlet of the fabric filter. If an increase in the concentration of HCl indicates that the lime is not free-flowing, the owner or operator must promptly initiate and complete corrective action.

(2) The owner or operator of a continuous lime injection system must record the lime feeder setting once each day of operation.

(3) An owner or operator who intermittently adds lime to a lime coated fabric filter must obtain approval from the permitting authority for a lime addition monitoring procedure. The permitting authority will not approve a monitoring procedure unless data and information are submitted establishing that the procedure is adequate to ensure that relevant emission standards will be met on a continuous basis.

(j) Total reactive flux injection rate. These requirements apply to the owner or operator of a group 1 furnace (with or without add-on air pollution control devices) or in-line fluxer. The owner or operator must:

(1) Install, calibrate, operate, and maintain a device to continuously measure and record the weight of gaseous or liquid reactive flux injected to each affected source or emission unit.

(i) The monitoring system must record the weight for each 15-minute block period, during which reactive fluxing occurs, over the same operating cycle or time period used in the performance test.

(ii) The accuracy of the weight measurement device must be ±1 percent of the weight of the reactive component of the flux being measured. The owner or operator may apply to the permitting authority for permission to use a weight measurement device of alternative accuracy in cases where the reactive flux flow rates are so low as to make the use of a weight measurement device of ±1 percent impracticable. A device of alternative accuracy will not be approved unless the owner or operator provides assurance through data and information that the affected source will meet the relevant emission standards.

(iii) The owner or operator must verify the calibration of the weight measurement device in accordance with the schedule specified by the manufacturer, or if no calibration schedule is specified, at least once every 6 months.

(2) Calculate and record the gaseous or liquid reactive flux injection rate (kg/Mg or lb/ton) for each operating cycle or time period used in the performance test using the procedure in §63.1512(o).

(3) Record, for each 15-minute block period during each operating cycle or time period used in the performance test during which reactive fluxing occurs, the time, weight, and type of flux for each addition of:

(i) Gaseous or liquid reactive flux other than chlorine; and

(ii) Solid reactive flux.

(4) Calculate and record the total reactive flux injection rate for each operating cycle or time period used in the performance test using the procedure in §63.1512(o).

(5) The owner or operator of a group 1 furnace or in-line fluxer performing reactive fluxing may apply to the Administrator for approval of an alternative method for monitoring and recording the total reactive flux addition rate based on monitoring the weight or quantity of reactive flux per ton of feed/charge for each operating cycle or time period used in the performance test. An alternative monitoring method will not be approved unless the owner or operator provides assurance through data and information that the affected source will meet the relevant emission standards on a continuous basis.

(s) Site-specific requirements for secondary aluminum processing units. (1) An owner or operator of a secondary aluminum processing unit at a facility must include, within the OM&M plan prepared in accordance with §63.1510(b), the following information:

(i) The identification of each emission unit in the secondary aluminum processing unit;

(ii) The specific control technology or pollution prevention measure to be used for each emission unit in the secondary aluminum processing unit and the date of its installation or application;

(iii) The emission limit calculated for each secondary aluminum processing unit and performance test results with supporting calculations demonstrating initial compliance with each applicable emission limit;

(iv) Information and data demonstrating compliance for each emission unit with all applicable design, equipment, work practice or operational standards of this subpart; and

(v) The monitoring requirements applicable to each emission unit in a secondary aluminum processing unit and the monitoring procedures for daily calculation of the 3-day, 24-hour rolling average using the procedure in §63.1510(t).

(2) The SAPU compliance procedures within the OM&M plan may not contain any of the following provisions:

(i) Any averaging among emissions of differing pollutants;

(ii) The inclusion of any affected sources other than emission units in a secondary aluminum processing unit;

(iii) The inclusion of any emission unit while it is shutdown; or

(iv) The inclusion of any periods of startup, shutdown, or malfunction in emission calculations.

(3) To revise the SAPU compliance provisions within the OM&M plan prior to the end of the permit term, the owner or operator must submit a request to the applicable permitting authority containing the information required by paragraph (s)(1) of this section and obtain approval of the applicable permitting authority prior to implementing any revisions.

(t) Secondary aluminum processing unit. Except as provided in paragraph (u) of this section, the owner or operator must calculate and record the 3-day, 24-hour rolling average emissions of PM, HCl, and D/F for each secondary aluminum processing unit on a daily basis. To calculate the 3-day, 24-hour rolling average, the owner or operator must:

(1) Calculate and record the total weight of material charged to each emission unit in the secondary aluminum processing unit for each 24-hour day of operation using the feed/charge weight information required in paragraph (e) of this section. If the owner or operator chooses to comply on the basis of weight of aluminum produced by the emission unit, rather than weight of material charged to the emission unit, all performance test emissions results and all calculations must be conducted on the aluminum production weight basis.

(2) Multiply the total feed/charge weight to the emission unit, or the weight of aluminum produced by the emission unit, for each emission unit for the 24-hour period by the emission rate (in lb/ton of feed/charge) for that emission unit (as determined during the performance test) to provide emissions for each emission unit for the 24-hour period, in pounds.

(3) Divide the total emissions for each SAPU for the 24-hour period by the total material charged to the SAPU, or the weight of aluminum produced by the SAPU over the 24-hour period to provide the daily emission rate for the SAPU.

(4) Compute the 24-hour daily emission rate using Equation 4:

$$E_{day} = \frac{\sum_{i=1}^{n}(T_i \times ER_i)}{\sum_{i=1}^{n} T_i} \qquad (Eq.\ 4)$$

Where,

E_{day} = *The daily PM, HCl, or D/F emission rate for the secondary aluminum processing unit for the 24-hour period;*

T_i = *The total amount of feed, or aluminum produced, for emission unit i for the 24-hour period (tons or Mg);*

ER_i = *The measured emission rate for emission unit i as determined in the performance test (lb/ton or μg/Mg of feed/charge); and*

n = *The number of emission units in the secondary aluminum processing unit.*

(5) Calculate and record the 3-day, 24-hour rolling average for each pollutant each day by summing the daily emission rates for each pollutant over the 3 most recent consecutive days and dividing by 3.

(u) Secondary aluminum processing unit compliance by individual emission unit demonstration. As an alternative to the procedures of paragraph (t) of this section, an owner or operator may demonstrate, through performance tests, that each individual emission unit within the secondary aluminum production unit is in compliance with the applicable emission limits for the emission unit.

The facility is subject to all of the above monitoring requirements.

§63.1511 Performance test/compliance demonstration general requirements.

(a) Site-specific test plan. Prior to conducting any performance test required by this subpart, the owner or operator must prepare a site-specific test plan which satisfies all of the requirements, and must obtain approval of the plan pursuant to the procedures, set forth in §63.7(c).

(b) Initial performance test. Following approval of the site-specific test plan, the owner or operator must demonstrate initial compliance with each applicable emission, equipment, work practice, or operational standard for each affected source and emission unit, and report the results in the notification of compliance status report as described in §63.1515(b). The owner or operator of any existing affected source for which an initial performance test is required to demonstrate compliance must conduct this initial performance test no later than the date for compliance established by §63.1501(a). The owner or operator of any new affected source for which an initial performance test is required must conduct this initial performance test within 90 days after the date for compliance established by §63.1501(b). Except for the date by which the performance test must be conducted, the owner or operator must conduct each performance test in accordance with the requirements and procedures set forth in §63.7(c). Owners or operators of affected sources located at facilities which are area sources are subject only to those performance testing requirements pertaining to D/F. Owners or operators of sweat furnaces meeting the specifications of §63.1505(f)(1) are not required to conduct a performance test.

(1) The owner or operator must conduct each test while the affected source or emission unit is operating at the highest production level with charge materials representative of the range of materials processed by the unit and, if applicable, at the highest reactive fluxing rate.

(2) Each performance test for a continuous process must consist of 3 separate runs; pollutant sampling for each run must be conducted for the time period specified in the applicable method or, in the absence of a specific time period in the test method, for a minimum of 3 hours.

(3) Each performance test for a batch process must consist of three separate runs; pollutant sampling for each run must be conducted over the entire process operating cycle.

(4) Where multiple affected sources or emission units are exhausted through a common stack, pollutant sampling for each run must be conducted over a period of time during which all affected sources or emission units complete at least 1 entire process operating cycle or for 24 hours, whichever is shorter.

(5) Initial compliance with an applicable emission limit or standard is demonstrated if the average of three runs conducted during the performance test is less than or equal to the applicable emission limit or standard.

(c) Test methods. The owner or operator must use the following methods in appendix A to 40 CFR part 60 to determine compliance with the applicable emission limits or standards:

(1) Method 1 for sample and velocity traverses.

(2) Method 2 for velocity and volumetric flow rate.

(3) Method 3 for gas analysis.

(4) Method 4 for moisture content of the stack gas.

(5) Method 5 for the concentration of PM.

(6) Method 9 for visible emission observations.

(7) Method 23 for the concentration of D/F.

(8) Method 25A for the concentration of THC, as propane.

(9) Method 26A for the concentration of HCl. Where a lime-injected fabric filter is used as the control device to comply with the 90 percent reduction standard, the owner or operator must measure the fabric filter inlet concentration of HCl at a point before lime is introduced to the system. Method 26 may be used in place of Method 26A where it can be demonstrated that there are no water droplets in the emission stream. This can be demonstrated by showing that the vapor pressure of water in the emission stream that you are testing is less than the equilibrium vapor pressure of water at the emission stream temperature, and by certifying that the emission stream is not controlled by a wet scrubber.

(e) Repeat tests. The owner or operator of new or existing affected sources and emission units located at secondary aluminum production facilities that are major sources must conduct a performance test every 5 years following the initial performance test.

The facility is not a major source and therefore does not have to conduct a performance test following the initial performance test.

(g) Establishment of monitoring and operating parameter values. The owner or operator of new or existing affected sources and emission units must establish a minimum or maximum operating parameter value, or an operating parameter range for each parameter to be monitored as required by §63.1510 that ensures compliance with the applicable emission limit or standard. To establish the minimum or maximum value or range, the owner or operator must use the appropriate procedures in this section and submit the information required by §63.1515(b)(4) in the notification of compliance status report. The owner or operator may use existing data in addition to the results of performance tests to establish operating parameter values for compliance monitoring provided each of the following conditions are met to the satisfaction of the applicable permitting authority:

(1) The complete emission test report(s) used as the basis of the parameter(s) is submitted.

(2) The same test methods and procedures as required by this subpart were used in the test.

(3) The owner or operator certifies that no design or work practice changes have been made to the source, process, or emission control equipment since the time of the report.

(4) All process and control equipment operating parameters required to be monitored were monitored as required in this subpart and documented in the test report.

§63.1512 Performance test/compliance demonstration requirements and procedures.

(d) Group 1 furnace with add-on air pollution control devices.

(1) The owner or operator of a group 1 furnace that processes scrap other than clean charge materials with emissions controlled by a lime-injected fabric filter must conduct performance tests to measure emissions of PM and D/F at the outlet of the control device and emissions of HCl at the outlet (for the emission limit) or the inlet and the outlet (for the percent reduction standard).

(2) The owner or operator of a group 1 furnace that processes only clean charge materials with emissions controlled by a lime-injected fabric filter must conduct performance tests to measure emissions of PM at the outlet of the control device and emissions of HCl at the outlet (for the emission limit) or the inlet and the outlet (for the percent reduction standard).

(3) The owner or operator may choose to determine the rate of reactive flux addition to the group 1 furnace and assume, for the purposes of demonstrating compliance with the SAPU emission limit, that all reactive flux added to the group 1 furnace is emitted. Under these circumstances, the owner or operator is not required to conduct an emission test for HCl.

(4) The owner or operator of a sidewell group 1 furnace that conducts reactive fluxing (except for cover flux) in the hearth, or that conducts reactive fluxing in the sidewell at times when the level of molten metal falls below the top of the passage between the sidewell and the hearth, must conduct the performance tests required by paragraph (d)(1) or (d)(2) of this section, to measure emissions from both the sidewell and the hearth.

(j) Secondary aluminum processing unit. The owner or operator must conduct performance tests as described in paragraphs (j)(1) through (3) of this section. The results of the performance tests are used to establish emission rates in lb/ton of feed/charge for PM and HCl and µg TEQ/Mg of feed/charge for D/F emissions from each emission unit. These emission rates are used for compliance monitoring in the calculation of the 3-day, 24-hour rolling average emission rates using the equation in §63.1510(t). A performance test is required for:

(1) Each group 1 furnace processing only clean charge to measure emissions of PM and either:

(i) Emissions of HCl (for the emission limit); or

(ii) The mass flow rate of HCl at the inlet to and outlet from the control device (for the percent reduction standard).

(2) Each group 1 furnace that processes scrap other than clean charge to measure emissions of PM and D/F and either:

(i) Emissions of HCl (for the emission limit); or

(ii) The mass flow rate of HCl at the inlet to and outlet from the control device (for the percent reduction standard).

(3) Each in-line fluxer to measure emissions of PM and HCl.

(k) Feed/charge weight measurement. During the emission test(s) conducted to determine compliance with emission limits in a kg/Mg (lb/ton) format, the owner or operator of an affected source or emission unit, subject to an emission limit in a kg/Mg (lb/ton) of feed/charge format, must measure (or otherwise determine) and record the total weight of feed/charge to the affected source or emission unit for each of the three test runs and calculate and record the total weight. An owner or operator that chooses to demonstrate compliance on the basis of the aluminum production weight must measure the weight of aluminum produced by the emission unit or affected source instead of the feed/charge weight.

(l) Continuous opacity monitoring system. The owner or operator of an affected source or emission unit using a continuous opacity monitoring system must conduct a performance evaluation to demonstrate compliance with Performance Specification 1 in appendix B to 40 CFR part 60. Following the performance evaluation, the owner or operator must measure and record the opacity of emissions from each exhaust stack for all consecutive 6-minute periods during the PM emission test.

(n) Inlet gas temperature. The owner or operator of a scrap dryer/delacquering kiln/decoating kiln or a group 1 furnace using a lime-injected fabric filter must use these procedures to establish an operating parameter value or range for the inlet gas temperature.

(1) Continuously measure and record the temperature at the inlet to the lime-injected fabric filter every 15 minutes during the HCl and D/F performance tests;

(2) Determine and record the 15-minute block average temperatures for the 3 test runs; and

(3) Determine and record the 3-hour block average of the recorded temperature measurements for the 3 test runs.

(o) Flux injection rate. The owner or operator must use these procedures to establish an operating parameter value or range for the total reactive chlorine flux injection rate.

(1) Continuously measure and record the weight of gaseous or liquid reactive flux injected for each 15 minute period during the HCl and D/F tests, determine and record the 15-minute block average weights, and calculate and record the total weight of the gaseous or liquid reactive flux for the 3 test runs;

(2) Record the identity, composition, and total weight of each addition of solid reactive flux for the 3 test runs;

(3) Determine the total reactive chlorine flux injection rate by adding the recorded measurement of the total weight of chlorine in the gaseous or liquid reactive flux injected and the total weight of chlorine in the solid reactive flux using Equation 5:

$$W_t = F_1 W_1 + F_2 W_2 \qquad (Eq.\ 5)$$

Where,

W_t *= Total chlorine usage, by weight;*

F_1 *= Fraction of gaseous or liquid flux that is chlorine;*

W_1 *= Weight of reactive flux gas injected;*

F_2 *= Fraction of solid reactive chloride flux that is chlorine (e.g., F = 0.75 for magnesium chloride; and*

W_2 *= Weight of solid reactive flux;*

(4) Divide the weight of total chlorine usage (W_t) for the 3 test runs by the recorded measurement of the total weight of feed for the 3 test runs; and

(5) If a solid reactive flux other than magnesium chloride is used, the owner or operator must derive the appropriate proportion factor subject to approval by the applicable permitting authority.

(p) Lime injection. The owner or operator of an affected source or emission unit using a lime-injected fabric filter system must use these procedures during the HCl and D/F tests to establish an operating parameter value for the feeder setting for each operating cycle or time period used in the performance test.

(1) For continuous lime injection systems, ensure that lime in the feed hopper or silo is free-flowing at all times; and

(2) Record the feeder setting for the 3 test runs. If the feed rate setting varies during the runs, determine and record the average feed rate from the 3 runs.

(q) Bag leak detection system. The owner or operator of an affected source or emission unit using a bag leak detection system must submit the information described in §63.1515(b)(6) as part of the notification of compliance status report to document conformance with the specifications and requirements in §63.1510(f).

(r) Labeling. The owner or operator of each scrap dryer/delacquering kiln/decoating kiln, group 1 furnace, group 2 furnace and in-line fluxer must submit the information described in §63.1515(b)(3) as part of the notification of compliance status report to document conformance with the operational standard in §63.1506(b).

(s) Capture/collection system. The owner or operator of a new or existing affected source or emission unit with an add-on control device must submit the information described in §63.1515(b)(2) as part of the notification of compliance status report to document conformance with the operational standard in §63.1506(c).

§63.1513 Equations for determining compliance.

(b) PM, HCl and D/F emission limits

(2) Use Equation 7A of this section to determine compliance with an emission limit for D/F:

$$E=\frac{C\times Q}{P} \qquad \text{(Eq. 7A)}$$

Where:

E = Emission rate of D/F, µg/Mg (gr/ton) of feed;

C = Concentration of D/F, µg/dscm (gr/dscf);

Q = Volumetric flow rate of exhaust gases, dscm/hr (dscf/hr); and

P = Production rate, Mg/hr (ton/hr).

(4) As an alternative to using the equations in paragraphs (e)(1), (2), and (3) of this section, the owner or operator may demonstrate compliance for a secondary aluminum processing unit by demonstrating that each existing group 1 furnace is in compliance with the emission limits for a new group 1 furnace in §63.1505(i) and that each existing in-line fluxer is in compliance with the emission limits for a new in-line fluxer in §63.1505(j).

§63.1515 Notifications.

(a) Initial notifications. The owner or operator must submit initial notifications to the applicable permitting authority as described in paragraphs (a)(1) through (7) of this section.

(1) As required by §63.9(b)(1), the owner or operator must provide notification for an area source that subsequently increases its emissions such that the source is a major source subject to the standard.

(2) As required by §63.9(b)(3), the owner or operator of a new or reconstructed affected source, or a source that has been reconstructed such that it is an affected source, that has an initial startup after the effective date of this subpart and for which an application for approval of construction or reconstruction is not required under §63.5(d), must provide notification that the source is subject to the standard.

(3) As required by §63.9(b)(4), the owner or operator of a new or reconstructed major affected source that has an initial startup after the effective date of this subpart and for which an application for approval of construction or reconstruction is required by §63.5(d) must provide the following notifications:

(i) Intention to construct a new major affected source, reconstruct a major source, or reconstruct a major source such that the source becomes a major affected source;

(ii) Date when construction or reconstruction was commenced (submitted simultaneously with the application for approval of construction or reconstruction if construction or reconstruction was commenced before the effective date of this subpart, or no later than 30 days after the date construction or reconstruction commenced if construction or reconstruction commenced after the effective date of this subpart);

(iii) Anticipated date of startup; and

(iv) Actual date of startup.

(4) As required by §63.9(b)(5), after the effective date of this subpart, an owner or operator who intends to construct a new affected source or reconstruct an affected source subject to this subpart, or reconstruct a source such that it becomes an affected source subject to this subpart, must provide notification of the intended construction or reconstruction. The notification must include all the information required for an application for approval of construction or reconstruction as required by §63.5(d). For major sources, the application for approval of construction or reconstruction may be used to fulfill these requirements.

(i) The application must be submitted as soon as practicable before the construction or reconstruction is planned to commence (but no sooner than the effective date) if the construction or reconstruction commences after the effective date of this subpart; or

(ii) The application must be submitted as soon as practicable before startup but no later than 90 days after the effective date of this subpart if the construction or reconstruction had commenced and initial startup had not occurred before the effective date.

(5) As required by §63.9(d), the owner or operator must provide notification of any special compliance obligations for a new source.

(6) As required by §63.9(e) and (f), the owner or operator must provide notification of the anticipated date for conducting performance tests and visible emission observations. The owner or operator must notify the Administrator of the intent to conduct a performance test at least 60 days before the performance test is scheduled; notification of opacity or visible emission observations for a performance test must be provided at least 30 days before the observations are scheduled to take place.

(7) As required by §63.9(g), the owner or operator must provide additional notifications for sources with continuous emission monitoring systems or continuous opacity monitoring systems.

(b) Notification of compliance status report. Each owner or operator of an existing affected source must submit a notification of compliance status report within 60 days after the compliance date established by §63.1501(a). Each owner or operator of a new affected source must submit a notification of compliance status report within 90 days after conducting the initial performance test required by §63.1511(b), or within 90 days after the compliance date established by §63.1501(b) if no initial performance test is required. The notification must be signed by the responsible official who must certify its accuracy. A complete notification of compliance status report must include the information specified in paragraphs (a)(1) through (10) of this section. The required information may be submitted in an operating permit application, in an amendment to an operating permit application, in a separate submittal, or in any combination. In a State with an approved operating permit program where delegation of authority under section 112(l) of the CAA has not been requested or approved, the owner or operator must provide duplicate notification to the applicable Regional Administrator. If an owner or operator submits the information specified in this section at different times or in different submittals, later submittals may refer to earlier submittals instead of duplicating and resubmitting the information previously submitted. A complete notification of compliance status report must include:

(1) All information required in §63.9(h). The owner or operator must provide a complete performance test report for each affected source and emission unit for which a performance test is required. A complete performance test report includes all data, associated measurements, and calculations (including visible emission and opacity tests).

(2) The approved site-specific test plan and performance evaluation test results for each continuous monitoring system (including a continuous emission or opacity monitoring system).

(3) Unit labeling as described in §63.1506(b), including process type or furnace classification and operating requirements.

(4) The compliant operating parameter value or range established for each affected source or emission unit with supporting documentation and a description of the procedure used to establish the value (e.g., lime injection rate, total reactive chlorine flux injection rate, afterburner operating temperature, fabric filter inlet temperature), including the operating cycle or time period used in the performance test.

(5) Design information and analysis, with supporting documentation, demonstrating conformance with the requirements for capture/collection systems in §63.1506(c).

(6) If applicable, analysis and supporting documentation demonstrating conformance with EPA guidance and specifications for bag leak detection systems in §63.1510(f).

(7) Manufacturer's specification or analysis documenting the design residence time of no less than 1 second for each afterburner used to control emissions from a scrap dryer/delacquering kiln/decoating kiln subject to alternative emission standards in §63.1505(e).

(8) Manufacturer's specification or analysis documenting the design residence time of no less than 0.8 seconds and design operating temperature of no less than 1,600 °F for each afterburner used to control emissions from a sweat furnace that is not subject to a performance test.

(9) The OM&M plan (including site-specific monitoring plan for each group 1 furnace with no add-on air pollution control device).

The facility is subject to all of the above notification, reporting, and recordkeeping requirements.

§63.1516 Reports.

(a) Startup, shutdown, and malfunction plan/reports. The owner or operator must develop a written plan as described in §63.6(e)(3) that contains specific procedures to be followed for operating and maintaining the source during periods of startup, shutdown, and malfunction, and a program of corrective action for malfunctioning process and air pollution control equipment used to comply with the standard. The owner or operator shall also keep records of each event as required by §63.10(b) and record and report if an action taken during a startup, shutdown, or malfunction is not consistent with the procedures in the plan as described in §63.6(e)(3). In addition to the information required in §63.6(e)(3), the plan must include:

(1) Procedures to determine and record the cause of the malfunction and the time the malfunction began and ended; and

(2) Corrective actions to be taken in the event of a malfunction of a process or control device, including procedures for recording the actions taken to correct the malfunction or minimize emissions.

(b) Excess emissions/summary report. The owner or operator must submit semiannual reports according to the requirements in §63.10(e)(3). Except, the owner or operator must submit the semiannual reports within 60 days after the end of each 6-month period instead of within 30 days after the calendar half as specified in §63.10(e)(3)(v). When no deviations of parameters have occurred, the owner or operator must submit a report stating that no excess emissions occurred during the reporting period.

(1) A report must be submitted if any of these conditions occur during a 6-month reporting period:

(i) The corrective action specified in the OM&M plan for a bag leak detection system alarm was not initiated within 1 hour.

(ii) The corrective action specified in the OM&M plan for a continuous opacity monitoring deviation was not initiated within 1 hour.

(iii) The corrective action specified in the OM&M plan for visible emissions from an aluminum scrap shredder was not initiated within 1 hour.

(iv) An excursion of a compliant process or operating parameter value or range (e.g., lime injection rate or screw feeder setting, total reactive chlorine flux injection rate, afterburner operating temperature, fabric filter inlet temperature, definition of acceptable scrap, or other approved operating parameter).

(v) An action taken during a startup, shutdown, or malfunction was not consistent with the procedures in the plan as described in §63.6(e)(3).

(vi) An affected source (including an emission unit in a secondary aluminum processing unit) was not operated according to the requirements of this subpart.

(vii) A deviation from the 3-day, 24-hour rolling average emission limit for a secondary aluminum processing unit.

(2) Each report must include each of these certifications, as applicable:

(i) For each thermal chip dryer: "Only unpainted aluminum chips were used as feedstock in any thermal chip dryer during this reporting period."

(ii) For each dross-only furnace: "Only dross and salt flux were used as the charge materials in any dross-only furnace during this reporting period."

(iii) For each sidewell group 1 furnace with add-on air pollution control devices: "Each furnace was operated such that the level of molten metal remained above the top of the passage between the sidewell and hearth during reactive fluxing, and reactive flux, except for cover flux, was added only to the sidewell or to a furnace hearth equipped with an add-on air pollution control device for PM, HCl, and D/F emissions during this reporting period."

(3) The owner or operator must submit the results of any performance test conducted during the reporting period, including one complete report documenting test methods and procedures, process operation, and monitoring parameter ranges or values for each test method used for a particular type of emission point tested.

(c) Annual compliance certifications. For the purpose of annual certifications of compliance required by 40 CFR part 70 or 71, the owner or operator must certify continuing compliance based upon, but not limited to, the following conditions:

(1) Any period of excess emissions, as defined in paragraph (b)(1) of this section, that occurred during the year were reported as required by this subpart; and

(2) All monitoring, recordkeeping, and reporting requirements were met during the year.

The facility is subject to all of the above reporting requirements.

§63.1517 Records

(a) As required by §63.10(b), the owner or operator shall maintain files of all information (including all reports and notifications) required by the general provisions and this subpart.

(1) The owner or operator must retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained off site.

(2) The owner or operator may retain records on microfilm, computer disks, magnetic tape, or microfiche; and

(3) The owner or operator may report required information on paper or on a labeled computer disk using commonly available and EPA-compatible computer software.

(b) In addition to the general records required by §63.10(b), the owner or operator of a new or existing affected source (including an emission unit in a secondary aluminum processing unit) must maintain records of:

(1) For each affected source and emission unit with emissions controlled by a fabric filter or a lime-injected fabric filter:

(i) If a bag leak detection system is used, the number of total operating hours for the affected source oremission unit during each 6-month reporting period, records of each alarm, the time of the alarm, the time corrective action was initiated and completed, and a brief description of the cause of the alarm and the corrective action(s) taken.

(ii) If a continuous opacity monitoring system is used, records of opacity measurement data, including records where the average opacity of any 6-minute period exceeds 5 percent, with a brief explanation of the cause of the emissions, the time the emissions occurred, the time corrective action was initiated and completed, and the corrective action taken.

(iii) If an aluminum scrap shredder is subject to visible emission observation requirements, records of all Method 9 observations, including records of any visible emissions during a 30-minute daily test, with a brief explanation of the cause of the emissions, the time the emissions occurred, the time corrective action was initiated and completed, and the corrective action taken.

(5) For each group 1 furnace (with or without add-on air pollution control devices) or in-line fluxer, records of 15-minute block average weights of gaseous or liquid reactive flux injection, total reactive flux injection rate and calculations (including records of the identity, composition, and weight of each addition of gaseous, liquid or solid reactive flux), including records of any period the rate exceeds the compliant operating parameter value and corrective action taken.

(6) For each continuous monitoring system, records required by §63.10(c).

(7) For each affected source and emission unit subject to an emission standard in kg/Mg (lb/ton) of feed/charge, records of feed/charge (or throughput) weights for each operating cycle or time period used in the performance test.

(8) Approved site-specific monitoring plan for a group 1 furnace without add-on air pollution control devices with records documenting conformance with the plan.

(9) Records of all charge materials for each thermal chip dryer, dross-only furnace, and group 1 melting/holding furnaces without air pollution control devices processing only clean charge.

(10) Operating logs for each group 1 sidewell furnace with add-on air pollution control devices documenting conformance with operating standards for maintaining the level of molten metal above the top of the passage between the sidewell and hearth during reactive flux injection and for adding reactive flux only to the sidewell or a furnace hearth equipped with a control device for PM, HCl, and D/F emissions.

(13) Records of monthly inspections for proper unit labeling for each affected source and emission unit subject to labeling requirements.

(14) Records of annual inspections of emission capture/collection and closed vent systems.

(15) Records for any approved alternative monitoring or test procedure.

(16) Current copy of all required plans, including any revisions, with records documenting conformance with the applicable plan, including:

(i) Startup, shutdown, and malfunction plan;

(ii) OM&M plan; and

(iii) Site-specific secondary aluminum processing unit emission plan (if applicable).

(17) For each secondary aluminum processing unit, records of total charge weight, or if the owner or operator chooses to comply on the basis of aluminum production, total aluminum produced for each 24-hour period and calculations of 3-day, 24-hour rolling average emissions.

The facility is subject to all of the above recordkeeping requirements.

§63.1518 Applicability of general provisions.

The requirements of the general provisions in subpart A of this part that are applicable to the owner or operator subject to the requirements of this subpart are shown in appendix A to this subpart.

Permit Conditions Review

This section describes the permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Revised Table 1.1

This table was modified to include Rotary Furnace #6 with baghouse control and the crucible cleaning operations.

Revised Permit Condition 2.1

This permit condition was revised to include the addition of a second rotary furnace and Trona-injected baghouse.

Removed Permit Condition 2.2

The PM and PM10 emissions from Rotary furnace No.1 are controlled by a single baghouse.

There is no requirement for controls on the salt cake staging operation. Most of the operation is done indoors, which provides some control of particulate emissions.

This permit requirement was removed as it was considered redundant to Table 1.1.

Revised Permit Conditions 2.2 and 2.3

These permit conditions were revised to include Rotary Furnace #6.

Added Permit Condition 2.4

Feed charge limits were added because the feed charge rate used to estimate emissions is less than the maximum potential rate. Monitoring and recordkeeping of feed charge is covered under 40 CFR Subpart RRR.

Revised Permit Condition 2.5

This permit condition was revised to include the stack for Rotary Furnace #6.

Revised Permit Condition 2.6

This permit condition was revised to include the dioxin and furan (D/F) limit from 40 CFR 63, Subpart RRR.

Revised Permit Condition 2.7

The salt cake production rate was revised to reflect the rate used to estimate emissions for both furnaces.

Removed Permit Condition 2.8

Trona injection to Rotary Furnace No. 1 shall be, at a minimum, the rate at which fluoride emissions from Stack No. 6 were in compliance during the required performance testing.

This permit condition was removed because it conflicts with the MACT. In accordance with 40 CFR 63, Subpart RRR 63.1512(p), the permittee must use the procedures during the HCl and D/F tests to establish an operating parameter value for the feeder setting for each operating cycle or time period used in the performance test. This requirement is included as part of Permit Condition 2.18.

Removed Permit Condition 2.10

The permittee shall install, calibrate, operate and maintain the following equipment:

- *A gas temperature monitor in the ducting entering the rotary furnaces baghouse.*
- *A continuous gas-pressure-drop monitor across the rotary furnaces baghouse, indicated as static pressure.*

This permit condition was removed because a bag leak detector is used for monitoring baghouse operations.

Removed Permit Condition 2.12

The temperature of the gases entering the rotary furnace baghouse shall not be greater than that established by a source test performed in accordance with 40 CFR 63, Subpart RRR and documented in the O&M approved by the DEQ.

This permit condition was removed because the temperature of the gases entering the baghouse is established by a source test in accordance with 40 CFR 63, Subpart RRR and is included as part of Permit Condition 2.11.

Removed Permit Condition 2.13

The permittee shall install, calibrate, operate, and maintain an alarm system to continuously indicate temperature and pressure drop problems in the Rotary Furnace's baghouse. The alarms shall be located such that the operator will hear and see them when activated.

This permit condition was removed because a baghouse alarm system is required in accordance with 40 CFR 63, Subpart RRR and is included as part of Permit Condition 2.11.

Revised Permit Condition 2.11

This permit condition was revised to include all applicable operating requirements under 40 CFR 63, Subpart RRR in accordance with 40 CFR 63.1506.

Revised Permit Condition 2.12

This permit condition was revised to assess compliance with the hourly and annual limit for salt cake production.

Added Permit Condition 2.13

This permit condition was added to assess compliance with the daily and annual limit for the feed charge for Rotary Furnace #3 and Rotary Furnace #6.

Revised Permit Condition 2.14

This permit condition was revised to include all applicable operating requirements under 40 CFR 63, Subpart RRR in accordance with 40 CFR 63.1510.

Added Permit Condition 2.19

This permit condition was added to include all applicable performance test and compliance demonstration general requirements under 40 CFR 63, Subpart RRR in accordance with 40 CFR 63.1511.

Added Permit Condition 2.20

This permit condition was added to include all applicable performance test and compliance demonstration requirements and procedures under 40 CFR 63, Subpart RRR in accordance with 40 CFR 63.1512.

Revised Permit Condition 2.21

This permit condition was revised to include all applicable notification, reports, and record requirements under 40 CFR 63, Subpart RRR in accordance with 40 CFR 63.1515 through 63.1517.

Revised Permit Condition 3.1

This permit condition was revised to include all rotary furnace staging and handling operations.

Removed Permit Condition 3.2

Emissions from the above sources are controlled in accordance with IDAPA 58.01.01.650 and IDAPA 58.01.01.651 (Rules for Control of Fugitive Dust).

This permit condition was removed because it was considered redundant to new Permit Condition 3.2.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

TABLE 1

SUMMARY OF PROJECTED EMISSIONS

ANNUAL EMISSIONS

Source	Emission Rate (ton/yr)										
	NO_X	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	VOC	Dioxin/Furan	CO_2e	HCl	HF
Rotary Furnace #3	16.03	30.11	0.07	26.13	7.60	7.60	1.64	0.000001	13,848.00	5.95	1.04
Rotary Furnace #6	10.68	20.08	0.07	17.42	5.07	5.07	1.10	0.000001	13,848.00	3.96	0.69
Salt Cake Handling (for Furnace #3)				0.06	0.06						
Salt Cake Handling (for Furnace #6)[1]				0.05	0.05						
Crucible Heater #1	0.64	0.54	0.004	0.05	0.05	0.05	0.04		773.86		
Crucible Heater #2	0.64	0.54	0.004	0.05	0.05	0.05	0.04		773.86		
Diesel Generator	1.22	0.27	0.08	0.09	0.09	0.09	0.10				
TOTALS>>>	**29.22**	**51.54**	**0.23**	**43.84**	**12.96**	**12.85**	**2.91**	**0.000001**	**29,243.73**	**9.91**	**1.73**

HOURLY EMISSIONS

Source	Emission Rate (lb/hr)										
	NO_X	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	VOC	Dioxin/Furan	CO_2e	HCl	HF
Rotary Furnace #3	3.66	6.88	0.02	5.96	1.74	1.74	0.38	0.0000002	3,161.64	1.36	0.24
Rotary Furnace #6	2.44	4.58	0.02	3.98	1.16	1.16	0.25	0.0000001	3,161.64	0.91	0.16
Salt Cake Handling (for Furnace #3)				0.01	0.01						
Salt Cake Handling (for Furnace #6)[1]				0.02	0.02						
Crucible Heater #1	0.15	0.12	0.001	0.01	0.01	0.01	0.01		176.68		
Crucible Heater #2	0.15	0.12	0.001	0.01	0.01	0.01	0.01		176.68		
Diesel Generator	0.28	0.06	0.02	0.02	0.02	0.02	0.02				
TOTALS>>>	**6.67**	**11.77**	**0.05**	**10.02**	**2.97**	**2.93**	**0.66**	**0.0000003**	**6,676.65**	**2.26**	**0.40**

TABLE 2

SUMMARY OF ROTARY FURNACE #3 ALUMINUM RECYCLING POTENTIAL EMISSIONS

54,750 TONS/YEAR & 150 TONS/HOUR LIMIT FOR ROTARY FURNACE #3

Pollutant	*Source Test Emission Factors* *Oily*	*Emission Factor Controlled Point Source (lb/ton) @125% of source test*[6]	*Emission Factor Source*	*Material Rated Capacity (ton/yr)*[5]	*Natural Gas Emission Factor Uncontrolled (lb/mmBtu)*	*Emission Factor Source*	*Burner Rated Capacity (mmBtu/hr)*[2]	*Burner Rated Capacity (mmBtu/yr)*	*Air Pollution Control Device*	*Capture %*	*Control %*	*Melting / Controlled Point Source Emissions*[3] *(ton/yr)*	*Natural Gas / Controlled Point Source Emissions*[4] *(ton/yr)*	*Total Emissions (Controlled) (ton/yr)*	*Total Emissions (Controlled) (lb/hr)*
NO_X	0.468	0.586	Aleris Goodyear AZ Rotary Test 06-2009	54,750	--	Included in melt factor	--	--	None	100	0	16.028		16.03	3.66
CO	0.880	1.100	Aleris Chicago Heights - Furnace #3 Test 06-2012	54,750	--	Included in melt factor	--	--	None	100	0	30.113		30.11	6.88
SO_2	--	--	--	0	0.000588	AP-42, Tbl 1.4-2 (7/98)[1]	27	236,520	None	100	0		0.070	0.07	0.02
PM	0.763	0.954	Aleris Coldwater MI Rotary Test 07-2008	54,750	--	Included in melt factor	--	--	Baghouse	100	98	26.126		26.13	5.96
PM_{10}	0.222	0.278	Aleris Post Falls ID Rotary Test 06-2009	54,750	--	Included in melt factor	--	--	Baghouse	100	98	7.600		7.60	1.74
$PM_{2.5}$	0.222	0.278	Aleris Post Falls ID Rotary Test 06-2009	54,750	--	Included in melt factor	--	--	Baghouse	100	98	7.600		7.60	1.74
VOC	0.048	0.060	Aleris Chicago Heights - Furnace #3 Test 06-2012	54,750	--	Included in melt factor	--	--	None	100	0	1.643		1.64	0.38
Dioxin/Furan	--	3.00E-08	40 CFR 63 Subpart RRR (40 CFR 63.1505(i)(3))	54,750	--	Included in melt factor	--	--	None	100	0	0.000001		0.000001	0.0000002
HCl	0.181	0.217	Aleris Test 12-2002	54,750	--	Included in melt factor	--	--	None	100	0	5.946		5.95	1.36
HF	0.030	0.038	Aleris Test 4-2014	54,750	--	Included in melt factor	--	--	None	100	0	1.040		1.04	0.24

[1] Per AP-42, natural gas factors in lb/mmscf converted to units of lb/mmBtu by dividing by 1020 Btu/scf

[2] 27 mmBtu/hr natural gas burner for the new rotary furnace.

[3] Melting / Controlled point source emissions (ton/yr) = Emission factor controlled point source (lb/ton) x material rated capacity (ton/yr) x 1 ton / 2000 lbs.
For melting controlled point source emissions, % capture and % control are already accounted for in the stack test emission factor.

[4] Natural Gas / controlled point source emissions (ton/yr) = Natural gas emission factor uncontrolled (lb/mmBtu) x Burner capacity (mmBtu/yr) x (% capture/100) x (1 - % control/100) x 1 ton / 2000 lbs. For natural gas controlled point source emissions, % capture and % control must be used to estimate emissions since emission factor is uncontrolled AP-42 factor

[5] Hours of operation 8760 hr/yr
"Particulate Matter Study at Three Representative Sources at Aluminum Recycling and Rolling Facilities", TRC Environmental Corporation", January 19, 2009

[6] Emission factors from all source testing in Table 2 have been increased by a safety factor of 25% except for HCl. HCl was increased by 20% to maintain area source status.

TABLE 2A

SUMMARY OF ROTARY FURNACE #6 ALUMINUM RECYCLING POTENTIAL EMISSIONS

36,500 TONS/YEAR & 100 TONS/HOUR LIMIT FOR ROTARY FURNACE #6

Pollutant	*Source Test Emission Factors*	*Emission Factor Controlled Point Source (lb/ton) @125% of source test*[6]	*Emission Factor Source*	*Material Rated Capacity (ton/yr)*[5]	*Natural Gas Emission Factor Uncontrolled (lb/mmBtu)*	*Emission Factor Source*	*Burner Rated Capacity (mmBtu/hr)*[2]	*Burner Rated Capacity (mmBtu/yr)*	*Air Pollution Control Device*	*Capture %*	*Control %*	*Melting / Controlled Point Source Emissions*[3] *(ton/yr)*	*Natural Gas / Controlled Point Source Emissions*[4] *(ton/yr)*	*Total Emissions (Controlled) (ton/yr)*	*Total Emissions (Controlled) (lb/hr)*
	Oily														
NO_X	0.468	0.585	Aleris Goodyear AZ Rotary Test 06-2009	36,500	--	Included in melt factor	--	--	None	100	0	10.682		10.68	2.44
CO	0.880	1.100	Aleris Chicago Heights - Furnace #3 Test 06-2012	36,500	--	Included in melt factor	--	--	None	100	0	20.075		20.08	4.58
SO_2	--	--	--	0	0.000588	AP-42, Tbl 1.4-2 (7/98)[1]	27	236,520	None	100	0		0.070	0.07	0.02
PM	0.763	0.954	Aleris Coldwater MI Rotary Test 07-2008	36,500	--	Included in melt factor	--	--	Baghouse	100	98	17.417		17.42	3.98
PM_{10}	0.222	0.278	Aleris Post Falls ID Rotary Test 06-2009	36,500	--	Included in melt factor	--	--	Baghouse	100	98	5.066		5.07	1.16
$PM_{2.5}$	0.222	0.278	Aleris Post Falls ID Rotary Test 06-2009	36,500	--	Included in melt factor	--	--	Baghouse	100	98	5.066		5.07	1.16
VOC	0.048	0.060	Aleris Chicago Heights - Furnace #3 Test 06-2012	36,500	--	Included in melt factor	--	--	None	100	0	1.095		1.10	0.25
Dioxin/Furan	--	3.00E-08	40 CFR 63 Subpart RRR (40 CFR 63.1505(i)(3))	36,500	--	Included in melt factor	--	--	None	100	0	0.0000005		0.0000005	0.0000001
HCl	0.181	0.217	Aleris Test 12-2002	36,500	--	Included in melt factor	--	--	None	100	0	3.964		3.96	0.91
HF	0.030	0.038	Aleris Test 4-2014	36,500	--	Included in melt factor	--	--	None	100	0	0.693		0.69	0.16

[1] Per AP-42, natural gas factors in lb/mmscf converted to units of lb/mmBtu by dividing by 1020 Btu/scf

[2] 27 mmBtu/hr natural gas burner for the new rotary furnace.

[3] Melting / Controlled point source emissions (ton/yr) = Emission factor controlled point source (lb/ton) x material rated capacity (ton/yr) x 1 ton / 2000 lbs.
For melting controlled point source emissions, % capture and % control are already accounted for in the stack test emission factor.

[4] Natural Gas / controlled point source emissions (ton/yr) = Natural gas emission factor uncontrolled (lb/mmBtu) x Burner capacity (mmBtu/yr) x (% capture/100) x (1 - % control/100) x 1 ton / 2000 lbs. For natural gas controlled point source emissions, % capture and % control must be used to estimate emissions since emission factor is uncontrolled AP-42 factor

[5] Hours of operation 8760 hr/yr
"Particulate Matter Study at Three Representative Sources at Aluminum Recycling and Rolling Facilities", TRC Environmental Corporation", January 19, 2009

[6] Emission factors from all source testing in Table 2 have been increased by a safety factor of 25% except for HCl. HCl was increased by 20% to maintain area source status.

TABLE 3

ROTARY FURNACE #3 SALT CAKE HANDLING EMISSION CALCULATIONS
LIMITS FOR ROTARY FURNACES #3

BACKGROUND DATA

Maximum Annual Charge to Rotary Furnace #3	54,750	ton/yr
Aluminum Recovery Rate	0.761	%
Unrecovered Material Rate	0.239	%
Furnace #3 Production		
Aluminum Recovered	41,684.46	ton/yr
Unrecovered Material Produced	13,065.54	ton/yr
	2,983.00	lb/hr
Salt Usage	4,927.50	ton/yr
	1,125.00	lb/hr
Salt Cake Produced	17,993.04	ton/yr
	4,108.00	lb/hr
Baghouse Control Parameters		
Capture Efficiency	0.98	
Control Efficiency	0.99	

Operating Scenario	*Salt Cake Produced*[1]	*Airborne PM Generated*[2]		*Controlled PM Emissions*[3]		*Fugitive PM Emissions*[4]	
	lb/hr	*lb/hr*	*ton/yr*	*lb/hr*	*ton/yr*	*lb/hr*	*ton/yr*
Furnace #3 Salt Cake Production	4,108	1.51	6.63	0.01	0.06	0.03	0.13

[1] Salt cake produced is a summation of unrecovered material and salt usage.

[2] Calculation methodology for Rotary Furnace #3 is contained in Statement of Basis for Permit to Construct No. P-2009.0139, Project ID 61123, issued on January 18, 2013. The methodology has been revised in this application to include the addition of salt which was not included in the Permit to Construct listed above. The salt addition increases the material throughput rate by 9%.

[3] Assumes that 98% of the airborne PM generated is captured and ducted to the baghouse where it is controlled at 99%.

[4] Assumes that the remaining 2% of the airborne PM generated is emitted as a fugitive emission inside the building.

TABLE 3A

ROTARY FURNACE #6 SALT CAKE HANDLING EMISSION CALCULATIONS
LIMITS FOR ROTARY FURNACES #6

BACKGROUND DATA

Maximum Annual Charge to Rotary Furnace #6	36,500	ton/yr
Aluminum Recovery Rate	0.775	%
Unrecovered Material Rate	0.225	%
Furnace #3 Production		
Aluminum Recovered	28,269.98	ton/yr
Unrecovered Material Produced	8,230.02	ton/yr
	1,879.00	lb/hr
Salt Usage	3,285.00	ton/yr
	750.00	lb/hr
Salt Cake Produced	11,515.02	ton/yr
	2,629.00	lb/hr
Baghouse Control Parameters		
Capture Efficiency	0.98	
Control Efficiency	0.99	

Operating Scenario	*Salt Cake Produced* [1]	*Airborne PM Generated* [2]		*Controlled PM Emissions* [3]		*Fugitive PM Emissions* [4]	
	lb/hr	*lb/hr*	*ton/yr*	*lb/hr*	*ton/yr*	*lb/hr*	*ton/yr*
Furnace #6 Salt Cake Production	2,629	0.97	4.24	0.01	0.04	0.02	0.08

[1] Salt cake produced is a summation of unrecovered material and salt usage.

[2] Calculation methodology for Rotary Furnace #3 is contained in Statement of Basis for Permit to Construct No. P-2009.0139, Project ID 61123, issued on January 18, 2013. The methodology has been revised in this application to include the addition of salt which was not included in the Permit to Construct listed above. The salt addition increases the material throughput rate by 9%.

[3] Assumes that 98% of the airborne PM generated is captured and ducted to the baghouse where it is controlled at 99%.

[4] Assumes that the remaining 2% of the airborne PM generated is emitted as a fugitive emission inside the building.

TABLE 4

CRUCIBLE CLEANING EMISSION CALCULATIONS
LIMITS FOR ROTARY FURNACES #3 & #6

BACKGROUND DATA

Uncontrolled PM Emissions	14.47 lb/crucible[1]
Crucibles Cleaned per Year	60 crucible/yr
Crucible Cleaning Time	10 hr/crucible
Baghouse Control Parameters	
Capture Efficiency	0.98
Control Efficiency	0.99

Operating Scenario	*Airborne PM Generated* [2]		*Controlled PM Emissions* [3]		*Fugitive PM Emissions* [4]	
	lb/hr	*ton/yr*	*lb/hr*	*ton/yr*	*lb/hr*	*ton/yr*
Crucible Cleaning	1.45	0.43	0.01	0.004	0.01	0.004

[1] Based on historical data from Aleris facilities.

[2] Pound per hour calculation was calculated as follows: 14.47 [lb PM/crucible] / 10 [hours/crucible. Ton per year was calculated as follows: 1.45 [lb PM/hour] x 60 [crucibles/year] x 10 [hours/crucible].

[3] Assumes that 98% of the airborne PM generated is captured and ducted to the baghouse where it is controlled at 99%.

[4] Assumes that 50% of the remaining 2% of the airborne PM generated is emitted as a fugitive emission. 50% of the uncaptured PM is assumed to be captured in the building and not emitted.

TABLE 5

CRUCIBLE HEATER EMISSION CALCULATIONS

NATURAL GAS COMBUSTION EMISSION CALCULATIONS

Equipment	Hours of Operation	Maximum Heat Input	Maximum Fuel Throughput		Fuel[1]	Emission Factors[2]		Emission Rates	
	(hr/yr)	(mmBtu/hr)	(mmscf/hr)	(mmscf/yr)		(Pollutant)	(lb/mmscf)	(lb/hr)	(ton/yr)
Crucible Heater #1	8,760	1.5	0.001	12.9	Natural Gas	NO_X	100.0	0.15	0.64
						CO	84.0	0.12	0.54
						PM	7.6	0.01	0.05
						PM_{10}	7.6	0.01	0.05
						SO_2	0.6	0.001	0.004
						VOC	5.5	0.01	0.04
Crucible Heater #2	8,760	1.5	0.001	12.9	Natural Gas	NO_X	100.0	0.15	0.64
						CO	84.0	0.12	0.54
						PM	7.6	0.01	0.05
						PM_{10}	7.6	0.01	0.05
						SO_2	0.6	0.001	0.004
						VOC	5.5	0.01	0.04

[1] Natural gas heat input 1,020 Btu/scf

[2] Emission factors from AP-42 Section 1.4, Natural Gas Combustion, Tables 1.4-1 and 1.4-2.

TABLE 6

NATURAL GAS COMBUSTION HAZARDOUS AIR POLLUTANT EMISSIONS
COMBINED LIMITS FOR ROTARY FURNACES #3 & #6 & CRUCIBLE HEATERS

CAS No.	*Pollutant*	**Emission Factors**	*Rotary Furnaces #3 & #6*		*Crucible Heaters*	
			0.05	mmscf/hr	0.003	mmscf/hr
			Emission Rate		*Emission Rate*	
		(lb/10^6 scf)[1]	*(lb/hr)*	*(ton/yr)*	*(lb/hr)*	*(ton/yr)*
91-57-6	2-Methylnaphthalene	2.40E-05	1.27E-06	5.57E-06	7.06E-08	3.09E-07
56-49-5	3-Methylchloranthrene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
	7,12-Dimethylbenz(a)anthracene	<1.60E-05	8.47E-07	3.71E-06	4.71E-08	2.06E-07
83-32-9	Acenaphthene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
203-96-8	Acenaphthylene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
120-12-7	Anthracene	<2.40E-06	1.27E-07	5.57E-07	7.06E-09	3.09E-08
7440-38-2	Arsenic	<2.00E-04	1.06E-05	4.64E-05	5.88E-07	2.58E-06
56-55-3	Benz(a)anthracene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
71-43-2	Benzene	2.10E-03	1.11E-04	4.87E-04	6.18E-06	2.71E-05
50-32-8	Benzo(a)pyrene	<1.20E-06	6.35E-08	2.78E-07	3.53E-09	1.55E-08
205-99-2	Benzo(b)fluoranthene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
191-24-2	Benzo(g,h,i)perylene	<1.20E-06	6.35E-08	2.78E-07	3.53E-09	1.55E-08
205-82-3	Benzo(k)fluoranthene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
7440-41-7	Berrylium	<1.20E-05	6.35E-07	2.78E-06	3.53E-08	1.55E-07
7440-43-9	Cadmium	<1.10E-03	5.82E-05	2.55E-04	3.24E-06	1.42E-05
218-01-9	Chrysene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
53-70-3	Dibenzo(a,h)anthracene	<1.20E-06	6.35E-08	2.78E-07	3.53E-09	1.55E-08
25321-22-6	Dichlorobenzene	1.20E-03	6.35E-05	2.78E-04	3.53E-06	1.55E-05
206-44-0	Fluoranthene	3.00E-06	1.59E-07	6.96E-07	8.82E-09	3.86E-08
86-73-7	Fluorene	2.80E-06	1.48E-07	6.49E-07	8.24E-09	3.61E-08
50-00-0	Formaldehyde	7.50E-02	3.97E-03	1.74E-02	2.21E-04	9.66E-04
110-54-3	Hexane	1.80E+00	9.53E-02	4.17E-01	5.29E-03	2.32E-02
193-39-5	Indeno(1,2,3-cd)pyrene	<1.80E-06	9.53E-08	4.17E-07	5.29E-09	2.32E-08
7439-96-5	Manganese	<3.80E-04	2.01E-05	8.81E-05	1.12E-06	4.90E-06
7439-97-6	Mercury	<2.60E-04	1.38E-05	6.03E-05	7.65E-07	3.35E-06
91-20-3	Naphthalene	6.10E-04	3.23E-05	1.41E-04	1.79E-06	7.86E-06
7440-02-0	Nickel	2.10E-03	1.11E-04	4.87E-04	6.18E-06	2.71E-05
85-01-8	Phenanathrene	1.70E-05	9.00E-07	3.94E-06	5.00E-08	2.19E-07
129-00-0	Pyrene	5.00E-06	2.65E-07	1.16E-06	1.47E-08	6.44E-08
108-88-3	Toluene	3.40E-03	1.80E-04	7.88E-04	1.00E-05	4.38E-05
		HAP Totals:	**0.10**	**0.44**	**0.01**	**0.02**

[1] Emission factors from AP-42 Chapter 1.4 Natural Gas Combustion Tables 1.4-3 & 1.4-4. Emission factors preceeded with a less-than symbol are based on method detection limits.

TABLE 7

NATURAL GAS COMBUSTION TAP EMISSION CALCULATIONS
COMBINED LIMITS FOR ROTARY FURNACES #6 & CRUCIBLE HEATERS

CAS No.	Pollutant	Emission Factors	Rotary Furnace #6 & Crucible Heaters		Generator		TAP Exemption Limit	Meets Level 1 Exemption
			0.03	mmscf/hr				
			Emission Rate		Emission Rate			
		(lb/10⁶ scf)[1]	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)[2]	
56-49-5	3-Methylchloranthrene	<1.80E-06	5.29E-08	2.32E-07			2.5E-06	YES
75070	Acetaldehyde				3.15E-03	7.88E-04	3.0E-03	YES
107028	Acrolein				3.80E-04	9.50E-05	1.7E-02	YES
56-55-3	Benz(a)anthracene[3]	<1.80E-06	5.29E-08	2.32E-07				
71-43-2	Benzene	2.10E-03	6.18E-05	2.71E-04	3.83E-03	9.59E-04	8.0E-04	YES
50-32-8	Benzo(a)pyrene[3]	<1.20E-06	3.53E-08	1.55E-07			2.0E-06	YES
205-99-2	Benzo(b)fluoranthene[3]	<1.80E-06	5.29E-08	2.32E-07				
205-82-3	Benzo(k)fluoranthene[3]	<1.80E-06	5.29E-08	2.32E-07				
106-99-0	1,2-Butadiene				1.61E-04	4.02E-05	0.000024	YES
218-01-9	Chrysene[3]	<1.80E-06	5.29E-08	2.32E-07				
53-70-3	Dibenzo(a,h)anthracene[3]	<1.20E-06	3.53E-08	1.55E-07				
50-00-0	Formaldehyde	7.50E-02	2.21E-03	9.66E-03	4.85E-03	1.21E-03	5.1E-04	YES
110-54-3	Hexane	1.80E+00	5.29E-02	2.32E-01			1.2E+01	YES
193-39-5	Indeno(1,2,3-cd)pyrene[3]	<1.80E-06	5.29E-08	2.32E-07				
91-20-3	Naphthalene	6.10E-04	1.79E-05	7.86E-05	3.49E-04	8.71E-05	3.3E+00	YES
108-88-3	Toluene	3.40E-03	1.00E-04	4.38E-04	1.68E-03	4.20E-04	2.5E+01	YES
1330207	Xylene				1.17E-03	2.93E-04	2.9E+01	YES
	7-PAH		3.35E-07	1.47E-06			2.0E-06	YES
7440-38-2	Arsenic	2.00E-04	5.88E-06	2.58E-05			1.5E-06	NO
7440-41-7	Beryllium	<1.20E-05	3.53E-07	1.55E-06			2.8E-05	YES
7440-43-9	Cadmium	1.10E-03	3.24E-05	1.42E-04			3.7E-06	NO
7440-47-3	Chromium	1.40E-03	4.12E-05	1.80E-04			3.3E-02	YES
7440-48-4	Cobalt	8.40E-05	2.47E-06	1.08E-05			3.3E-03	YES
7440-50-8	Copper	8.50E-04	2.50E-05	1.10E-04			1.3E-02	YES
7439-96-5	Manganese	3.80E-04	1.12E-05	4.90E-05			6.7E-02	YES
7439-98-7	Molybdenum	1.10E-03	3.24E-05	1.42E-04			3.3E-01	YES
7440-02-0	Nickel	2.10E-03	6.18E-05	2.71E-04			2.7E-05	NO
7782-62-2	Selenium	<2.40E-05	7.06E-07	3.09E-06			1.3E-02	YES
7440-62-2	Vanadium	<2.30E-03	6.76E-05	2.96E-04			3.0E-03	YES
7440-66-6	Zinc	<2.90E-02	8.53E-04	3.74E-03			6.7E-01	YES
	HF		0.16	0.69			1.7E-01	YES

[1] Emission factors from AP-42 Chapter 1.4 Natural Gas Combustion Tables 1.4-3 & 1.4-4. Emission factors preceeded with a less-than symbol are based on method detection limits.

[2] TAP limits pursuant to IDAPA 58.01.01.223.02 and Sections 585 and 586.

[3] Individual pollutants combined for 7-PAH

Maximum Operating Schedule 8,760 hr/yr

* HCl is not addressed in this table since it is covered under the area source NESHAP, 40 CFR 63 Subpart RRR.

TABLE 8

NATURAL GAS COMBUSTION GREENHOUSE GAS (GHG) EMISSION CALCULATIONS
COMBINED LIMITS FOR ROTARY FURNACES #3 & #6

Emission Unit	*Maximum Annual Fuel Throughput*	*CO_2*	*CH_4*	*N_2O*	*CO_2e*
		(lb/mmscf)	*(lb/mmscf)*	*(lb/mmscf)*	
		120,018.54	*2.26*	*0.23*	
	(mmscf/yr)	*(ton/yr)*			
Rotary Furnace #3	230.53	13,833.72	6.52	7.77	13,848.00
Rotary Furnace #6	230.53	13,833.72	6.52	7.77	13,848.00
Crucible Heater #1	12.88	773.06	0.36	0.43	773.86
Crucible Heater #2	12.88	773.06	0.36	0.43	773.86
TOTALS>>>	**486.82**	**29,213.55**	**13.76**	**16.41**	**29,243.73**

Notes:

Global Warming Potentials for pollutants

CO_2	1
CH_4	25
N_2O	298

Example Emission Calculation Formula for CO_2e:

CO_2 Emissions [short tons] = Natural Gas Usage [mmscf] x CO_2 Emission Factor [lb/mmscf] x Global Warming Potential [CO_2e] / 2,000 [lbs/ton]

CO_2e is calculated by summing the emissions for CO_2, CH_4, and N_2O.

Emission Factor Determination:

EMISSION FACTORS

Natural Gas	*kg/mmBtu*	*lb/mmBtu*	*lb/10^6 scf*
CO_2	53.06	116.98	120,018.54
CH_4	0.001	0.002	2.26
N_2O	0.0001	0.0002	0.23

Notes:

Emission factors from 40 CFR Part 98 Tables C-1 and C-2.

To convert from kg to lb multiply kg by 2.20462

Default High Heat Value 1026 Btu/scf

TABLE 9
DIESEL ENGINE EMISSION CALCULATIONS

Engine Size	Pollutants	Emission Factors[1]	Emissions	
(HP)		*(lb/HP-hr)*	*(lb/hr)*	*(ton/yr)*[3]
158	NOx	0.031	0.28	1.22
	CO	0.0068	0.06	0.27
	PM/PM_{10}	0.0022	0.02	0.09
	SO_2	0.00205	0.02	0.08
	VOC[2]	0.00247	0.02	0.10

[1] AP-42, Table 3.3-1 for Uncontrolled diesel industrial engines.
[2] VOM is equal to total TOC for engine exhaust
[3] Hours of Operation

Annual	500 hr/yr
Hourly	8,760 hr/yr

Annual emissions are based on 500 hours per year and hourly emissions are based on 8,760 hours per year.

TABLE 8

NATURAL GAS COMBUSTION GREENHOUSE GAS (GHG) EMISSION CALCULATIONS

Emission Unit	***Maximum Annual Fuel Throughput***	***CO_2***	***CH_4***	***N_2O***	***CO_2e***
		(lb/mmscf)	***(lb/mmscf)***	***(lb/mmscf)***	
		120,018.54	***2.26***	***0.23***	
	(mmscf/yr)	***(ton/yr)***			
Rotary Furnace #3	230.53	13,833.72	6.52	7.77	13,848.00
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Annual	500	hr/yr
Hourly	8,760	hr/yr

Annual emissions are based on 500 hours per year and hourly emissions are based on 8,760 hours per year.

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: April 22, 2015

TO: Kelli Wetzel, Permit Writer, Air Program

FROM: Darrin Mehr, Analyst, Air Program

PROJECT: P-2009.0139 PROJ 61440 - PTC Modification Application for Real Alloy Recycling, Inc. (formerly Aleris Recycling, Inc.) –Installation of New Rotary Furnace Line #6, 2 Crucible Heaters, and Crucible Cleaning Operations at the Facility near Post Falls, Idaho

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs)

1.0 Summary

1.1 General Project Summary

On October 17, 2014, Real Alloy Recycling, Inc. (Real Alloy) submitted a Permit to Construct (PTC) application to modify their current Permit to Construct (PTC), P-2009.0139, Project ID 61123, issued January 23, 2013, to Aleris Recycling, Inc., for their secondary aluminum production facility, located near Post Falls, in Kootenai County. The primary purposes of this application are to:

1) add a new Rotary Furnace #6 for secondary aluminum manufacturing and associated salt cake handling processing;
2) add two 1.5 million British thermal unit per hour (MMBtu/hr) crucible heaters in the proposed #6 Rotary Furnace area; and,
3) add crucible cleaning operations at the proposed #6 Rotary Furnace salt cake handling area.

On March 3, 2015, DEQ received a notice of a formal name change from Aleris Recycling, Inc., to Real Alloy Recycling, Inc.

Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the identified project were submitted to DEQ to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). Conestoga-Rovers & Associates (Conestoga-Rovers), Real Alloy's permitting consultant, submitted analyses and applicable information and data to enable DEQ to evaluate potential impacts to ambient air.

Conestoga-Rovers performed project-specific air quality impact analyses to demonstrate compliance of allowable facility emissions with air quality standards. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the pollutant dispersion modeling analyses used to demonstrate that the estimated emissions associated with operation of the facility as modified will not cause or significantly contribute to a violation of the applicable air quality standards. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. This modeling review also did not evaluate the accuracy of emissions estimates. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the DEQ Statement of Basis.

The submitted air quality impact analyses in combination with DEQ sensitivity analyses: 1) utilized appropriate methods and models according to established DEQ/EPA rules, policies, guidance, and procedures; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the facility as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from applicable emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project do not result in increased ambient air impacts exceeding allowable TAP increments. Table 1 presents key assumptions and results to be considered in the development of the permit.

This modeling review memorandum is based on the April 7, 2015 submittal of a revised modeling report and electronic modeling files, which increased 24-hour and annual average emission rates for the facility's affected sources.

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Process Throughputs and Modeled Emission Rates Modeled short term emissions rates for the existing Rotary Furnace #3 and the proposed Rotary Furnace #6 were based on a higher throughput than what was submitted in the final emissions inventory.	Emission rates modeled to demonstrate compliance with 24-hour average significant impact level (SIL) and National Ambient Air Quality Standards (NAAQS) were based on daily throughput levels for the Rotary Furnaces #3 and #6 and the salt cake handling processes for each furnace, and exceed the requested daily throughput limits requested in the permit application documentation. NAAQS compliance is assured provided the modeled rate represents or exceeds potential emissions or emissions as limited by an enforceable permit condition.
Fugitive Emissions Impacts of fugitive process emissions were minimal, primarily because of the small emissions quantity resulting from a claimed high level of capture and control of such emissions.	Fugitive emissions sources tend to cause higher ambient impacts than point sources because of the lower release height and lack of plume rise. NAAQS compliance is not assured if claimed capture efficiencies and control efficiencies are not realized and not representative of potential emissions or emissions as limited by an enforceable permit condition.
Point Source Emissions Emission control procedures and control equipment was assumed to be operational at all times in the modeling demonstration. The modeling analyses did not include a scenario involving uncontrolled Rotary Furnace #3 salt cake handling emissions, either emitted entirely as fugitive releases or emitted from Stack #9 without the control of the baghouse. The facility's current Permit to Construct P-2009.0139, issued January 18, 2013, allows existing Furnace #3 salt cake handling emissions to be emitted uncontrolled.	NAAQS compliance has not been demonstrated for a scenario where claimed capture and control efficiencies is not reflective of allowable emissions.
Release Orientation All point sources were modeled with unobstructed vertical releases.	The orientation of the release has a substantial effect on dispersion, especially for releases near the ambient air boundary of the facility. Compliance with NAAQS has not been demonstrated for the condition where any of Real Alloy's process exhaust stacks are equipped with a raincap or vent to atmosphere in a non-vertical orientation.
Emergency Diesel Engine Operations The diesel-fired internal combustion engine (Stack #10) for the firewater pump engine is operated only for emergency purposes. 500 hours per year of operation were accounted for in the modeled emission rates. For the 24-hour average PM_{10}, the 24-hour $PM_{2.5}$ and the annual $PM_{2.5}$ NAAQS, a factor determined by 500 hours per year / 8,760 hours per year was applied to maximum hourly emissions. This equates to just over 80 minutes per day of operation.	NAAQS compliance has not been demonstrated for operation of the engine in non-emergency situations, other than for operational testing and maintenance.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department, using DEQ/EPA established guidance, policies, and procedures, that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

1.2 Summary of Submittals and Actions

July 21, 2014: Conestoga-Rovers submitted a modeling protocol, via email, on behalf of Aleris Recycling, Inc. (now Real Alloy Recycling).

July 25, 2014: DEQ issued a modeling protocol approval letter via email to Conestoga-Rovers. DEQ-approved and generated AERMOD-ready meteorological data files were also attached.

October 17, 2014: DEQ received an application for a PTC modification from Real Alloy. Project number 61440 was assigned to this application.

October 24, 2014: DEQ declared the PTC modification application incomplete.

November 6, 2014: Conestoga-Rovers submitted a second modeling protocol on behalf of Real Alloy for the project, via email.

November 21, 2014: DEQ emailed Conestoga-Rovers and Real Alloy co-contributing source impacts for NO_2, PM_{10}, and $PM_{2.5}$ for the NAAQS demonstration, slightly altering the ambient backgrounds for the project.

December 3, 2014: Conestoga-Rovers submitted a third modeling protocol for the project via email, on behalf of Real Alloy.

December 8, 2014: DEQ issued a modeling protocol approval letter for the December 3, 2014 protocol, via email to Real Alloy and Conestoga-Rovers.

December 17-18, 2014: DEQ downloaded Real Alloy's incompleteness response, which included a revised PTC application, modeling report, and electronic modeling files from Conestoga-Rover's file transfer protocol (ftp) site.

January 12, 2015: DEQ declared the application complete.

March 3, 2015: DEQ modeling staff requested substantiation documentation of modeled exhaust parameters and notified (via email) Conestoga-Rovers and Real Alloy that the toxic air pollutant (TAP) modeling file was corrupted.

March 5, 2014: Conestoga-Rovers responded via email that no additional exhaust parameter documentation from Real Alloy is available for submittal to DEQ.

March 5, 2014:	DEQ downloaded the complete electronic TAP modeling file from the Conestoga-Rovers ftp site.
March 12, 2015:	DEQ requested confirmation via email that the modeling demonstration's ambient air boundary was accurate.
March 13, 2015:	Conestoga-Rovers confirmed that a private property parcel not currently owned by Real Alloy was excluded from ambient air.
March 19, 2015:	Conestoga-Rovers and Real Alloy submitted a revised modeling report and electronic modeling files for TAPs, SIL, and NAAQS compliance reflecting the corrected ambient air boundary.
March 30, 2015:	DEQ modeling staff requested clarification and confirmation from Conestoga-Rovers, via email, that maximum requested emission rates for the annual and 24-hour averaging periods were accurately reflected in the modeling demonstration. Conestoga-Rovers was notified that daily throughputs modeled were at 93% and 89% of the requested throughput for Furnace #3 and Furnace #6, respectively.
April 6, 2015:	Conestoga-Rovers submitted a revised modeling report via email to DEQ on behalf of Real Alloy.
April 7, 2015:	DEQ downloaded revised electronic modeling files from the Conestoga-Rovers ftp site. DEQ permitting staff received a revised emission calculation spreadsheet, revised application forms, and process throughput descriptions.

2.0 Background Information

2.1 Permit Requirements for Permits to Construct

PTCs are issued to authorize the construction of a new source or modification of an existing source or permit. Idaho Air Rules Section 203.02 requires that emissions from the new source or modification not cause or significantly contribute to a violation of an air quality standard, and Idaho Air Rules Section 203.03 requires that emissions from a new source or modification comply with applicable toxic air pollutant (TAP) increments of Idaho Air Rules Sections 585 and 586.

This project is a modification to PTC #P-2009.0139 PROJ 61123, issued on January 23, 2013, to Aleris Recycling, Inc. New emissions units and exhaust stacks will be included in this permitting action, requiring the applicant to demonstrate that the changes in allowable emissions from the facility will comply with Idaho Air Rules Sections 203.02 and 203.03. The changes to the Aleris facility affect 24-hour and annual $PM_{2.5}$, 24-hour PM_{10}, and 1-hour and annual NO_2 emissions and associated impact analyses.

2.2 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality standards and analyses used to demonstrate compliance with air quality standards.

2.2.1 Area Classification

The facility is located near Post Falls, Idaho, in Kootenai County. The area is designated as attainment or unclassifiable for all pollutants.

2.2.2 Modeling Applicability for Criteria Pollutants

Idaho Air Rules Section 203.02 state that a PTC cannot be issued unless the application demonstrates to the satisfaction of DEQ that the new source or modification will not cause or significantly contribute to a NAAQS violation. Atmospheric dispersion modeling is used to evaluate the potential impact of a proposed project to ambient air and demonstrate NAAQS compliance. However, if the emissions associated with a project are very small, project-specific modeling analyses may not be necessary. If the emissions increases associated with a project are below modeling applicability thresholds established in the *Idaho Air Modeling Guideline* ("State of Idaho Guideline for Performing Air Quality Impact Analyses," available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf, then a project-specific analysis is not required. Modeling applicability emissions thresholds were developed by DEQ based on modeling of a hypothetical source and were designed to reasonably ensure that impacts are below the applicable SIL. DEQ has established two threshold levels: Level 1 thresholds are unconditional thresholds, requiring no approval for use by DEQ; Level 2 thresholds are conditional upon DEQ approval, which depends on evaluation of the project and the site, including emissions quantities, stack parameters, number of sources emissions are distributed amongst, distance between the sources and the ambient air boundary, and the presence of sensitive receptors near the ambient air boundary.

This project will add two new point source emission stacks and one fugitive emission source in a location within the facility that is different from the existing permitted furnace and salt cake handling stacks and fugitive emission source.

2.2.3 Significant and Cumulative NAAQS Impact Analyses

If maximum modeled pollutant impacts to ambient air from emissions sources associated with a new facility or the emissions increase associated with a modification exceed the SILs of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis may also be required for permit revisions driven by compliance/enforcement actions, any correction of emissions limits or other operational parameters that may affect pollutant impacts to ambient air, or other cases where DEQ believes NAAQS may be threatened by the emissions associated with the facility or proposed project.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts, according to established DEQ/EPA guidance, policies, and procedures, from applicable facility-wide emissions and emissions from any nearby co-contributing sources. A DEQ-approved background concentration value is then added to the modeled result that is appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Impact Levels[a] (μg/m³)[b]**	**Regulatory Limit[c] (μg/m³)**	**Modeled Design Value Used[d]**
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6[th] highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8[th] highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2[nd] highest[n]
	8-hour	500	10,000[m]	Maximum 2[nd] highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 μg/m³)	75 ppb[p] (196 μg/m³)	Mean of maximum 4[th] highest[q]
	3-hour	25	1,300[m]	Maximum 2[nd] highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 μg/m³)	100 ppb[s] (188 μg/m³)	Mean of maximum 8[th] highest[t]
	Annual	1.0	100[r]	Maximum 1[st] highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1[st] highest[n]
	Quarterly	NA	1.5[r]	Maximum 1[st] highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	75 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1[st] highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98[th] percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8[th] highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1[st] highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99[th] percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4[th] highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1[st] highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98[th] percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8[th] highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4[th] highest daily maximum 8-hour concentration averaged over three years.

If the cumulative NAAQS impact analysis shows a violation of the standard, the permit cannot be issued if the proposed project or facility has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. The facility or project does not have a significant contribution to a violation if impacts are below the SIL at all specific receptors showing violations during the time periods when modeled violations occurred.

Compliance with Idaho Air Rules Section 203.02 is demonstrated if: a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) modeled design values of the cumulative NAAQS impact analysis (modeling applicable emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or c) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

2.2.4 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

2.3 Background Concentrations

A background concentration tool was used to establish ambient background concentrations for this project. A beta version of the background concentration tool was developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW AirQuest) and provided through Washington State University (located at http://lar.wsu.edu/nw-airquest/lookup.html). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data. The background is added to the design value for each pollutant and averaging period.

DEQ requested that Real Alloy's NAAQS demonstration use the NW AirQuest backgrounds concentration tool for the Post Falls site location to obtain general area ambient backgrounds for the 24-hour PM_{10}, 24-hour and annual $PM_{2.5}$, and 1-hour and annual NO_2. The ambient backgrounds at the latitude and longitude coordinates of the facility (47.74261 degrees latitude and -117.0043 degrees longitude) are listed in Table 3.

DEQ also requested Real Alloy to account for air quality impact contributions from the nearby North Idaho Energy Logs (NIEL) wood pellet manufacturing facility subsequent to the PTC application incompleteness determination. NIEL is located at 16620 W. Prairie Ave., near Post Falls. IDEQ developed the NIEL component of the background values based on NIEL's permit limitations for PM_{10} and NO_x in PTC Number P-2013.0044, PROJ 61236, issued on September 4, 2013. NIEL's contribution to the background concentrations was emailed to Real Alloy and Conestoga-Rovers on November 21, 2014. DEQ determined it was appropriate to account for pollutant impacts from the NIEL by adding a value to background based on the emissions quantities associated with operation of the facility.

The pertinent text of the November 21, 2014 email from DEQ to Conestoga-Rovers and Real Alloy regarding background values for the nearby source for this permitting action is listed below:

> *DEQ applied the standardized Chi/Q background estimates to the potential emissions identified for NIEL based on the March 14, 2003 memorandum titled, "Background Concentrations for Use in New Source Review Dispersion Modeling, from Rick Hardy and Kevin Schilling, Technical Services, DEQ to Mary Anderson, Air Program Modeling Coordinator, DEQ, Table 14*
>
> *Chi/Q relationships were:*
> *0.011 micrograms per cubic meter (ug/m^3), annual average per ton /year of emissions*
> *0.036 ug/m^3, 24-hr avg per T/yr*
> *0.132 ug/m^3, 3-hr avg per T/yr*
>
> *Darrin Mehr assumption: 1-hr Chi/Q = 3-hr avg Chi/Q*
>
> *NIEL's potential to emit was established as:*
> *PM10: 49.8 T/yr*
> *PM2.5: 30.6 T/yr based on Oregon DEQ PM2.5 and PM10 fractions for emission factors for the wood products industry*
> *NOx: 49 T/yr*
>
> *NIEL's CONTRIBUTIONS:*
> *24-hour average PM10: 1.8 ug/m^3*
> *24-hr avg PM2.5: 1.1 ug/m^3*
> *Annual avg PM2.5: 0.34 ug/m^3*
> *1-hour avg NO2: 6.5 ug/m^3*
> *Annual avg NO2: 0.54 ug/m^3.*

Ozone backgrounds were not needed because Real Alloy elected to demonstrate compliance with the 1-hour NO_2 SCL and NAAQS with a Tier I method for conversion of NO to NO_2, assuming all NO is converted to NO_2. This is the most conservative approach for the 1-hour NO_2 analyses.

Modeling was not required for 1-hour and 8-hour CO because the modification project's emissions of 7.43 lb/hr were below the Level I modeling threshold. Modeling was also not required for lead emissions. A lead emissions rate was not presented in the emissions inventory. It was assumed that the project's potential lead emissions are negligible and certainly will be less than the modeling applicability threshold of 14 lbs/month.

Ambient background values are listed in Table 3.

Table 3. BACKGROUND CONCENTRATIONS			
Pollutant and Averaging Period	Northern Idaho Energy Logs Contribution ($\mu g/m^3$)[a]	NW AIRQUEST Background Concentration ($\mu g/m^3$)	Total Ambient Background Concentration ($\mu g/m^3$)
NO_2 1-hour	6.5	43.24	49.74
NO_2, annual	0.54	5.45	5.99
PM_{10} 24-hour	1.8	75[e]	76.8
$PM_{2.5}$ 24-hour	1.1	17	18.1
$PM_{2.5}$ annual	0.34	5.2	5.54

a. Micrograms per cubic meter.
b. Nitrogen dioxide.
c. Particulate matter with a mean aerodynamic diameter of ten microns or less.
d. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less.
e. Extreme values were removed.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

This section describes the modeling methods used by the applicant's consultant, Conestoga-Rovers, to demonstrate compliance with applicable air quality standards.

3.1.1 Overview of Analyses

Conestoga-Rovers performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the facility, using established DEQ policies, guidance, and procedures. Results of the submitted analyses, in combination with DEQ's analyses, demonstrated compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 4 provides a brief description of parameters used in the modeling analyses.

Table 4. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Post Falls, Idaho	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 14134.
Meteorological Data	Spokane	2008-2012 - See Section 3.1.5 of this memorandum. Surface and upper air data from Spokane, Washington.
Terrain	Considered	Receptor, building, and emissions source stack base elevations were determined using USGS 1.0 arc second National Elevation Dataset (NED) files based on the NAD83 datum.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility.
Receptor Grid (see Figures 2 and 3 in this memorandum)	Grid 1	50-meter spacing along the ambient air boundary except along the southeast ambient air boundary, shared with Solid Rock Gate Supply, where the 15-meter spacing is present and along the eastern boundary where a maximum spacing of 45 meters was present.
	Grid 2	15-meter spacing within the property parcel in the southeast corner of the property owned and operated by Solid Rock Gate Supply.
	Grid 3	50-meter spacing in a rectangular grid from the ambient air boundary outward to a distance of 500 meters along the ambient air boundary in the primary south, east, and west directions. North of the ambient air boundary and in the regions not covered by the 50-meter rectangular grid, located southwest and southeast of the facility, receptors were spaced at distances ranging from approximately 5 meters to 150 meters.
	Grid 4	100-meter spacing in a 2,000-meter (x) by 2,000-meter (y) rectangular grid roughly centered on Grid 3.
	Grid 5	250-meter spacing in a 5,000-meter (x) by 5,000-meter (y) rectangular grid centered on Grid 4.
	Grid 6	500-meter spacing in a 10-kilometer (x) by 10-kilometer (y) rectangular grid centered on Grid 5.
	Grid 7	1,000-meter spacing in a 20-kilometer (x) by 20-kilometer (y) rectangular grid centered on Grid 6.
	Grid 8	5,000-meter spacing in a 100-kilometer (x) by 100kilometer (y) rectangular grid centered on Grid 7.

3.1.2 Modeling Protocol and Methodology

A modeling protocol was submitted to DEQ prior to submittal of the application. The PTC modification project was conducted by Conestoga-Rovers, on behalf of Real Alloy Recycling, Inc. (formerly Aleris Recycling). The initial modeling protocol was submitted on July 21, 2014. DEQ responded with a protocol approval letter, with comments, on July 25, 2014. The DEQ-generated and recommended 5-year meteorological dataset was sent with the modeling protocol approval letter via email.

DEQ declared the initial PTC application incomplete on October 24, 2014. A second modeling protocol was submitted on November 6, 2014 with a follow-up modeling protocol received on December 3, 2014, which addressed issues discussed between DEQ, Real Alloy, and Conestoga-Rovers after the application was declared incomplete. DEQ issued a protocol approval letter in response to the last protocol submittal on December 8, 2014.

Final project-specific modeling was generally conducted using data and methods described in the *Idaho Air Modeling Guideline*.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple-source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 14134 was used by Conestoga-Rovers for the modeling analyses to evaluate impacts of the facility. This is the current version of this regulatory guideline model. DEQ also used AERMOD version 14134 for sensitivity analyses.

NO_2 1-hour impacts can be assessed using a tiered approach to account for $NO/NO_2/O_3$ chemistry. Tier 1 assumes full conversion of NO to NO_2. Tier 2 assumes a 0.80 default ambient ratio of NO_2/NOx. Tier 3 accounts for more refined assessment of the NO to NO_2 conversion, using a supplemental modeling program with AERMOD to better account for $NO/NO_2/O_3$ atmospheric chemistry. Either the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) can be specified within the AERMOD input file for the Tier 3 approach. EPA guidance (Memorandum: from Tyler Fox, Leader, Air Quality Modeling Group, C439-01, Office of Air Quality Planning and Standards, USEPA; to Regional Air Division Directors. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard.* March 01, 2011) has not indicated a preference for one option over the other (PVMRM vs OLM) for particular applications. The Tier 3 methods are considered to be non-regulatory guideline methods and should be approved for the applicant's use on a case-by-case basis. Conestoga-Rovers elected to use a Tier I approach for the Real Alloy analyses.

3.1.4 Meteorological Data

DEQ provided Conestoga-Rovers with a model-ready meteorological dataset processed from Spokane surface data and Spokane upper air meteorological data covering the years 2008-2012. The dataset for this project was based on Spokane airport (FAA airport code KGEG) for surface and Automated Surface Observing System (ASOS) data and upper air data from the Spokane National Weather Service (NWS) Station site (site code OTX). Surface characteristics were processed by DEQ staff using AERSURFACE version 13016. AERMINUTE version 11325 was used to process ASOS wind data for use in AERMET. AERMET version 12345 was used to process surface and upper air data. DEQ determined these data were reasonably representative for the Real Alloy site and approved use of this dataset for this permitting project. A copy of the DEQ memorandum describing the data and methods used to process the meteorological data was submitted with the permit application.

3.1.5 Terrain Effects

Conestoga-Rovers used 1 arc second National Elevation Dataset (NED) files, in the North American Datum 1983 (NAD83), to calculate elevations of receptors. The terrain preprocessor AERMAP version 11103 was used to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

Base elevations for emission sources and building were also determined by extracting elevations from the USGS NED files using AERMAP.

3.1.7 Building Downwash

Potential downwash effects on the emissions plume were accounted for in the model by using building parameters as described by Conestoga-Rovers. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and release parameters for input to AERMOD. Modeled building heights are listed in Table 5.

No off-site structures were included in the model setup. The neighboring Solid Rock Gate Supply facility's structures appear to be noticeably shorter than the Real Alloy structures, and the Real Alloy structures should be dominant structures for determining any building downwash effects.

Table 5. BUILDING HEIGHTS

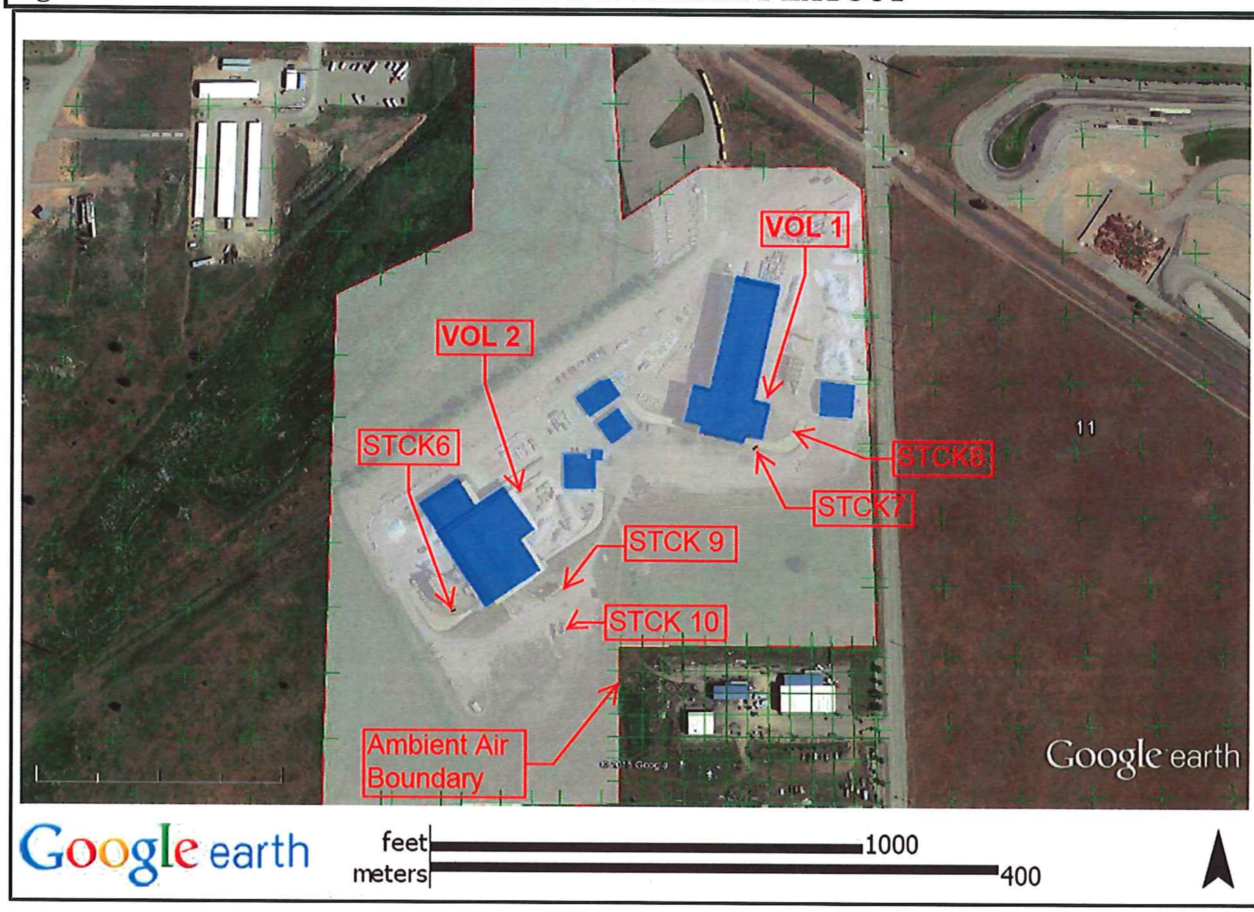
Building Name	Number of Building Tiers	Base Elevation (m)[a]	Tier Height (m)
BLD_1	1	646.0	15.2
BLD_2	1	646.0	3.1
BLD_3	1	646.5	3.7
BLD_4	1	646.4	3.7
BLD_4.1	1	646.5	3.1
BLD_5	1	646.4	4.6
BLD_6	1	646.8	15.2
BLD_6.1	1	646.9	12.2

a. Meters.

3.1.8 Facility Layout

Real Alloy's modeled emission points, structures, and ambient air boundary in the model setup are shown in Figure 1. The facility's structure locations and horizontal dimensions closely matched those presented in Google earth photographic imagery.

Figure 1. REAL ALLOY MODELING REPORT FACILITY LAYOUT



3.1.8 Ambient Air Boundary

The ambient air boundary for this project was corrected in the March 19, 2015, revised modeling report and modeling files. Real Alloy has a security fence around the entire facility except in the southeastern corner of the facility. A parcel of property was sold to an entity that is independent from Real Alloy, so common ownership or control of that land does not apply. A welding and fabrication facility currently owns the parcel and the ambient air boundary was adjusted to reflect the limits of the property boundary. Section 4.1 of the final March 19, 2015, modeling report states:

> "The public is precluded from accessing the areas excluded from the receptor network by a security fence. As the fence line will restrict public access it served as the ambient air boundary in the model. Additionally, there are no trespassing signs posted and regular security patrols that inspect the perimeter and routinely ask trespassers to leave. Attachment D provides a recordkeeping form for routine security patrols which also inspect the integrity of physical barriers and illumination that would allow security personnel to identify trespassers. There are no other features such as rivers bisecting the Facility, leasing agreements or right of ways that might complicate ambient air issues."

A combination of physical obstructions and notifications including fencing, gates, and no trespassing signs will be used by Real Alloy along the entire ambient air boundary to preclude public access. DEQ determined the ambient air boundary described uses appropriate methods to control access as described in

DEQ's *Modeling Guideline*.

3.1.9 Receptor Network

Table 4 describes the receptor network used in the submitted modeling analyses. DEQ determined that the receptor network was adequate to reasonably assure compliance with applicable air quality standards at all ambient air locations. Figures 2 and 3 below present the modeled receptor network for the project. The same network was used for criteria air pollutants and TAPs modeling runs.

Figure 2. REAL ALLOY FULL RECEPTOR GRID

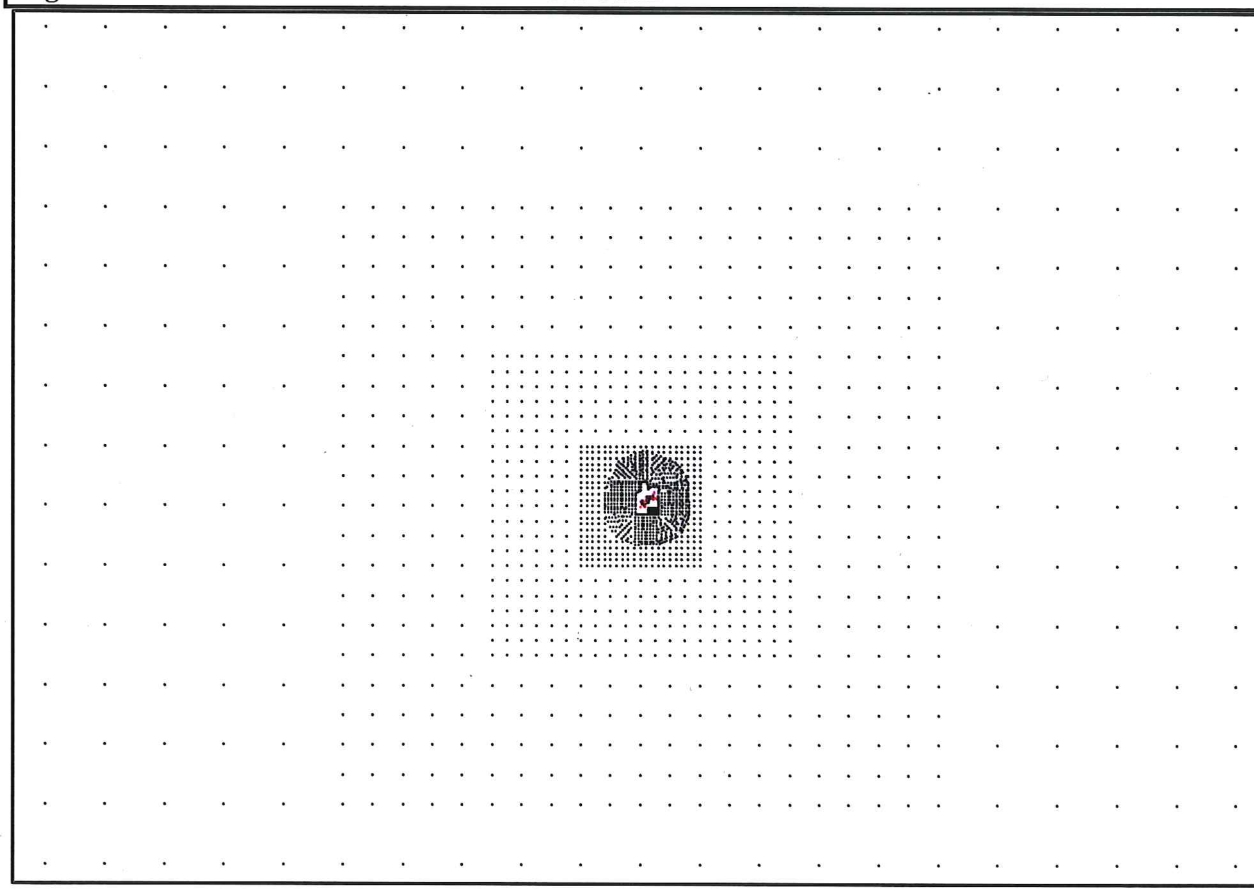
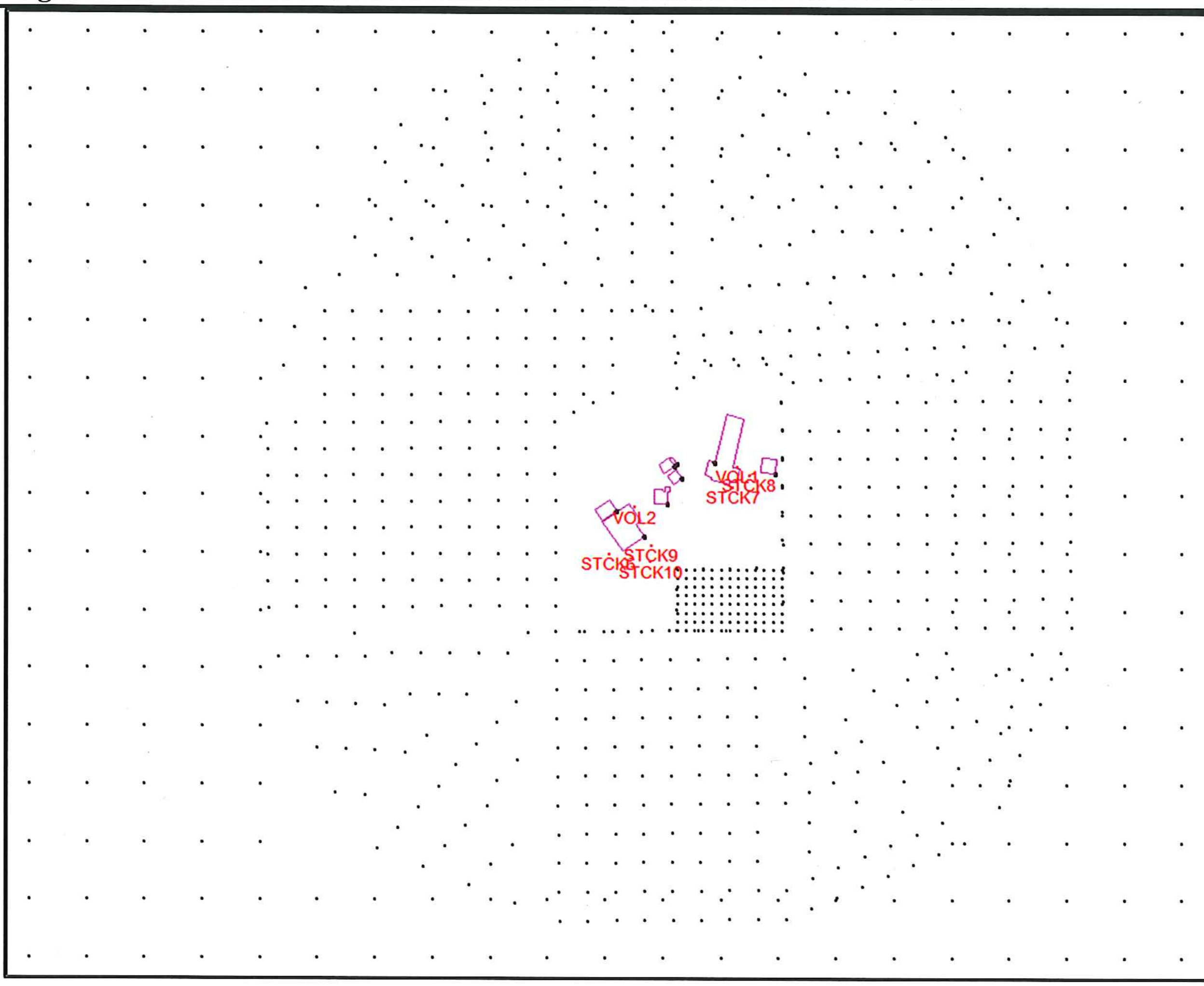


Figure 3. REAL ALLOY RECYCLING NEAR-FACILITY RECEPTOR GRID



3.2 Emission Rates

Emissions rates of criteria air pollutants and toxic air pollutants were provided by the applicant. DEQ modeling review, described in this memorandum, did not include review of emissions rates for accuracy. Review and approval of estimated emissions was the responsibility of the DEQ permit writer. DEQ modeling staff provided the model inputs for the permit writer to review and determine whether facility-wide potential emissions had been modeled correctly.

3.2.1 Criteria Pollutant Emissions Rate

Table 6 lists criteria pollutant continuous (24 hours/day) emissions rates used to evaluate NAAQS compliance for standards with averaging periods of 24 hours or less. Table 7 lists criteria pollutant continuous (8,760 hours/year) emissions rates used to evaluate NAAQS compliance for standards with an annual averaging period. These modeled rates must represent allowable facility-wide emissions for the listed averaging period. Conestoga-Rovers and Real Alloy modeled identical emission rates for the significant impact analyses and the NAAQS demonstration.

Emissions of NO_x, PM_{10}, and $PM_{2.5}$ exceeded the Level I modeling thresholds, described in the *Idaho Air Modeling Guideline*, for the project. Emissions of CO and SO_2 did not exceed the Level I modeling thresholds for the proposed modification project. Project-specific modeling was required due to the addition of two new point sources and one new fugitive volume source associated with the requested plant expansion project.

Modeled short term emissions rates for the existing Rotary Furnace #3 and the proposed Rotary Furnace #6 were based on 161.4 tons per day throughput for each furnace, averaged over 24 hours per day. These worst-case short-term emissions rates were modeled over 8,760 hours per year. The total annual throughputs for Rotary Furnaces #3 and #6 were 58,911 tons per year for each furnace. These throughputs and emission rates exceed the supporting project emissions rates and process throughputs documentation presented in the final emissions inventory for the project.

Fugitive process emissions were minimal based on highly effective capture and control methods which were reflected as control efficiencies for calculating process PM_{10} and $PM_{2.5}$ emissions. PM_{10} and $PM_{2.5}$ emissions from the salt cake handling process are captured with a 98% efficiency. The remaining 2% of these emissions are emitted within the buildings for salt cake handling for Rotary Furnaces #3 and #6. Rotary Furnace #6 process area will also have a crucible cleaning area with a capture efficiency of 98% and an additional 50% control efficiency for fallout within the building enclosure for a total capture efficiency of 99% for crucible cleaning emissions.

Capture efficiencies of 100% eliminate all process fugitive emissions of PM_{10} and $PM_{2.5}$ for Rotary Furnaces # 3. This level of control was also applied to Rotary Furnace #6 and the Crucible Heaters #1 and #2 in the Rotary Furnace #6 process area.

Impacts of PM_{10} and $PM_{2.5}$ from fugitive processes are minimal based on the requested salt cake throughput levels and crucible cleaning levels and the assumptions used for emission capture and retention within each process building which minimize the modeled fugitive emission rates for these sources.

Process emissions for Rotary Furnace #3 are routed to a trona-injected baghouse which exhausts to Stack #6. Process emissions for Rotary Furnace #6, and natural gas combustion emissions from Crucible Heaters #1 and #2 will be controlled by a trona-injected baghouse which will exhaust from Stack #7. The trona-injected baghouses for Stacks #6 and #7 provide 98% control for PM_{10} and $PM_{2.5}$ emissions. The captured salt cake handling emissions will be routed to Stack #9 for existing Rotary Furnace #3. The baghouses for Stacks #8 and #9 provide 99% control of all captured salt cake cooling and handling and crucible cleaning process emissions.

NAAQS modeling demonstrations must reflect requested potential emissions. NAAQS compliance has not been demonstrated for emissions associated with a control efficiency of less than 99% for Stacks #8 and #9 and 98% for Stacks # 6 and #7.

Table 6. SHORT-TERM EMISSIONS RATES USED IN MODELING ANALYSES				
Modeled Emissions Point	Description	PM_{10}[a] (lb/hr)[b]	$PM_{2.5}$[c] (lb/hr)	NO_x[d] (lb/hr)
STCK6	Existing Rotary Furnace #3 Baghouse Stack	1.87	1.87	3.95
STCK7	Proposed Rotary Furnace #6 & Crucible Heating Baghouse Stack	1.87	1.87	3.95
STCK8	Proposed Rotary Furnace #6 Salt Cake Handling & Crucible Cleaning Baghouse Stack	0.02	0.02	0[e]
STCK9[e]	Existing Rotary Furnace #3 Salt Cake Handling Baghouse Stack	0.01	0.01	0[e]
STCK10	158-hp diesel-fired Fire Water Pump Generator Engine	0.02	0.02	0[e]
VOL1	Uncaptured salt cake handling future furnace #6 & crucible cleaning & crucible #1 and #2 natural gas heating emissions	0.04	0.04	0[e]
VOL2	Uncontrolled salt cake handling existing furnace #3	0.04	0.04	0[e]

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Pounds per hour.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Nitrogen oxides.
e. Where "0"is listed no emissions from this source were modeled for this pollutant.

Table 7. LONG-TERM EMISSIONS RATES USED IN MODELING ANALYSES			
Modeled Emissions Point	Description	$PM_{2.5}$[a] (lb/hr)[b]	NO_x[c] (lb/hr)
STCK6	Existing Rotary Furnace #3 Baghouse Stack	1.87	3.95
STCK7	Proposed Rotary Furnace #6 & Crucible Heating Baghouse Stack	1.87	3.95
STCK8	Proposed Rotary Furnace #6 Salt Cake Handling & Crucible Cleaning Baghouse Stack	0.02	0[d]
STCK9	Existing Rotary Furnace #3 Salt Cake Handling Baghouse Stack	0.01	0[d]
STCK10	158-hp diesel-fired Fire Water Pump Generator Engine	0.02	0.28
VOL1	Uncaptured salt cake handling future furnace #6 & crucible cleaning & crucible #1 and #2 natural gas heating emissions	0.04	0[d]
VOL2	Uncontrolled salt cake handling existing furnace #3	0.04	0[d]

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
b. Pounds per hour.
c. Nitrogen oxides.
d. Where "0" is listed no emissions from this source were modeled for this pollutant.

3.2.2 TAP Emissions Rates

The increase in emissions from the proposed project are required to demonstrate compliance with the toxic air pollutant (TAP) increments, with an ambient impact analyses required for any TAP having a requested potential emission rate that exceeds the screening emissions level (EL) specified by Idaho Air Rules Section 585 or 586. Conestoga-Rovers and Real Alloy identified four carcinogenic TAPs emissions rates that exceeded the ELs, including arsenic, cadmium, formaldehyde, and nickel.

Real Alloy's operations are regulated by 40 CFR 63 Subpart RRR—National Emission Standard for Hazardous Air Pollutants (NESHAP) for Secondary Aluminum Production. TAPs emissions that are regulated by 40 CFR 63 are exempt from TAP impact analysis requirements, as per Idaho Air Rules Section 210.20. Natural gas combustion products were the primary source of the TAPs emissions presented in the dispersion modeling analyses. Real Alloy's TAP analyses also included formaldehyde emissions from the emergency diesel-fired fire water pump engine. Modeling staff did not evaluate whether the formaldehyde emissions were regulated by a New Source Performance Standard (NSPS) for this existing engine. Impacts for formaldehyde were conservatively included in the analyses, as described in the PTC modification application modeling report. The hourly emission rates listed in Table 8 were modeled for 8,760 hours per year.

Table 8. EMISSIONS RATES USED IN TAPs MODELING ANALYSES[c]					
Emissions Point[b]	Description	Arsenic (lb/hr)[a]	Cadmium (lb/hr)	Formaldehyde (lb/hr)	Nickel (lb/hr)
STCK6	Existing Rotary Furnace #3 Baghouse Stack	5.29E-06	2.91E-06	1.99E-03	5.56E-05
STK7	Proposed Rotary Furnace #6 & Crucible Heating Baghouse Stack	5.88E-06	3.24E-05	2.21E-03	6.18E-05
STCK10	158-hp diesel-fired Fire Water Pump Generator Engine	0	0	4.85E-03	0

a. Pounds per hour.
b. Model ID as listed in the TAPs modeling files.
c. Real Alloy's modeling analyses used a unit emission rate of 1.0 lb/hr for each stack. The maximum ambient impact on the unit emission rate basis for each stack was then multiplied by the applicable TAPs emission rate for each stack, and the impacts were added to compare against the allowable TAP increment.

3.3 *Emission Release Parameters*

Table 9 lists emissions release parameters for modeled sources. All point sources were modeled with uninterrupted and vertical releases to the atmosphere. No sources were modeled as raincapped or horizontal releases. Each project's permit application is to have stand-alone documentation to support the exhaust parameters used in the modeling demonstration. Section 4.3 of the Real Alloy March 19, 2015 modeling report provides a narrative discussion of the support documentation for the applicant's modeled exhaust parameters.

STACK #6
The supporting documentation provided in the modeling report included a complete report for a performance test conducted on April 30, 2014, on existing Rotary Furnace #3 (model ID STCK6). Appendix C of the April 6, 2015, revised modeling report provides this documentation. The performance test was conducted at an average hourly process throughput rate of 6.8 tons per hour. Exhaust flow rate, exhaust temperature at the sampling port locations, and stack diameter for Stack #6 were provided in this document. Model inputs were identical to the performance test values. The actual stack height for Stack #6 was listed as an on-site measurement by Aleris (Real Alloy). This documentation adequately supports the Stack #6 exhaust parameters.

STACK #7
Stack #7 (model ID STCK7) represents the trona-injected baghouse stack that will exhaust emissions from proposed the Rotary Furnace #6/Crucible Heater emissions sources. Emissions from natural gas combustion from the 27 million British Thermal Units per hour (MMBtu/hr) furnace and two 1.5 MMBtu/hr crucible heaters in combination with rotary furnace process emissions will be vented from Stack #7.

The April 30, 2014, performance test temperature for Stack #6 was applied to Stack #7. An exhaust flow rate of 70,000 actual cubic feet per minute (ACFM) was modeled for this stack. Vendor or engineering design documentation was not included as support documentation. An exit diameter of 4.52 feet and a release height of 70 feet are described as the currently-available design values.

This source vents emissions from either the crucible heaters or the crucible heaters and the crucibles being heated. Proposed furnace #6 was described as having a 100 tons per day rated capacity, which is 67% of the size of existing Furnace #3. If this area is equipped with a separate enclosure and/or fume hood collection system to exhaust and control emissions from the natural gas-fired crucible heaters and crucibles containing molten aluminum, an unknown amount of additional airflow would be expected, but a description or copies of design data supporting the parameters were not submitted.

The modeling report indicated that the stack parameters for Stack #7 for proposed Rotary Furnace #6 and Stack #8 for proposed Rotary Furnace #6 salt cake handling and crucible cleaning were "...based on design information available at the time the application was submitted. Real understands that it may need to submit revised information to IDEQ once the final design is known." This level of documentation was determined to be inadequate for DEQ's review purposes. Some form of design data should have been available for submittal with the permit to construct application package as of DEQ's March 4, 2015 reiteration of the request for exhaust parameter substantiation, given on-site equipment delivery and anticipated installation activities timelines discussed with the permittee. In the absence of exhaust parameter documentation materials, it is not readily apparent that the modeled parameters represent conservative values that would not require additional substantiation. For this reason, DEQ determined that conducting a sensitivity analysis was appropriate to support issuance of the modeling memorandum for this project. The effect of the conducting a sensitivity analysis on the timeline for finalizing a memorandum was considered.

STACK #8

Stack #8 represents the baghouse-controlled stack venting emissions collected from the salt cake handling for proposed Rotary Furnace #6. Emissions from an intermittent crucible cleaning operation were also assumed to be vented to this stack. As discussed above, the exhaust parameters for this source were stated as being based on design information that was available at the time the application was submitted. The same stack temperature for the trona-injected baghouse stack for a rotary furnace was applied to salt cake handling and crucible cleaning. It is unknown how the exit temperatures for these two dissimilar processes compare and if there is a varying temperature profile over the period the slag cools before it is transported from the salt cake cooling area. As described above for Stack #7, DEQ found the exhaust parameter substantiation lacked the necessary detail to concur that exhaust parameters were accurately established for this point source.

STACK #9

Stack #9 is the baghouse-equipped stack that vents the salt cake handling process associated with existing Rotary Furnace #3. The salt cake cooler was removed from service in a previous air permitting project. Real Alloy used the average temperature for the trona-injected baghouse stack that exhausts emissions for existing Rotary Furnace #3. Measured values or design data representative of this source for stack volumetric flow rate and temperature were not available at this time. Real Alloy and Conestoga-Rovers described the values as being based on the best engineering estimate assuming conservative exhaust flow rates. Stack release height and diameter were described as having been measured on-site.

STACK #10

Stack #10 vents the exhaust from the 158-horspower diesel-fired generator engine used to power the firewater pump at the facility. DEQ accepted the modeled exhaust parameters without additional substantiation due to the limited and intermittent operation of the source and the exhaust parameters appear reasonable given the modeled release height of 2.3 meters above grade indicates that the engine is equipped with a very short stack.

VOL1 and VOL2

The fugitive emissions for the salt cake handling and crucible cleaning operations were modeled as ground level release volume sources from each building housing the process areas. Real Alloy's submittal states that the dimensions of the sources are based on the approximate dimensions of the opening of the bay doorways on each building. The release height was assumed to be at ground level. Given the extremely small particulate matter emissions rates presented in the modeling demonstration for these fugitive sources DEQ accepted the release parameters as submitted.

Table 9. EMISSIONS RELEASE PARAMETERS

Point Sources

Release Point	New or Existing & Description	UTM[d] Coordinates, Zone 11		Stack Height (m)	Modeled Diameter (m)	Stack Gas Temperature (K)[b]	Stack Flow Velocity (m/s)[c]
		Easting (x) (m)[a]	Northing (y) (m)				
STCK6	Existing - Rotary Furnace #3	499,540.42	5,287,562.74	13.20	1.38	352.3	17.74
SCTK7	New – Rotary Furnace #6 & Crucible Heaters	499,755.74	5,287,678.65	21.34	1.38	352.3	17.74
STCK8	New – Salt Cake Handling for Furnace #6 and Crucible Cleaning	499,783.13	5,287,699.31	15.24	1.02	352.3	20.37
STCK9	Existing – Salt Cake Handling for Furnace #3	499,614.14	5,287,577.59	6.61	1.12	352.3	10.82
STCK10	Existing – 158-horsepower diesel firewater pump engine	499,612.82	5,287,549.77	2.29	0.09	755.4	30.41

Volume Sources

Release Point	Description	New or Existing	Location UTM Coordinates		Release Height (m)	Initial Horizontal Dimension (m)	Initial Vertical Dimension (m)
			Easting (x) (m)	Northing (y) (m)			
VOL1	Uncaptured salt cake handling future furnace #6 & crucible cleaning & crucible heaters #1 and #2 natural gas heating emissions	New	499,762.2	5,287,714.06	0.0	1.13	8.00
VOL2	Uncontrolled salt cake handling existing furnace #3	Existing	499,584.3	5,287,643.13	0.0	1.13	8.00

a. Meters.
b. Meters per second.
c. Kelvin.
d. Universal Transverse Mercator.

3.4 Results for Air Impact Analyses

3.4.1 Results for Significant Impact Analyses

Table 10 provides results for the 24-hour and annual $PM_{2.5}$, 24-hour PM_{10}, and annual and 1-hour NO_2 significant impacts level analyses (SIL) analyses.

Emissions increases of other criteria pollutants resulting from the proposed project were below applicable DEQ modeling thresholds that trigger site-specific impact analyses. The results of Real Alloy's SIL analyses are listed in Table 10. Cumulative NAAQS impact analyses were needed for all pollutants modeled in the SIL analyses since the applicable SILs were exceeded.

Table 10. RESULTS FOR SIGNIFICANT IMPACT ANALYSES				
Pollutant	**Averaging Period**	**Modeled Design Value Concentration ($\mu g/m^3$)[a]**	**SIL[b] ($\mu g/m^3$)**	**Percent of SIL**
$PM_{2.5}$[c]	24-hour	11.64[f]	1.2	970%
	Annual	2.61[g]	0.3	870%
PM_{10}[d]	24-hour	13.06[h]	5.0	261%
NO_2[e]	1-hour	67.43[i]	7.5	899%
	Annual	5.14[j]	1.0	514%

a. Micrograms per cubic meter.
b. Significant impact level.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
e. Nitrogen dioxide.
f. Modeled design value is the maximum 5-year mean of highest 24-hour values from each year of a 5-year meteorological dataset.
g. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.
h. Modeled design value is the maximum of highest 24-hour values from a 5-year meteorological dataset.
i. Modeled design value is the maximum 5-year mean of 1st highest daily 1-hour maximum impacts for each year of a 5-year meteorological dataset. Real Alloy's analyses did not use the AERMOD naming convention of "NO2" as the pollutant for modeling 1-hr NOx emissions. The pollutant was named "NOX". Special 1-hour average NO_2 processing was not performed by the model. Results are slightly conservative. All NO was assumed to convert to NO_2, which is also a conservative assumption.
j. Modeled design value is the maximum annual average value of 5 individual years of meteorological data. Real Alloy's analyses used a 5-year concatenated met file and a design impact value that was averaged over 5 years. This is slightly less conservative than the individual year design value approach. A 100% conversion of NO to NO_2 was assumed, which is conservative and offsets the effect of using an impact averaged over 5 years of meteorological data.

3.4.2 Results for Cumulative NAAQS Impact Analyses

The results for the cumulative impact analyses are listed in Table 11. Ambient impacts for the facility were well below the applicable NAAQS. Conestoga-Rovers used modeled design value concentrations that were consistent with EPA and DEQ guidance for all criteria pollutants modeled except for 1-hour and annual NO_2, as described in the footnotes of Table 11. This approach is acceptable because it produces conservative results that will over predict the design value. Attachments A and B to this memorandum present 24-hour average $PM_{2.5}$ and 1-hour average NO_2 isopleth (constant concentration) plots based on modeled facility-wide emissions. The figures show that the ambient impacts drop off dramatically as distance between the ambient receptors and the Real Alloy emission sources increases, except for the 1-hour average NO_2 impacts, where relatively higher impacts were predicted to occur at those receptors located in elevated terrain to the northwest of the Real Alloy facility.

Table 11. RESULTS FOR CUMULATIVE IMPACT ANALYSES						
Pollutant	**Averaging Period**	**Modeled Design Value Concentration ($\mu g/m^3$)[a]**	**Background Concentration[k] ($\mu g/m^3$)**	**Total Ambient Impact ($\mu g/m^3$)**	**NAAQS[b] ($\mu g/m^3$)**	**Percent of NAAQS**
$PM_{2.5}$[c]	24-hour	8.30[f]	18.1	26.4	35	75%
	Annual	2.61[g]	5.54	8.2	12	68%
PM_{10}[d]	24-hour	13.06[h]	76.8	89.9	150	60%
NO_2[e]	1-hour	61.83[i, l]	49.74	111.6	188	59%
	Annual	5.14[j]	5.99	11.1	100	11%

a. Micrograms per cubic meter.
b. National ambient air quality standards.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
e. Nitrogen dioxide.
f. Modeled design value is the maximum 5-year mean of 8th highest 24-hour values from each year of a 5-year meteorological dataset.
g. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.
h. Modeled design value is the maximum of 6th highest 24-hour values from a 5-year meteorological dataset. Real Alloy's demonstration used the 1st highest 24-hour value from the 5-year dataset. This is conservative.
i. Modeled design value is the maximum 5-year mean of 8th highest daily 1-hour maximum impacts for each year of a 5-year meteorological dataset. Real Alloy's analyses did not use the AERMOD naming convention of "NO2" as the pollutant for modeling NOx emissions for the 1-hr NO_2 analyses. The name "NOX" was used. Special 1-hour average NO_2 processing was not performed by the model. Results are slightly conservative. This impact is the 5-year mean value of the maximum 8th highest 1-hour impacts at this receptor without regard to each individual day. All NO was assumed to convert to NO_2, which is also a conservative assumption.
j. Modeled design value is the maximum annual average value of 5 individual years of meteorological data. Real Alloy's analyses used a 5-year concatenated met file and a design impact value that was averaged over 5 years. This is slightly less conservative than the individual year design value approach. A 100% conversion of NO to NO_2 was assumed, which is conservative.
k. This is a total background concentration based on NW Airquest and North Idaho Energy Logs background components as listed in Table 3 of this memorandum.
l. Table 3 of the April 7, 2015 Revised modeling report lists the design impact as 44.82 $\mu g/m^3$. The background and design impacts were transposed in the modeling report.

3.4.3 Results for Toxic Air Pollutant Analyses

Dispersion modeling was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 586 for those TAPs with applicable emissions increases exceeding emissions screening levels (ELs). The results of the TAPs analyses are listed in Table 12. The predicted ambient TAPs impacts were well below any TAPs increments.

Impacts were estimated by modeling unit emission rates (1 lb/hr) for each stack affected by the project. The maximum annual average impact at any receptor was used as the design concentration for that stack. This disregards whether each stack has an ambient impact at a common design receptor and is a conservative approach given the different locations within the facility and the differences in the physical exhaust parameters for the modeled stacks (Rotary Furnace #3 – STCK6, Rotary Furnace #6 – STCK7, and the diesel-fired fire water pump engine—STCK10). The impact for each stack was modeled by the applicable TAP emission rate for that source and the impacts were summed to obtain a design impact that was compared to the allowable TAP increment. All maximum modeled impacts were below the allowable increments.

Table 12. RESULTS OF TAPs ANALYSES				
Toxic Air Pollutant	**Averaging Period**	**Maximum Modeled Concentration ($\mu g/m^3$)[a]**	**AACC[b] ($\mu g/m^3$)**	**Percent of AACC**
Arsenic	Annual	8.0E-06	2.3E-04	3%
Cadmium	Annual	4.4E-05	5.6E-04	8%
Formaldehyde	Annual	1.8E-02	7.7E-02	23%
Nickel	Annual	8.4E-05	4.2E-03	2%

a. Micrograms per cubic meter.
b. Acceptable ambient concentration for carcinogens.

3.4.4 Results for DEQ Sensitivity Analyses

The submitted permit application lacked adequate documentation and justification of stack release parameters, and when additional information/data was requested by DEQ, Conestoga-Rovers indicated that additional information/data was not available. Stack release parameters can have a substantial effect on dispersion, and use of uncertain and non-conservative parameters lessens DEQ's confidence that compliance with applicable air quality standards is assured. To resolve the issue DEQ performed a sensitivity analysis, using conservative release parameters that DEQ is confident will not artificially enhance dispersion and under-represent impacts. The sensitivity analyses were performed for 24-hour and annual $PM_{2.5}$.

The DEQ sensitivity analyses were conducted on March 10, 2015. The sensitivity analyses were based on the December 18, 2014, modeling setup that preceded Real Alloy's March 19, 2015, submittal for the correction of the ambient air boundary and the final April 7, 2015, submittal where emissions rates were increased based on throughputs of 161.4 tons/day and 58,911 tons/year for each of the two rotary furnace lines. The revised Conestoga- Rovers modeling report does not clearly state these changes in throughput assumptions, but rather the throughputs were determined based on the emission rates and emissions factors. The April 7, 2015, revisions to the permit application still request 150 tons/day throughput for Furnace #3 and 100 tons/day for proposed furnace #6, and no additional information supporting the operation of the emissions units was presented in this project's permit application. The 24-hour average and annual average $PM_{2.5}$ emissions were modeled at 1.87 lb/hr each stack for Stack #6 and Stack #7.

The sensitivity analyses were based on more conservative exhaust parameters for the existing and proposed salt cake handling baghouse stacks (model IDs STCK9 and STCK8) and the proposed Rotary Furnace #6 trona-injected baghouse stack (model ID STCK7). Specific documentation from equipment vendors or design consultants for the new proposed sources was not provided in the application. Therefore, DEQ altered certain exhaust parameters for Stacks #7, #8, and #9 for a sensitivity modeling run to verify that modeled ambient impacts would not be substantially increased if applicant-submitted stack parameters were not accurate. The stack parameters used by DEQ were those that could logically be interpreted to apply to these stacks without having all the information needed to accurately establish values for exhaust parameters. Values for the existing Rotary Furnace #3's Stack #6 and Stack #10 for the diesel-fired generator engine were not altered in any way. The exhaust parameters for Stack #6 are supported with high quality documentation, using the April 30, 2014, source test on that stack. The exhaust parameters for the generator engine were not changed because the engine only operates intermittently and the modeled stack height shows there is no stack extension for the generator engine.

The applicant-submitted modeled flow rate for the new furnace's stack #7 was 70,000 ACFM. Existing Rotary Furnace #3 has a permit allowable capacity of 150 tons/day, and the proposed Rotary Furnace #6 requested permit-allowable capacity is 100 tons/day, about 2/3[rds] that of existing Rotary Furnace #3. Two 1.5 MMBtu/hr crucible heaters also vent to this stack. There may be a component of a process operations capture hood that requires additional airflow for venting of areas, but additional flow from such venting was not described in the application. The 70,000 ACFM flow rate may be accurate, but supporting documentation explaining the value was not provided in the application. If additional unrealized throughput capacity for Furnace #6 will be built into this unit's design, the application did not describe whether the flow rate of the capture and control system for Furnace #6 will be operated at varying exhaust flow rate levels according to a varying process throughput level.

The flow rate for Stack #7 was assumed to be comprised of at least the 100 tons/day Rotary Furnace #6 and Crucible Heater #1 and #2 exhaust streams. The exhaust flow rate used for Furnace #6 in the sensitivity run was reduced by scaling the April 30, 2014, source test-based average volumetric flow rate for Rotary Furnace #3 by the requested capacities for the two furnaces and adding a small component for venting crucible heaters:

- Sensitivity Flow for Furnace #6 = (100 tons/day / 150 tons/day) * 56,057.4 ACFM
- Assumed flowrate for 3 MMBtu/hr natural gas-fired Crucible Heaters #1 and #2 = 1,000 ACFM
- Additional flow for some form of hood capture systems = unknown, assumed to be 0.0 ACFM.

Stack #7 modeled sensitivity analysis flow rate = 38,372 ACFM.

The existing Rotary Furnace #3 salt cake handling baghouse stack (Stack #9) exit velocity was reduced from the applicant-submitted modeled flow rate of 22,512 ACFM to a DEQ-assumed value of 15,000 ACFM, resulting in a reduction of the exit velocity to 7.2 meters per second (m/s). Actual design data was not used to establish this value. Modeling staff was able to locate any additional documentation on the salt cake handling baghouse exhaust parameter specifications in the source file. The velocity was reduced to a level that provides relatively good dispersion with consideration of a 1 meter diameter stack. This is a reasonable flow rate, not an extremely conservative one.

The proposed Rotary Furnace #6 salt cake handling baghouse stack flow rate was scaled according to furnace capacity, in the same manner as Rotary Furnace #3, to obtain a flow rate of 10,000 ACFM for Stack #8. An additional 2,500 ACFM of flow was assumed to be provided to the stack to account for operation of an industrial ventilation hood for capture of the emissions from crucible cleaning operations. A total of 12,500 ACFM was calculated for Stack #8, which yields a sensitivity analysis exit velocity of 7.3 meters/second. Note that crucible cleaning is an intermittent operation that was described as operating for 10 hours per cleaning cycle for 60 individual times per calendar year. DEQ's approach still accounts for some level of airflow for crucible cleaning emission capture even though the most conservative approach would be to disregard it entirely considering there could be 300+ days per year with idle crucible cleaning operations within the #6 Furnace salt cake handling area.

The use of an exit exhaust temperature from the rotary furnace #3 performance test for the proposed rotary furnace #6 stack (Stack #7) is reasonably appropriate, but applying the exit temperature obtained at the test ports for a trona-injected baghouse stack to salt cake handling stacks (new Stack #8 and existing Stack #9) without any additional documentation is not supported, and a more conservative value may be appropriate for a sensitivity analysis. A varying temperature profile is assumed to occur throughout the passive cooling cycle for each batch of salt cake produced by each batch cycle of the rotary furnaces prior to removal from the salt cake handling area. A temperature value estimated to be relatively conservative was chosen—100 degrees Fahrenheit.

Table 13 provides a description of parameters used in the DEQ sensitivity analyses where those parameters differ from the final submitted analyses.

Table 14 provides results from the DEQ sensitivity analyses. As shown in the Table, the effects of applying somewhat more conservative exhaust parameters for sources, where the submitted documentation does not clearly support a new emissions point's exhaust parameters, will have little effect on the design concentrations for the project. In part, the emission rates for the salt cake handling baghouses, as presented in the permit application emission inventory and impact analyses, are so low that the effects of the conservative temperature and velocity are minimized. Where the flow rate for Stack #7 (proposed Rotary Furnace #6 and Crucible Heaters #1 and #2) was reduced by 45% compared to the application's modeling demonstration flow rate, modeling with a 1.05 pound/hour $PM_{2.5}$ emission rate still did not cause a significant increase in the design impact due to the 70 feet stack release height. Assuming more conservative flow rates and temperatures for the salt cake handling baghouses will presumably not cause any appreciable increase in ambient impacts because the increased level of baghouse control to 99% that is reflected in the project emission inventory minimizes the controlled particulate matter emissions rates. The only sources of appreciable particulate matter emissions are the trona-injected baghouse-controlled rotary furnace stacks.

Fugitive emissions exhaust parameters were not altered in any way for this sensitivity run and impacts from the fugitive sources (VOL1 and VOL2) are minimized due to the extremely low PM_{10} and $PM_{2.5}$ emission rates presented by the permittee.

DEQ concludes that the effects of high capture and control efficiencies far outweigh the effects of using more conservative release parameters.

Table 13. SENSITIVITY ANALYSES EMISSIONS RELEASE PARAMETERS

Release Point	Description	$PM_{2.5}$[a] Emission Rate (lb/hr)[b]	Altered Parameters			
			Original Flow Velocity (m/s)[c]	Sensitivity Flow Velocity (m/s)	Application's Modeled Temperature (K)[d]	Sensitivity Run Modeled Temperature (K)
STCK7[e]	Proposed Rotary Furnace #6 & Crucible Heater #1 and #2 Trona-injected Baghouse Stack	1.05	22.2	12.1	352.3	352.3
STCK8	Proposed Rotary Furnace #6 Salt Cake Handling a & Crucible Cleaning Baghouse Stack	0.02	20.4	7.3	352.3	310.9
STCK9	Existing Rotary Furnace #3 Salt Cake Handling Baghouse Stack	0.0148	10.8	7.2	352.3	310.9

a. Particulate matter with an aerodynamic diameter of 2.5 microns.
b. Pounds per hour. Modeled for 24 hours per day and 8,760 hours per year.
c. Meters per second.
d. Kelvin.
e. Stack #6 (Existing Rotary Furnace #3) was modeled at a $PM_{2.5}$ emission rate of 1.61 lb/hr in the sensitivity analysis and all of Real Alloy's for the project's modeling demonstrations prior to the April 7, 2014 submittal.

Table 14. RESULTS FOR SENSITIVITY IMPACT ANALYSES				
Pollutant	**Averaging Period**	**Sensitivity Analyses Design Value (µg/m³)[a]**	**Real Alloy's Analyses Design Value[f] (µg/m³)**	**Percent Increase Due to More Conservative Exhaust Parameters**
$PM_{2.5}$[c]	24-hour	6.87[d]	6.02	14%
	Annual	2.16[e]	1.83	18%

a. Micrograms per cubic meter.
b. National ambient air quality standards.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Modeled design value is the maximum 5-year mean of 8th highest 24-hour values from each year of a 5-year meteorological dataset.
e. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.
f. Design impacts from the December 18, 2014 incompleteness response modeling demonstration. Modeled emission rates are identical for the December 18, 2014 modeling runs and the DEQ sensitivity runs.

4.0 Conclusions

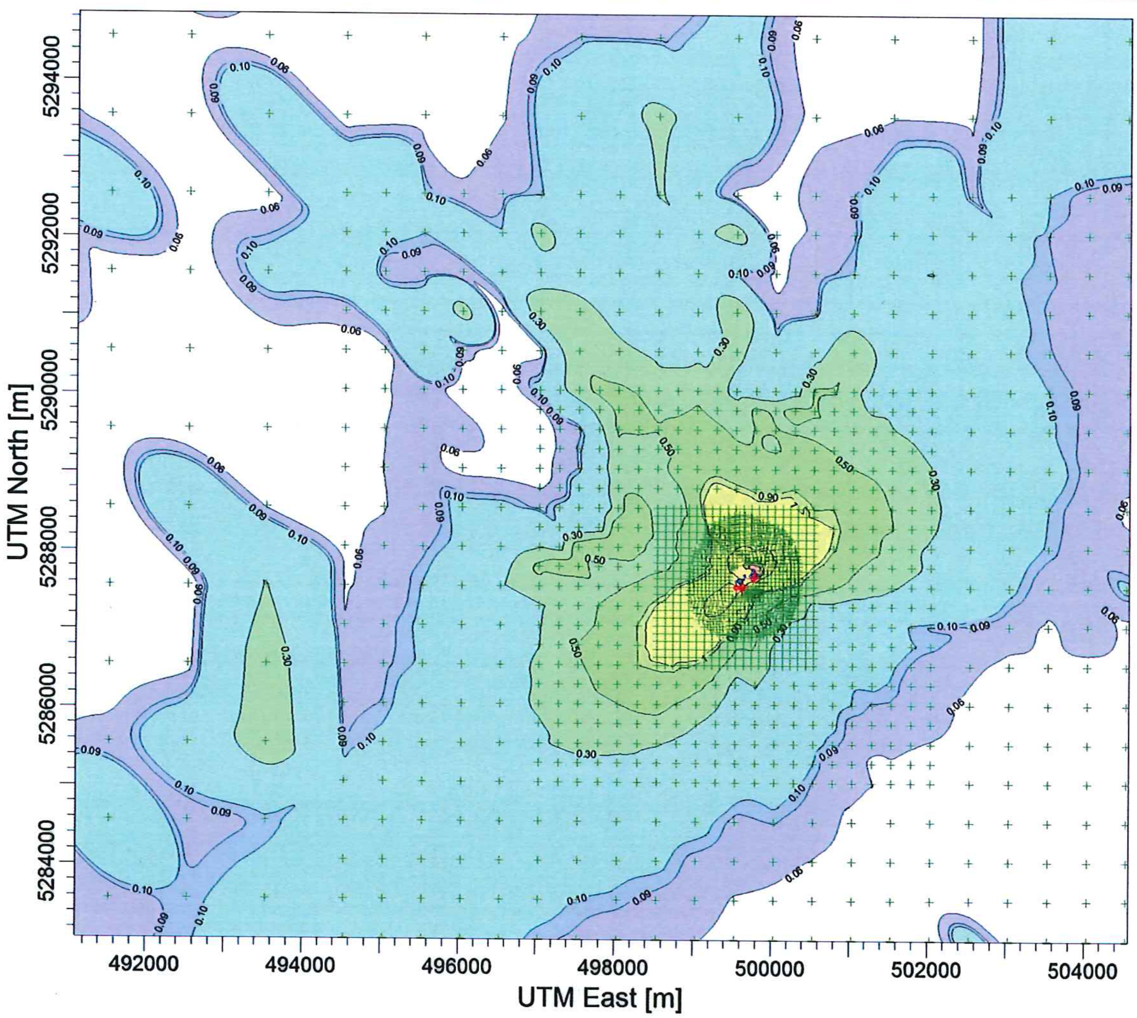
The ambient air impact analyses and DEQ sensitivity analyses demonstrated to DEQ's satisfaction that emissions from the Real Alloy facility will not cause or significantly contribute to a violation of any NAAQS and the proposed modification will not cause a violation of applicable TAPs increments.

Attachment A

24-hour $PM_{2.5}$ NAAQS Impacts

PROJECT TITLE:

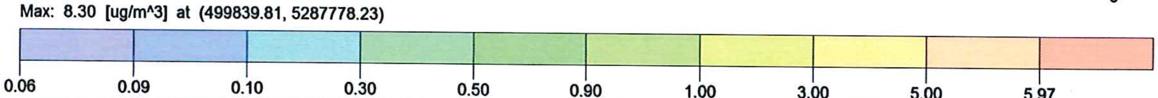
PM2.5 24-hr Isopleth
Real Alloy's April 7, 2015 Submittal



PLOT FILE OF 8TH-HIGHEST MAX DAILY 24-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL

ug/m^3

Max: 8.30 [ug/m^3] at (499839.81, 5287778.23)



COMMENTS:	SOURCES:	COMPANY NAME:	
Note that a high ambient impact are not present in the elevated terrain northeast of facility as with the 1-hr NOx impacts	7	**Idaho DEQ Review of April 7, 2015 Submittal**	
	RECEPTORS: **2518**	MODELER: **Darrin Mehr, Air Quality Analyst**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:76,699 (0 — 3 km)	
	MAX: **8.30 ug/m^3**	DATE: **4/10/2015**	PROJECT NO.: **2009.0139 PROJ 614**

AERMOD View - Lakes Environmental Software

C:\MODELING PROJECTS\Real Alloy Recycling\4_7_2015 Remodel\Aleris PM2.5\Aleris PM2.isc

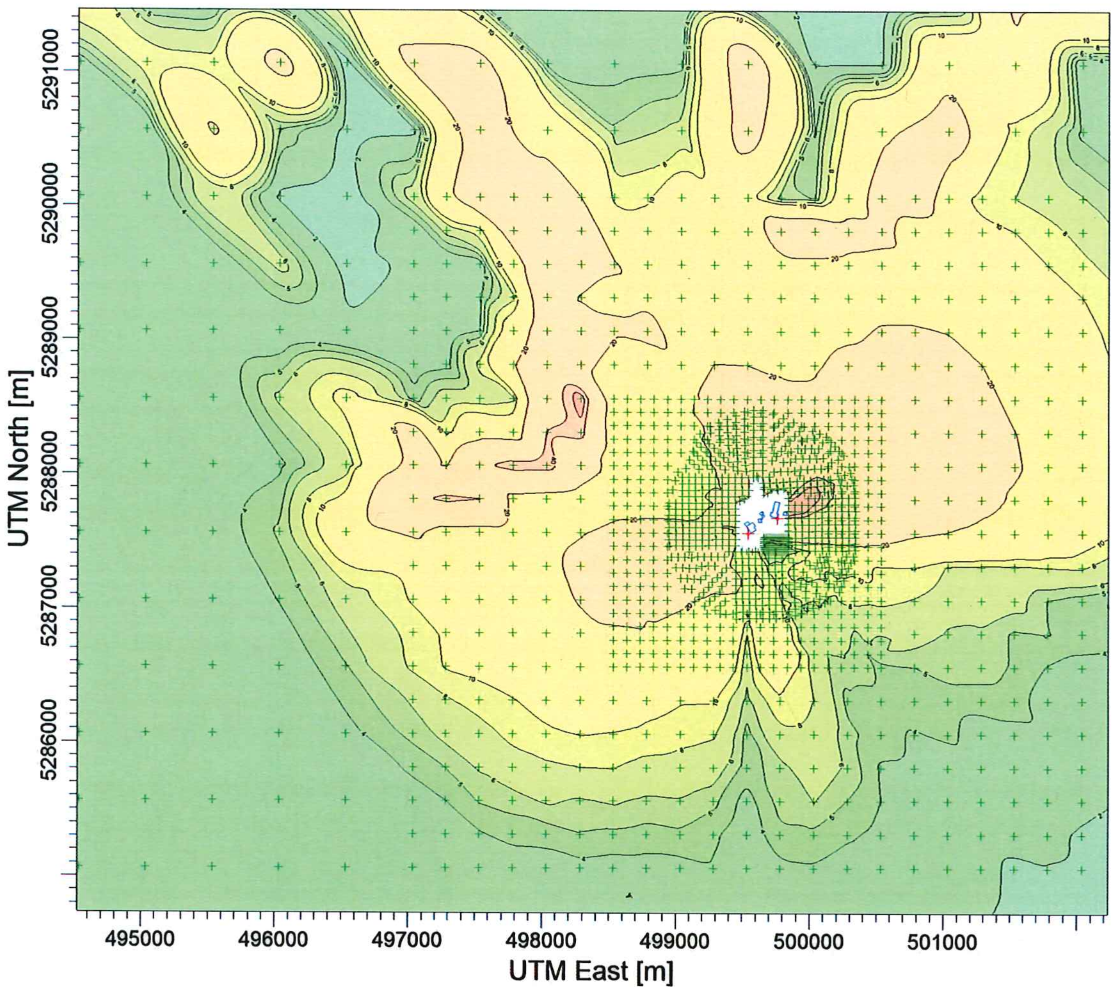
Attachment B

1-hour Total NOx Impacts for 1-hr NO_2 NAAQS

(NOx impacts equal NO_2 impacts, assuming 100% conversion to NO_2)

PROJECT TITLE:

1-hr NO2 NAAQS Run Isopleth
Real Alloy Post Falls Facility_DEQ Review



PLOT FILE OF HIGH 8TH HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m^3

Max: 61.8 [ug/m^3] at (499839.81, 5287778.23)

0.4 0.5 0.6 0.8 1.0 2.0 4.0 5.0 6.0 8.0 10.0 20.0 40.0 44.4

COMMENTS:	SOURCES:	COMPANY NAME:	
Approximately 1 mile northeast of the Real Alloy facility there are some impacts on elevated terrain that are comparable to eastern fenceline impacts.	2	**Idaho DEQ Review of April 7, 2015 Submittal**	
	RECEPTORS: **2482**	MODELER: **Darrin Mehr, Air Quality Analyst**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:44,874 0 — 1 km	
	MAX: **61.8 ug/m^3**	DATE: **4/10/2015**	PROJECT NO.: **2009.0139 PROJ 614**

AERMOD View - Lakes Environmental Software

C:\MODELING PROJECTS\Real Alloy Recycling\4_7_2015 Remodel\Aleris 1hr NOx\Aleris NOx.isc

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on April 27, 2015:

Facility Comment: In Table 1.1 the feed for Rotary Furnace #6 should be 300,000 and split the salt cake staging and handling into two separate lines to show the controls as existing baghouse #9 for rotary furnace #3 and baghouse #8 for rotary furnace #6.

DEQ Response: The changes were made as requested.

Facility Comment: Permit condition 2.7, the salt cake production rate should be established on a monthly average as shown in the statement of basis.

DEQ Response: The change was made as requested.

Facility Comment: Permit condition 2.12, delete hourly from the requirement as the batch process takes longer than an hour to produce.

DEQ Response: The change was made as requested.

Facility Comment: Permit condition 2.13 revise to replace salt cake produced with feed charge.

DEQ Response: The change was made as requested.

APPENDIX D – PROCESSING FEE

PTC Fee Calculation

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Real Alloy Recycling, Inc.
Address: 16168 W. Prairie Avenue
City: Post Falls
State: ID
Zip Code: 83854
Facility Contact: Jeff Bohannon
Title: Plant Manager
AIRS No.: 055-00031

N — Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y — Did this permit require engineering analysis? Y/N

N — Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	1.0	0	1.0
SO_2	0.2	0	0.2
CO	51.3	0	51.3
PM10	0.0	2.5	-2.5
VOC	2.8	0	2.8
TAPS/HAPS	0.2	0	0.2
Total:	0.0	2.5	**53.0**
Fee Due	**$ 5,000.00**		

Comments: