Smith, Claudia

From: Blackmar, Guy <gblackmar@chemtradelogistics.com>
Sent: Thursday, August 27, 2015 4:22 PM
To: Smith, Claudia; Trabing, Aaron
Subject: RE: New Plant Manager- Chemtrade Refinery Services Riverton, Wyoming

Claudia,

Here is what I have.

Guy Blackmar II
Plant Manager
C 307-840-2245
W 307-857-4645
Chemtrade Logistics, Inc
140 Goes In Lodge Rd
Riverton, Wyoming 82501
gblackmar@chemtradelogistics. com

From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Thursday, August 27, 2015 4:17 PM
To: Trabing, Aaron
Cc: Blackmar, Guy
Subject: RE: New Plant Manager- Chemtrade Refinery Services Riverton, Wyoming

Aaron,

You can send me Guy's complete contact information via email and I can update our records.

Thanks,

Claudia

From: Trabing, Aaron [mailto:atrabing@chemtradelogistics.com]
Sent: Thursday, August 27, 2015 4:14 PM
To: Smith, Claudia
Cc: Blackmar, Guy
Subject: New Plant Manager- Chemtrade Refinery Services Riverton, Wyoming

Claudia,

Helen Cane is no longer the plant manager at the Chemtrade Refinery Services Inc., Riverton, Wyoming facility. Chemtrade recently hired a new plant manager and his name is Guy Blackmar. What is your recommendation on communicating this to your department within the Environmental Protection Agency? Is there a certain form that you would like for us to fill out to complete this communication accurately?

Thanks,

Aaron Trabing
EH&S Supervisor
Chemtrade Logistics Inc.
Office-(307)-857-4653
Cell- (307)-851-6923

This e-mail (including any attachments) is for the sole use of the intended recipient and may contain confidential information which may be protected by privilege. If you are not the intended recipient, please notify the sender immediately, delete this e-mail and destroy any copies. E-mail transmission cannot be guaranteed to be secure or error-free and the sender cannot accept responsibility for any errors or omissions resulting from such transmission. Thank you.

Smith, Claudia

From: Smith, Claudia
Sent: Thursday, August 27, 2015 4:29 PM
Subject: Notice of Issuance of Minor New Source Review Permit on the Wind River Indian Reservation

This is to notify you that the EPA has issued a final Clean Air Act (CAA) synthetic minor New Source Review permit for the existing Chemtrade Logisitcs, Chemtrade Refinery Services, Inc. Riverton, Wyoming Facility pursuant to the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49. The final MNSR permit and response to comments can be accessed in PDF format on our website at: http://www2.epa.gov/region8/nsr-and-psd-permits-issued-region-8.

In accordance with the regulations at §49.159(a), the permit will be effective on September 28, 2015. Within 30 days after a final permit decision has been issued (32 days in this case, as 30 days fell on a Saturday), any person who filed comments on the proposed permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period (or in this case 32-day period) within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

Thank you,

Claudia Young Smith
Environmental Scientist
US EPA Region 8 Air Program
Phone: (303) 312-6520
Fax: (303) 312-6064
http://www2.epa.gov/region8/air-permitting

****
US EPA Region 8
1595 Wynkoop Street
Mail Code 8P-AR
Denver, Colorado 80202
****

Smith, Claudia

From: Smith, Claudia
Sent: Thursday, August 27, 2015 3:01 PM
To: Trabing, Aaron
Cc: 'Odeh, Eyaad'; Cane, Helen; Rothery, Deirdre; Whitmore, Scott; 'Lang, Annette (ENRD)'; Smith, Robert H; Miller, Patrick; 'Ryan Ortiz'; 'pawilson@e-shoshone.com'; Lokilo St. Clair
Subject: Final Tribal MNSR Permit for Chemtrade Refinery Services, Inc. Riverton Facility
Attachments: Chemtrade Refinery Services Riverton Final Tribal SMNSR Permit.pdf

Aaron,

I have attached the final requested permit and the accompanying response to comments document for the Chemtrade Refinery Services, Inc. Riverton, Wyoming, Facility issued pursuant to the Tribal Minor New Source Review Program at 40 CFR Part 49 (MNSR). A paper copy will follow in the mail tomorrow. We will also be posting the final MNSR permit and response to comments in PDF format shortly on our website at: http://www2.epa.gov/region8/nsr-and-psd-permits-issued-region-8.

In accordance with the regulations at §49.159(a) and , the permit will be effective on September 28, 2015. Within 30 days after a final permit decision has been issued (32 days in this case, as 30 days fell on a Saturday), any person who filed comments on the proposed permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period (or in this case 32-day period) within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

If you have any questions or concerns regarding this final permit action, please contact me.

Thank you,

Claudia Young Smith
Environmental Scientist
US EPA Region 8 Air Program
Phone: (303) 312-6520
Fax: (303) 312-6064
http://www2.epa.gov/region8/air-permitting

****
US EPA Region 8
1595 Wynkoop Street
Mail Code 8P-AR
Denver, Colorado 80202
****

ELECTRONIC MAIL

July 24, 2015

Darcy O'Connor
Acting Assistant Regional Administrator
United State Environmental Protection Agency Region 8 Air Program
1595 Wynkoop St.
Denver, CO 80202

Re: Chemtrade – Riverton, WY Facility Comments on Draft Permit #SMNSR-WR-000003-2013.001

Dear Ms. O'Connor,

Chemtrade Refinery Services Inc. (Chemtrade) received a copy of the draft Title V permit and Statement of Basis on June 26, 2015 for the facility located at140 Goes In Lodge Rd, Riverton, WY, 82501.

Chemtrade has reviewed documents and submits the following comments within the statuary 30 day public comment period. Attached to this letter is the flowing document:

- *Chemtrade – Riverton, WY Facility Comments on Draft Permit #SMNSR-WR-000003-2013.001* Date July 20, 2015

Please review the information and comments provided. If you have any questions, please contact me at (419) 290.1082

Sincerely,

Eyaad Odeh
Chemtrade -Sr. Environmental Project Manager

Cc: Claudia Smith – Region 8 EPA Air Division (Electronic)

July 20, 2015

Darcy O'Connor
Acting Assistant Regional Administrator
United State Environmental Protection Agency Region 8 Air Program
1595 Wynkoop St.
Denver, CO 80202

Re: - Chemtrade – Riverton, WY Facility Comments on Draft Permit #SMNSR-WR-000003-2013.001

After reviewing the Technical Support Document and the Synthetic Minor permit referenced above, the following comments are submitted for the EPA's consideration. The comments are based on the EPA's stated goal to only incorporate the terms and requirements of a Federal Consent Decree (CD) related to air emissions at the facility (Case 3:09-cv-00067), which became effective on January 1, 2013.

It is Chemtrade's request that the specific modifications to the language listed below each comment be incorporated into the final permit.

Comment #1

Permit Section:

Technical Support Document Page 10 of 15 – Section B

Section B. "**We are also proposing to require that Chemtrade install, certify, calibrate, maintain, and operate a continuous opacity monitoring system (COMS)** to measure and record the visible emissions from the scrubber exhaust stacks of Plants #1 and #2 to demonstrate compliance with the opacity limits. The COMS shall be continuously operated at all times the plants are operating to produce"

Chemtrade Comment:

Chemtrade requests that the following language be removed from the TDS: "**We are also proposing to require that Chemtrade install, certify, calibrate, maintain, and operate a continuous opacity monitoring system (COMS)** to measure and record the visible emissions from the scrubber exhaust stacks of Plants #1 and #2 to demonstrate compliance with the opacity limits. The COMS shall be continuously operated at all times the plants are operating to produce"

The CD did not require the facility to install a COMS at any of the sulfuric acid facilities. A COMS is optional to show compliance, Chemtrade has elected not to exercise that option under the CD.

Comment #2

Permit Section:

Page 6 of 26 – Control and Operational Requirements Section D.4

(4): The Permittee shall install, certify, calibrate, operate, and maintain a continuous emissions monitoring system (CEMS) in the scrubber exhaust stack of both Plant #1 and Plant #2 that is equipped with a converter inlet SO2 analyzer and is capable of directly measuring, calculating, and recording the in-stack volumetric flow rate, the in-stack SO2 emission rate concentrations, expressed as the average lb/ton of 100% H2SO4 produced in any consecutive 3-hour period, and the in-stack oxygen (O2) concentration.

Chemtrade Comment:

Chemtrade requests that the language in Section D.4 be removed from the final permit because it is factually incorrect and the intent of the section is met in the preceding section (Section D.5) by incorporating by reference Appendixes B and C. Plants #1 and #2 have different requirements under Appendixes B and C and the language referenced above indicates that they are identical. Plant #1 (Appendix B) is required to have a SO2 analyzer on the scrubber exhaust stack, an in-stack oxygen analyzer, and a flow meter, while Plant #2 (Appendix C) is required to have a SO2 analyzer on the scrubber exhaust stack, an inlet converter SO2 analyzer, and a stack flow meter.

Comment #3

Page 7 of 26 – Control and Operational Requirements Section E.1.a

Permit Section: The initial performance tests shall be conducted within 90 calendar days of the **effective date of this permit**.

Chemtrade Comment:

Chemtrade requests that the" effective date of this permit" be clarified. The initial performance test was successfully conducted in 2010. As it reads now, Chemtrade would be required to performance another "initial" performance test once this current permit is finalized which would be an additional requirement outside the scope of the CD.

Comment #4

Page 8 of 26 – Control and Operational Requirements Section E.3 & 5

Permit Section:

Section E.3: "The Permittee shall not abort any tests that demonstrate non-compliance with the emission limits specified in this permit."

Section E.5: "If the results of a complete and valid performance test of the emissions from Plant #1 or Plant #2 demonstrate noncompliance with the emission limits specified in this permit, the plant shall be shut down as soon as safely possible, and appropriate corrective action shall be taken (e.g., repairs, component cleaning, component replacement). The Permittee shall notify the EPA in writing within 24 hours of each such shut down. The plant must be retested within 7 days of being restarted and the emissions must meet the applicable limits in this permit. If the retest shows that the emissions continue to exceed the limits specified in this permit, the plant shall again be shut down as soon as safely possible, and the plant may not operate, except for purposes of startup and testing, until the Permittee demonstrates through testing that the emissions do not exceed the emission limits specified in this permit."

Chemtrade Comment:

Chemtrade requests that Section E.3 & 5 be removed from the final permit. Both sections are not required in the current CD or the current Title V Part 71 permit. It is outside the scope of the intent of this permit modification to incorporate the terms of the CD into a facility Synthetic Minor permit.

Comment #5

Page 8 of 26 – Monitoring Requirements Section F.3

Permit Section:

Section F.3: "At least once during each calendar week in which the permitted source operates, the Permittee shall perform a visible emissions survey of the scrubber exhaust stacks of Plant #1 and Plant #2 to demonstrate continuous compliance with the opacity limits in this permit. The survey shall be performed during daylight hours, while the facility is operating, and by an individual trained in EPA Reference Method 22 of 40 CFR Part 60, Appendix A..."

Chemtrade Comment:

Chemtrade requests that Section F.3 be removed from the final permit. The requirement is not listed in the current CD or the current Title V Part 71 permit. It is outside the scope of the intent of this permit modification to incorporate the terms of the CD into a facility Synthetic Minor permit.

Smith, Claudia

From: Steve Babits <sbabits@wyoming.com>
Sent: Friday, July 24, 2015 1:29 PM
To: Smith, Claudia
Cc: R8AirPermitting
Subject: Comments on Proposed Chemtrade MNSR Permit

Claudia,

I am writing in response to your notice regarding the proposed MNSR Permit for the Chemtrade facility on the Wind River Indian Reservation. I have one question and one comment.

If I understand correctly, this is a new permit and not a renewal for existing emissions sources at the facility. There will be no emissions increases or changes in operation and the emissions limits will stay the same as set forth in the 2009 Consent Decree. My question is why is a new permit required when nothing at the facility has changed? Is this due to a rule change or new rule? Can you please explain.

My comment is that the Northern Arapaho Tribe would like Chemtrade to send copies of required reports and notifications of any deviations to this office at the address below. If EPA does not have the authority to require Chemtrade to report directly to the Tribe, then we would like EPA to provide a copy to the Tribe.

Thank you for providing us with a copy of the proposed permit and for considering our comments.

Steve Babits
Northern Arapaho Environmental Office
PO Box 396
Ft. Washakie, WY 82514
307-335-1094

Smith, Claudia

From: Rothery, Deirdre
Sent: Thursday, June 25, 2015 1:15 PM
To: eodeh@chemtradelogistics.com; atrabing@chemtradelogistics.com
Cc: sbranoff@Environcorp.com; Smith, Claudia
Subject: Proposed Synthetic Minor NSR Permit for Chemtrade Refinery Services, LLC Riverton, Wyoming Facility
Attachments: Chemtrade Refinery Services Proposed SMNSR Permit-TSD-Notice.pdf

I have attached the requested proposed permit, the accompanying technical support document, and the bulletin board notice for the Chemtrade Logistics, Chemtrade Refinery Services, LLC, Riverton, Wyoming Facility. We will also be posting the application, proposed permit, technical support document, and other supporting information on our website at: http://www2.epa.gov/region8/air-permit-public-comment-opportunities by the start of the public comment period.

In accordance with the regulations at 40 CFR 49.157, we are providing a public comment period from June 26, 2015 to July 27, 2015 for public comment on this proposed permit. Comments must be received by 5:00pm MST July 27, 2015, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to Claudia Smith of my staff at smith.claudia@epa.gov, or to r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Smith, Claudia

From: Rothery, Deirdre
Sent: Thursday, June 25, 2015 1:15 PM
To: pawilson@e-shoshone.com
Cc: kilojohn77@yahoo.com; Smith, Claudia
Subject: Proposed Synthetic Minor NSR Permit Chemtrade Refinery Services, LLC Riverton Facility
Attachments: Bulletin Board Notice.pdf; Chemtrade Refinery Services Proposed SMNSR Permit-TSD-Notice.pdf

Phoebe,

I have attached the proposed permit, the accompanying technical support document, and the bulletin board notice for the Chemtrade Logistics, Chemtrade Refinery Services, LLC, Riverton, Wyoming Facility. We will also be posting the application, proposed permit, technical support document, and other supporting information on our website at: http://www2.epa.gov/region8/air-permit-public-comment-opportunities by the start of the public comment period. As agreed upon with Claudia Smith of my staff, the attached public notice bulletin can be used to electronically advertise the public comment period using whatever mechanism you may have available. We also sent paper copies of the proposed permit documents and the public notice bulletin to you by mail.

In accordance with the regulations at 40 CFR 49.157, we are providing a public comment period from June 26, 2015 to July 27, 2015 for public comment on this proposed permit. Comments must be received by 5:00pm MST July 27, 2015, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to Claudia Smith of my staff at smith.claudia@epa.gov, or to r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Smith, Claudia

From: Rothery, Deirdre
Sent: Thursday, June 25, 2015 1:14 PM
To: northernarapaho@msn.com; rortiz@northernarapaho.com; sbabbits@wyoming.com
Cc: Smith, Claudia
Subject: Proposed Synthetic Minor NSR Permit Chemtrade Refinery Services, LLC Riverton Facility
Attachments: Bulletin Board Notice.pdf; Chemtrade Refinery Services Proposed SMNSR Permit-TSD-Notice.pdf

I have attached the proposed permit, the accompanying technical support document, and the bulletin board notice for the Chemtrade Logistics, Chemtrade Refinery Services, LLC, Riverton, Wyoming Facility. We will also be posting the application, proposed permit, technical support document, and other supporting information on our website at: http://www2.epa.gov/region8/air-permit-public-comment-opportunities by the start of the public comment period. As agreed upon with Claudia Smith of my staff, please post the public notice bulletin to the Tribe's website and Facebook page to advertise the public comment period. We also sent paper copies of the proposed permit documents and the public notice bulletin to you by mail.

In accordance with the regulations at 40 CFR 49.157, we are providing a public comment period from June 26, 2015 to July 27, 2015 for public comment on this proposed permit. Comments must be received by 5:00pm MST July 27, 2015, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to Claudia Smith of my staff at smith.claudia@epa.gov, or to r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Smith, Claudia

From: Rothery, Deirdre
Sent: Thursday, June 25, 2015 1:14 PM
Subject: Notice of Public Comment Period – Proposed Permit to Construct on the Wind River Indian Reservation
Attachments: Bulletin Board Notice.pdf

In accordance with the regulations at 40 CFR 49.157, the EPA is hereby providing notification of the availability for public comment of the proposed Clean Air Act synthetic minor permit to construct for the following source located on the Wind River Indian Reservation:

Chemtrade Logistics, Chemtrade Refinery Services, LLC, Riverton Facility

Electronic copies of the proposed permit, technical support document, and supporting permit record may be viewed online at: http://www2.epa.gov/region8/air-permit-public-comment-opportunities.

Paper copies of the proposed permit, technical support document, and supporting permit docket may be obtained by contacting the EPA and/or other contacts identified on the attached public notice bulletin.

Comments may be sent by mail to:

US EPA Region 8
Air Program Office
1595 Wynkoop Street, 8P-AR
Denver, CO 80202
Attn: Federal Minor NSR Coordinator

or

Electronically to R8AirPermitting@epa.gov

In accordance with the regulations at §49.157, the Agency is providing a public comment period from June 26, 2015 to July 27, 2015 for public comment on this proposed permit. Comments must be received by 5:00pm MST July 27, 2015, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

Ref: 8P-AR

Phoebe Wilson, Executive Secretary
Eastern Shoshone Tribe
P.O. Box 538
Fort Washakie, Wyoming 82514-0538

JUN 22 2015

Re: Transmittal of Proposed Synthetic Minor New Source Review Permit for a Source on the Wind River Indian Reservation

Dear Ms. Wilson:

Please find enclosed copies of the proposed permit, technical support document, and the public notice bulletin for the following source located on the Wind River Indian Reservation. We will be transmitting electronic copies of these documents to you via email. We will also be posting these documents, as well as the application and other supporting documents, in PDF format on our website at: http://www2.epa.gov/region8/air-permit-public-comment-opportunities upon the start of the public comment period on Friday, June 26, 2015. Additionally, paper copies of these documents will also be available for public inspection at the Central Wyoming College Library and the Riverton Public Library.

Chemtrade Logisitics
Chemtrade Refinery Services, LLC

In accordance with the regulations at 40 CFR 49.157, we are providing a public comment period from June 26, 2015 to July 27, 2015 for this proposed synthetic minor New Source Review permit.

We have also enclosed copies of a public notice bulletin. Please post this bulletin in locations that you see fit to broadly advertise this public comment period.

Please submit any written recommendations you may have concerning the terms and conditions of the proposed permit directly to me at smith.claudia@epa.gov, to our Region 8 Air Program email address at R8AirPermitting@epa.gov, or to the following address:

Federal Minor New Source Review Coordinator
U.S. EPA Region 8 Air Program
1595 Wynkoop Street, 8P-AR
Denver, Colorado 80202
(303) 312-6649

Thank you for your assistance in this matter. Should you have any questions regarding our request you may contact me at (303) 312-6520.

Sincerely,

Claudia Smith, Environmental Scientist
Air Program

Enclosures (3)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

Ref: 8P-AR

JUN 19 2015

Mr. Aaron Trabing
EH&S Supervisor
Chemtrade Logistics
140 Goes In Lodge Road
Riverton, Wyoming 82501

Re: Chemtrade Logistics, Chemtrade Refinery Services, Inc., Riverton, Wyoming Sulfuric Acid Manufacturing Facility Permit # SMNSR-WR-000003-2013.001, Proposed Synthetic Minor New Source Review Permit

Dear Mr. Trabing:

The U.S. Environmental Protection Agency Region 8 has completed its review of Chemtrade Logistics' application requesting a synthetic minor new source review permit for the Chemtrade Refinery Services, Inc., Riverton, Wyoming Sulfuric Acid Manufacturing Facility, located on the Wind River Indian Reservation in Wyoming, pursuant to the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49.

Enclosed are the proposed permit and the corresponding technical support document. The regulations at 40 CFR 49.157 require that the affected community and the general public have the opportunity to submit written comments on any proposed MNSR permit. All written comments submitted within 30 calendar days after the public notice is published will be considered by the EPA in making its final permit decision. Enclosed is a copy of the public notice which will be published on the EPA's website located at: http://www2.epa.gov/region8/air-permit-public-comment-opportunities, on Friday, June 26, 2015. The public comment period will end at 5:00 p.m. on Monday, July 27, 2015.

The conditions contained in the proposed permit will become effective and enforceable by the EPA if the permit is issued final. If you are unable to accept any term or condition of the draft permit, please submit your written comments, along with the reason(s) for non-acceptance to:

Tribal NSR Permit Contact
c/o Air Program (8P-AR)
U.S. EPA, Region 8
1595 Wynkoop Street
Denver, Colorado 80202

or

R8AirPermitting@epa.gov

If you have any questions concerning the enclosed proposed permit or technical support document, please contact Claudia Smith of my staff at (303) 312-6520.

Sincerely,

Darcy O'Connor
Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Enclosures (3)

cc: Ryan Ortiz, Director, Northern Arapaho Environmental Office
Phoebe Wilson, Executive Secretary, Eastern Shoshone Tribe
Helen Cane, Plant Manager, Chemtrade Refinery Services, Inc.

Air Pollution Control
40 CFR 49.151 Federal Minor New Source Review In Indian Country
Technical Support Document
Proposed Permit #SMNSR-WR-000003-2013.001

Chemtrade Logistics
Chemtrade Refinery Services, Inc.
(Sulfuric Acid Manufacturing Plant)
Wind River Indian Reservation
Fremont County, Wyoming

In accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49, this Federal permit to construct is being issued under authority of the Clean Air Act (CAA). The EPA has prepared this technical support document describing the conditions of this MNSR permit and presents information that is germane to this permit action.

Table of Contents

I. Introduction

On December 24, 2013, the EPA received an application from Chemtrade Logistics (Chemtrade) requesting a synthetic minor permit for the Chemtrade Refinery Services, Inc. Riverton, Wyoming, sulfuric acid manufacturing facility (facility) in accordance with the requirements of MNSR Permit Program.

This permit action will apply to an existing facility operating at 140 Goes In Lodge Road, near Riverton, Wyoming, on the Wind River Indian Reservation. The exact location is Latitude 42.9988889N, Longitude -108.416111W, in Fremont County, Wyoming.

This permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit is intended only to incorporate required emission limits and provisions from a January 12, 2009, federal Consent Decree (CD) with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at the facility (Case 3:09-cv-00067), which became effective on January 1, 2013.

The CD requires that Chemtrade control the sulfur dioxide (SO_2) emissions from two (2) existing combustion chambers at the facility, using a sodium based SO_2 scrubbing system. The CD established emission limits and various associated monitoring, performance testing, recordkeeping, and reporting requirements. This permit is proposing to incorporate the combustion chamber emission control requirements from the CD.

The CD also requires the control of sulfuric acid (H_2SO_4) mist emissions from two (2) existing absorbing towers. The CD references the Standards of Performance for Sulfuric Acid Plants at 40 CFR Part 60, Subpart H (NSPS H) for the H_2SO_4 mist control requirements and dictates that the facility shall be considered an affected facility under NSPS H. NSPS H is an independently enforceable regulation through 40 CFR Part 60. Independently enforceable applicable requirements would not normally be established in a synthetic minor MNSR permit; however, Plant #1 and Plant #2 were constructed in 1958, which is prior to the effective date of the rule and the CD is the current and only enforceable mechanism applying the requirements of NSPS H to the facility. In the absence of the CD, the requirements of NSPS H would not otherwise apply to the facility. Therefore, we are proposing H_2SO_4 mist emissions control requirements consistent with NSPS H in this permit.

Upon compliance with this permit, the legally and practically enforceable reductions in SO_2 emissions can be taken into account when determining the applicability of other CAA requirements, such as the Prevention of Significant Deterioration (PSD) Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71 (Part 71).

II. Facility Description

The facility has two (2) primary H_2SO_4 production plants that operate differently to manufacture H_2SO_4 in varying concentrations. Plant #1 produces H_2SO_4 using elemental sulfur as a feedstock. Plant #2 produces H_2SO_4 by a regeneration process using spent acid and elemental sulfur (from the petroleum refining or other industries) as a feedstock.

A. Plant #1 Process Description

Plant #1 has two (2) emissions units, the combustion chamber and the absorbing tower, which both exhaust through a common stack. Elemental molten sulfur is pumped continuously into the combustion chamber where it oxidizes to produce SO_2. Combustion air is then taken directly from the atmosphere into a blower and discharged to a packed oleum[1] tower with 99% sulfuric acid in circulation as a drying agent to remove moisture from the SO_2 gas. The gas leaving the sulfur furnace contains about 10% SO_2. This gas stream is cooled in a waste heat boiler [2] to approximately 450 °F. A gas bypass around the waste heat boiler allows the reheating of the gas to around 800 °F before entering a converter.

The converter contains four beds of catalyst with cooling occurring between each bed. The converter is designed as a closed system process and is not a source of emissions. The gas enters the converter at 800 °F and about 98% of the SO_2 is progressively converted to sulfur trioxide (SO_3). Cooling between the first and second beds is achieved by a heat exchanger that preheats the combustion air going to the sulfur furnace. Dilution air is introduced between the second and third catalyst beds and the third and fourth catalyst beds. The converter exit gas is cooled to between 450 °F and 500 °F in an economizer, preheating the boiler feed water. The cooled gas stream enters the 30% oleum tower where the SO_3 is partially absorbed in a circulating stream of 30% to 35% oleum (fuming H_2SO_4). The effluent gas from the 30% oleum tower is passed through the final absorbing tower in a circulating stream of 99% H_2SO_4. The SO_3 combines with water to form additional H_2SO_4. The 30% oleum system is designed as a closed-loop system to supply SO_3 gas as a feedstock to a high purity H_2SO_4 unit (also referred to as Ultra Pure Acid, or UPA). The UPA unit is designed with a water spray to the stripper vent line in order to remove any entrained acid mist, followed by a vent knockout pot. The vent knockout pot is equipped with a mist elimination pad to allow the water and acid to be removed from the air in the vent line. The vent off the knockout pot is routed to the atmosphere in order to eliminate potential back pressure in the UPA unit from this vent line, resulting in minimal SO_2 emissions. The gas stream is then passed through mist eliminators before entering the bottom of a two-stage SO_2 scrubber. The SO_2 scrubber is designed to reduce the effluent SO_2 concentrations using a sodium bicarbonate (soda ash) solution.

B. Plant #2 Process Description

Plant #2 has three (3) emissions units, a combustion chamber and an absorbing tower, which both exhaust through a common stack, and a natural gas-fired heater. The process for regeneration of spent acid is divided into two sections: 1) the decomposition and gas cleaning section; and 2) the contact section, where cleaned SO_2 is converted to concentrated H_2SO_4.

1. Decomposition and Gas Cleaning (Regeneration Section)

Plant #2 is designed to produce 100 tons per day of H_2SO_4. The plant receives bulk shipments of spent acid consisting of around 90% H_2SO_4 and impurities that include

[1] Also known as fuming sulfuric acid. Refers to a solution of various compositions of sulfur trioxide in sulfuric acid or sometimes more specifically to disulfuric acid (also known as pyrosulfuric acid).

[2] The waste heat boiler is not a combustion source or a process source and has no emissions. It is a heat exchanger that operates to exchange heat between non-contact cooling water in pipes or tubes and the process gases that pass through the interior.

3-7% volatile organic compounds (VOC) on average. Spent acid is fed from an above ground storage tank to the Plant #2 combustion chamber, where it is atomized into the furnace by two air-atomized and one gas-atomized spray nozzles. In the furnace, the spent acid is decomposed at a minimum temperature of 1,800 °F to SO_2, carbon dioxide (CO_2), oxygen, and water. The decomposition reaction is endothermic[3] and requires a considerable amount of heat, which is provided by the burning of natural gas, elemental sulfur, and the hydrocarbon content of the spent acid.

The Plant #2 heater is used for cold plant startup to bring the catalyst bed to its 800 °F operating temperature, which prevents catalyst fouling and provides for sufficient conversion of SO_2 to SO_3. Once the proper temperature is achieved, the heater is turned off until the next cold startup.

The furnace exit gas is cooled in the same waste heat boiler used by Plant #1, producing a saturated steam at about 275 pounds per square inch (psi). The gas leaving the boiler is further cooled by direct contact with a weak H_2SO_4 circulation solution in a venturi contactor to around 175 °F. The venturi scrubbing system removes some of the undecomposed sulfuric acid and residual furnace ash. The cooled gas leaves the venturi scrubber separator and enters two graphite shell and tube gas coolers to cool the gas to around 90 °F.

The final step of the gas cleaning process is the removal of residual H_2SO_4 mist and solids from the gas in a lead tube electrostatic mist precipitator. The electrostatic mist precipitator is a process control device and is not used as an emissions control device.

2. Contact Section

The cleaned SO_2 gas from the regeneration section is dried by direct contact with a circulating 99% H_2SO_4 stream in a packed drying tower (absorbing tower). The dry SO_2 passes through an entrainment separator before leaving the tower and entering the main gas blower. Ambient air is dried in the air drying tower by direct contact with 99% H_2SO_4 and used to dilute the SO_2 gas entering the main blower to a concentration ranging from 9.55% to 10.6% SO_2 for conversion to SO_3.

Cold SO_3 gas from the blower is heated to the converter inlet temperature of around 800 °F in gas-to-gas heat exchangers. The converter is made up of four beds of catalyst with cooling between each bed to maintain optimum conversion of SO_2 to SO_3. The gas enters the first bed of the converter where 64% of the SO_2 is converted to SO_3. The gas is cooled again before entering the second bed where the conversion increases to 87%. The gas is cooled again by adding quench air in the third bed and the conversion is increased to 96%. The gas is again cooled by quench air in the fourth bed where final conversion of SO_2 occurs, increasing conversion to 98%.

Gas leaves the fourth bed of the converter and is cooled in the tube side of the air preheat exchanger while preheating the furnace combustion air. The gas is further cooled in the tube side of the cold heat exchanger before entering an absorbing tower.

[3]Endothermic or "within-heating" describes a process or reaction that absorbs energy in the form of heat.

In the packed absorbing tower, SO_3 contained in the gas is absorbed into a circulating stream of 99% H_2SO_4 to form new H_2SO_4 of varying strengths. The unabsorbed gas passes through mist eliminators before entering the bottom of the same two-stage scrubbing tower used by Plant #1: this is designed to reduce the effluent of SO_2 concentrations using a soda ash solution.

C. Sodium Bisulfite Solution and Weak Acid Production

Two ancillary processes take facility exhaust gas as a feed stream to produce two additional commercial products, sodium bisulfite solution (SBS) and 50% H_2SO_4 (weak acid). These processes were installed in 2012 to reduce facility SO_2 emissions by January 1, 2013, in accordance with the CD. The SBS solution is made from SO_2 gas from the scrubbers in the scrubbing tower and sends it to a mechanical filtration unit in an attached addition to the gas cleaning building.

D. Utilities and Storage

The facility is equipped with two cooling towers that are used to dissipate heat from non-contact cooling water that is used as a heat transfer medium in the H_2SO_4 production processes. The larger cooling tower (main cooling tower) is used in conjunction with the H_2SO_4 manufacturing processes in Plant #1 and Plant #2. Water is circulated in pipes and vessels throughout the processes in Plant #1 and Plant #2 to transfer heat from process streams, such as occurs in the acid cooling boilers. The main cooling tower has a flow rate of 3,400 gallons of water per minute (gpm). The water is treated with biocide to prevent biological growth, an inhibitor to prevent the buildup of scale and hardness, and small amounts of H_2SO_4 to regulate the pH. None of the chemical additives contains compounds that are hazardous air pollutants (HAPs). The smaller cooling tower (UPA cooling tower) is used to service only the UPA portion of Plant #1 and has a flow rate of 1,500 gpm. The same additives, in proportionately smaller volumes, are added to the water used in this cooling tower.

The facility receives raw elemental sulfur and spent acid by truck from various suppliers. Two (2) storage tanks (primary and auxiliary) are used to store spent acid and other materials such as fresh acid. Each tank has a storage capacity of approximately 406,000 gallons. The primary storage tank is used to store the spent acid feedstock for Plant #2. Although customarily called “spent acid,” this material is actually a dilute acid that has previously been used in an industrial application, and, as explained previously, typically contains a small percentage of VOC (3% to 7% on average). The primary spent acid storage tank is equipped with a closed-vent system that routes VOC emissions to the Plant #2 combustion chamber for destruction. The auxiliary storage tank is used to store fresh acid, which contains no VOC, or, as necessary for backup storage of spent acid. Prior to using the auxiliary storage tank for backup storage of spent acid or other volatile organic liquids with a vapor pressure higher than 5.3 kPa, the tank would be connected to a closed-vent system to route VOC emissions to the Plant #2 combustion chamber for destruction.

H_2SO_4, weak acid, and SBS manufactured at the plant are stored onsite in one of several above ground storage tanks. The product storage tanks do not contain VOC and are negligible sources of emissions due to low vapor pressure.

The facility uses a natural gas-fired auxiliary boiler, which provides occasional steam, primarily needed when Plant #1 is not operating.

The facility also operates other MNSR-exempt or negligible sources of emissions to support testing, quality assurance, production, and operation, including, but not limited to, heavy-duty vehicles (mobile sources), bench scale laboratory activities, internal combustion engines used for landscaping, and fuel/maintenance tanks in closed-loop systems.

The emissions units identified in Table 1 are currently installed and operating at the facility. The information provided in this table is for informational purposes only and is not intended to be viewed as enforceable restrictions or open for public comment. The units and/or control requirements identified here either existed prior to the promulgation of the MNSR permitting program or have been approved through the alternative methods identified in the table. Table 2 provides an accounting of uncontrolled and proposed allowable (controlled) emissions in tons per year (tpy).

Table 1. Existing Emissions Units

Emissions Unit Description	Controls	Original Preconstruction Approval & Emission Control Mechanism
Plant #1 (exhaust through a common stack): • Combustion Chamber: one (1) elemental sulfur nozzle (30 tons per day design capacity) and one (1) 10.2 MMBtu/hr* natural gas-fired burner; and • Absorbing Tower: SO_3 gas stream.	1) Soda Ash SO_2 Scrubber: and 2) H_2SO_4 Mist Elimination System	No pre-construction NSR approval required for the installation of the combustion chamber. Installed and/or approved prior to the promulgation of the MNSR Permit Program. SO_2 and H_2SO_4 mist emissions control requirements established in the January 12, 2009 CD (Case 3:09-cv-00067), which became effective January 1, 2013.
Plant #2 (exhaust through a common stack): • Combustion Chamber: one (1) 19 MMBtu/hr natural gas-fired burner, two (2) spent sulfuric acid atomization nozzles and one (1) 3.8 MMBtu/hr* natural gas-fired atomization nozzle; and • Absorbing Tower: SO3 gas stream.	1) Soda Ash SO_2 Scrubber; and 2) H_2SO_4 Mist Elimination System	No pre-construction NSR approval required for the installation of the combustion chamber. Installed and/or approved prior to the promulgation of the MNSR Permit Program. SO_2 and H_2SO_4 mist emissions control requirements established in the January 12, 2009 CD (Case 3:09-cv-00067), which became effective January 1, 2013.
Plant #2 Heater: natural gas-fired, 1,020 Btu/scf*, 5 MMBtu/hr* heater for cold plant startups.	None	No pre-construction approval required for the heater. Installed and/or approved prior to promulgation of the MNSR Permit Program.
Main Cooling Tower (serves Plant #1 and Plant #2) using non-contact cooling water.	None	No pre-construction approval required for installation of cooling tower. Installed prior to promulgation of the MNSR Permit Program.

Emissions Unit Description	Controls	Original Preconstruction Approval & Emission Control Mechanism
UPA Stripping Tower (water spray to remove entrained acid mist, followed by knockout pot, then vent line to atmosphere).	None	UPA Unit formerly a closed process and not an emissions unit; however, it was modified to vent some SO_2 emissions in October 2014, to address issues with back pressure in UPA process. No pre-construction approval required for the modification, as potential emissions of modification did not exceed minimum thresholds for SO_2 or any other NSR-regulated pollutants under the MNSR Permit Program.
UPA Cooling Tower (Plant #1 UPA production process only), using non-contact cooling water, 1,500 gpm flow rate.	None	No pre-construction approval required for the cooling tower. Installed and/or approved prior to promulgation of the MNSR Permit Program.
2 - Spent Sulfuric Acid (or other materials) Storage Tanks (main and auxiliary), 406,558 gallon capacity each, 4.9 million gallons per year throughput each.	Plant #2 Combustion Chamber (not enforceable)	No pre-construction approval required for the storage tanks. Installed and/or approved prior to promulgation of the MNSR Permit Program.
Auxiliary Boiler, natural gas-fired, 10.5 MMBtu/hr*.	Fuel Sulfur Content Restriction	No pre-construction approval required for the boiler. Installed and/or approved prior to promulgation of the MNSR Permit Program. SO_2 emissions are controlled through applicable fuel requirements of NSPS Dc.
Insignificant* Emissions Units (i.e., < 2 tpy NSR-regulated pollutants and <1,000 tpy HAP). [Includes: soda ash storage and handling lime storage and handling; spent acid off-loading; elemental sulfur and H_2SO_4 storage and loading; 30% oleum tower; three (3) UPA storage tanks; 1 nitrate storage tank; mineral spirits parts* cleaner; various fuel and maintenance oil storage tanks; CEMS* monitor vents; natural gas pressure regulator vents; bench scale laboratory equipment and maintenance; steam vents and pressure relief valves.]	None	No pre-construction approval required for these emissions units. Installed and/or approved prior to promulgation of the MNSR Permit Program.
MNSR Exempt Sources [Includes: mobile sources (vehicles and other mobile industrial equipment); ventilating units for comfort; non-commercial food preparation; consumer use office equipment and products; janitorial products use; internal combustion engines used for landscaping purposes; bench scale laboratory activities (except for laboratory fume hoods or vents).]	None	No pre-construction approval required for these emissions units. Installed and/or approved prior to promulgation of the MNSR permitting program, and are exempt from MNSR Permit Program requirements per 40 CFR 49.153(c).

*Btu/scf = British thermal units per standard cubic foot of gas; Btu/hr = British thermal units per hour; CEMS – continuous emissions monitoring system; “insignificant” = as defined in 40 CFR Part 71; mineral spirits = a petroleum distillate commonly used as a paint thinner and mild solvent.

Table 2. Facility-Wide Emissions

Pollutant	Uncontrolled Emissions (tpy)	Proposed Allowable Emissions* (Controlled) (tpy)
PM	20.68	20.68
PM_{10}	20.68	20.68
$PM_{2.5}$	20.68	20.68
SO_2	567.20	78.40
NO_X	43.49	43.49
CO	14.95	14.95
VOC	1.12	1.12
H_2SO_4 mist	7.23	5.48
Pb	2.9E-04	2.9E-04
Fluorides	NA	NA
H_2S	NA	NA
TRS	NA	NA
RSC	NA	NA
CO_2e (Total)	24,700	24,700
HAP (Total)	0.32	0.32

PM – Particulate Matter
PM_{10} – Particulate Matter less than 10 microns in size
$PM_{2.5}$ – Particulate Matter less than 2.5 microns in size
SO_2 – Sulfur Dioxide
NO_X – Nitrogen Oxides
CO – Carbon Monoxide
VOC – Volatile Organic Compounds
H_2SO_4 mist – sulfuric acid mist
Pb – Lead
H_2S – Hydrogen Sulfide
TRS – Total Reduced Sulfur
RSC – Reduced Sulfur Compounds
CO_2e – Equivalent CO_2. A measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP)
HAP – Hazardous Air Pollutants

Shaded rows indicate effect of permit requirements

*Allowable Emissions = emissions calculated considering any emissions limitations that are enforceable as a practical matter on the facility's potential to emit.

III. Proposed Synthetic Minor Permit Action

At Chemtrade's request, we are proposing this permit to incorporate required emission limits and provisions from the January 12, 2009, CD. The CD requires that Chemtrade control the SO_2 emissions from the Plant #1 and Plant #2 combustion chambers at the facility. The CD established control requirements, emission limits and various associated monitoring, performance testing, recordkeeping, and reporting requirements.

The CD also requires the control of H_2SO_4 mist emissions from the Plant #1 and Plant #2 absorbing towers at the facility. The CD references NSPS H for the H_2SO_4 mist control requirements and dictates that the facility shall be considered an affected facility under NSPS H. NSPS H is an independently enforceable regulation through 40 CFR Part 60. Independently enforceable applicable requirements would not normally be established in a synthetic minor MNSR permit; however, in the absence of the CD, the requirements of NSPS H would not otherwise apply to the facility, because it was constructed prior to the applicability date of the rule for new sources. Therefore, we are proposing H_2SO_4 mist emissions control requirements consistent with NSPS H in this permit.

Additionally, based on the CD and MNSR Permit Program requirements, we are proposing performance testing, monitoring, recordkeeping, notification and reporting requirements sufficient to provide practical enforceability of the emissions and operational limits.

A. Emission Limits

We are proposing the emission limits contained in the CD, which consist of short-term limits of SO_2 lb/ton of 100% H_2SO_4 produced, as well as rolling 12-month facility-wide caps on SO_2 emissions in tons. Consistent with the CD, we are also proposing limits of SO_2 lb/ton of 100%

H_2SO_4 produced for each combustion chamber for cold startup periods, which shall not exceed 26 hours per event, and which differ by the hours after startup. Table 4 provides a summary of the proposed emission limits.

Table 4 - Proposed Emission Limits

Emissions Unit	**Maximum Emissions During Startups, Not to Exceed 26 hours per event**						**Maximum Short-Term Emissions (pounds per ton (lb/ton) of 100% H_2SO_4 produced (average any consecutive 3-hour period)**		**Maximum Visible Emissions**	**Maximum Annual Emissions (tons in any consecutive 12-month period)**
	SO_2 lb/ton 100% H_2SO_4 produced (by hours after startup)						SO_2	H_2SO_4 mist	% Opacity	SO_2
	1-14	14-15	15-16	16-24	24-25	25-26				
Plant #1 - Combustion Chamber & Absorbing Tower (common stack)	15.0	12.0	9.0	6.0	4.7	3.4	1.9	0.15	<10	35.0
Plant #2 - Combustion Chamber & Absorbing Tower (common stack)	15.0	12.0	9.0	6.0	4.7	3.4	2.1	0.15	<10	38.0

B. Monitoring Requirements

We are proposing to require that Chemtrade install, certify, calibrate, operate and maintain a CEMS capable of measuring and recording the in-stack concentration of SO_2 emissions in the scrubber exhaust stacks of the Plants #1 and #2 in such a manner that compliance with the SO_2 emission limits can be demonstrated. The CEMS shall be continuously operated at all times the plants are operating or shut down, to demonstrate compliance with the emission limits in the permit, except during CEMS breakdown, repairs, calibration checks, and zero span adjustments.

Chemtrade shall minimize CEMS breakdowns and downtime by implementing the CEMS plans in Appendix B and Appendix C of the permit (developed based on the CEMS plans in the CD) to continuously monitor compliance with the SO_2 emission limits. Alternative CEMS plans may only be used upon receiving written approval of the alternative plan from the EPA. Any alternative CEMS plan shall describe how Chemtrade will monitor compliance with the SO_2 emission limits, including the methodology to demonstrate compliance in the event of CEMS downtime lasting longer than 24 hours.

We are also proposing to require that Chemtrade install, certify, calibrate, maintain, and operate a continuous opacity monitoring system (COMS) to measure and record the visible emissions from the scrubber exhaust stacks of Plants #1 and #2 to demonstrate compliance with the opacity

limits. The COMS shall be continuously operated at all times the plants are operating to produce H_2SO_4.

C. Performance Testing Requirements

We are proposing that compliance with the SO_2 and H_2SO_4 mist limits in Table 4 be demonstrated by conducting initial performance tests of the exhaust stacks of both Plants #1 and #2 in accordance with EPA Reference Method 8 found in 40 CFR Part 60, Appendix A, and Part 60, Appendix B Performance Specification 2, or an alternative method approved by the EPA. Each test shall consist of at least nine method test runs and may serve as the CEMS relative accuracy test required under Performance Specification 2. We are proposing that compliance with the opacity limits in Table 4 be demonstrated by conducting initial performance tests of the exhaust stacks of both Plants #1 and #2 in accordance with EPA Reference Method 9 found in 40 CFR Part 60, Appendix A, and the procedures in 40 CFR 60.11, or an alternative method approved by the EPA. A COMS may be used for demonstrating compliance with the opacity limit at either of the plants.

D. Recordkeeping Requirements

We are proposing to require that Chemtrade keep records of the following:

- Manufacturer specifications or specifications developed by the vendor or Permittee, for all emissions units and emissions control equipment covered under this permit;
- All calibration, maintenance, shutdowns, repairs, or replacements conducted on all emissions units and emissions control equipment covered under this permit;
- All required performance testing, including the date, time, and place of sampling measurements, the dates analyses were performed, the company or entity that performed the analysis, the analytical techniques or methods used, the results of such analyses or measurements, and the operating conditions as existed at the time of sampling or measurement; and
- All required monitoring.

E. Reporting and Notification Requirements

We are proposing to require Chemtrade to submit to the EPA a notice of intent to conduct each required performance test by no later than 30 days before the test is scheduled to be conducted. By no later than 60 days after conducting each required performance test, Chemtrade shall submit to the EPA a report of the results of each performance test.

We are proposing to require submittal of annual written reports of the actual SO_2 and H_2SO_4 emissions in terms of the relevant emission limits in this permit.

We are also proposing to require prompt (as defined in the permit) submittal of any deviations of permit requirements, including a description of the probable cause of such deviations, and any corrective actions or preventative measures taken to prevent future deviations.

IV. Air Quality Review

The MNSR Regulations at 40 CFR 49.154(d) require that an Air Quality Impact Assessment (AQIA) modeling analysis be performed if there is reason to be concerned that new construction would cause or contribute to a National Ambient Air Quality Standard (NAAQS) or PSD increment violation. If an AQIA reveals that the proposed construction could cause or contribute to a NAAQS or PSD increment violation, such impacts must be addressed before a pre-construction permit can be issued.

The emissions at this existing facility will not be increasing due to the MNSR permit action and the emissions will continue to be well controlled at all times. The proposed MNSR permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations and the substantive requirements of the CD (emission controls and reductions) have already been fulfilled at this facility. In short, this action will have no adverse air quality impacts; therefore, we have determined that an AQIA modeling analysis is not required for the proposed MNSR permit.

V. Tribal Consultations and Communications

We offer tribal government leaders an opportunity to consult on each proposed synthetic minor MNSR permit action. The tribal government leaders are asked to respond to the EPA's offer to consult within 30 days of receiving the offer. On April 1, 2014, EPA sent a letter to the chairpersons of the Northern Arapaho Tribe and the Eastern Shoshone Tribe (the Tribes) offering opportunities for government-to-government consultation regarding this MNSR permit action. To date, the EPA has not received a request for such consultation.

All minor source applications (synthetic minor, minor modification to an existing facility, new true minor or general permit) are submitted to both the EPA and the Tribes per the application instructions (see http://www2.epa.gov/region8/tribal-minor-new-source-review-permitting). The Tribes have 10 business days from the receipt of the application to communicate to us any preliminary questions and comments on the application. In the event an AQIA is triggered, a copy of that document is emailed to the Tribes within 5 business days from the date we receive it.

Additionally, the Tribes are notified of the public comment period for the proposed MNSR permit and provided copies of the notice of public comment opportunity to post in various locations of their choosing on the Reservation. The Tribes are also notified of the issuance of the final MNSR permit.

VI. Environmental Justice

On February 11, 1994, the President issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order calls on each federal agency to make environmental justice a part of its mission by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

The EPA defines "Environmental Justice" to include meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The EPA's goal is to address the needs of overburdened populations or communities to participate in the permitting process. *Overburdened* is used to describe the minority, low-income, tribal and indigenous populations or communities in the

United States that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

This discussion describes the EPA's efforts to identify potentially overburdened communities and assess potential effects in connection with issuing this proposed MNSR permit.

A. Environmental Impacts to Potentially Overburdened Communities

This MNSR permit action does not authorize the construction of any new air emission sources, or air emission increases from existing units, nor does it otherwise authorize any other physical modifications to the associated facility or its operations. The air emissions at the existing facility will not increase due to the permit action and the emissions will continue to be well controlled at all times. This permit action will have no adverse air quality impacts.

Furthermore, the permit contains a provision stating, "*The permitted source shall not cause or contribute to a National Ambient Air Quality Standard violation or a PSD increment violation.*" Noncompliance with this permit provision is a violation of the permit and is grounds for enforcement action and for permit termination or revocation. As a result, the EPA concludes that issuance of the permit will not have disproportionately high or adverse human health effects on communities in the vicinity of the Wind River Indian Reservation.

B. Enhanced Public Participation

Given the presence of potentially overburdened communities in the vicinity of the facility, we are providing an enhanced public participation process for this permit.

1. Interested parties can subscribe to an EPA listserve that notifies them of public comment opportunities on the Wind River Indian Reservation for proposed air pollution control permits via email at http://www2.epa.gov/region8/air-permit-public-comment-opportunities.

2. All minor source applications (synthetic minor, modification to an existing facility, new true minor or general permit) are submitted to both the EPA and the Tribes per the application instructions (see http://www2.epa.gov/region8/tribal-minor-new-source-review-permitting).

3. The Tribes have 10 business days to communicate to us any preliminary questions and comments on the application.

4. In the event an AQIA is triggered, we email a copy of that document to the Tribes within 5 business days from the date we receive it.

5. We notify the Tribes of the public comment period for the proposed permit and provide copies of the notice of public comment opportunity to post in various locations of their choosing on the Reservation. We also notify the Tribes of the issuance of the final permit.

6. We offer the tribal government leaders an opportunity to consult on each proposed permit action. We ask the Tribal Government Leaders to respond to us within 30 days. We offered an opportunity to consult on this permit action to the Chairpersons of the Tribes via letters dated April 1, 2014. To date, we have not received any responses to our offers to consult on this MNSR permit action.

VII. Authority

Requirements under 40 CFR 49.151 to obtain a MNSR permit apply to new and modified minor stationary sources, and minor modifications at existing major stationary sources ("major" as defined in 40 CFR 52.21). In addition, the MNSR program provides a mechanism for an otherwise major stationary source to voluntarily accept restrictions on its potential to emit to become a synthetic minor source. The EPA is charged with direct implementation of these provisions where there is no approved tribal implementation plan for implementation of the MNSR regulations. Pursuant to Section 301(d)(4) of the CAA (42 U.S.C. Section 7601(d)), the EPA is authorized to implement the MNSR regulations at 40 CFR 49.151 in Indian country. The facility is located on the Wind River Indian Reservation in the central-western part of the State of Wyoming. The exact location is Latitude 42.9988889 N, Longitude -108.416111 W, in Fremont County, Wyoming.

VIII. Public Notice and Comment, Hearing, and Appeals

A. Public Comment Period

In accordance with 40 CFR 49.157, we must provide public notice and a 30-day public comment period to ensure that the affected community and the general public have reasonable access to the application and proposed permit information. The application, the proposed permit, this technical support document, and all other supporting materials for the proposed permit are available for review at:

Central Wyoming College Library
2660 Peck Avenue
Riverton, Wyoming 82501
(307) 855-2141
http://www.cwc.edu/resources/Library
Summer/School Break Hours: Mon – Fri, 7:30 a.m. to 5:00 p.m.
Contact: Nicole Pouget, Director of Library Services at (307) 855-2332 or npouget@cwc.edu

and

Riverton Public Library
1330 West Park Street
Riverton, Wyoming 82501
Hours: Mon – Thu, 10:00 a.m. – 9:00 p.m., Fri & Sat, 1:00 p.m. – 4:00 p.m.
Contact: Gloria Brodle at (307) 856-3556, ext. 211

and

U.S. EPA, Region 8
Air Program Office (8P-AR)

1595 Wynkoop Street
Denver, Colorado 80202-1129
Contact: Claudia Smith at 303-312-6520 or Smith.Claudia@epa.gov

All documents are available for review at our office Monday through Friday from 8:00 a.m. to 4:00 p.m. (excluding Federal holidays). Additionally, the proposed permit and technical support document can be reviewed on our website anytime during the public comment period at http://www2.epa.gov/region8/air-permit-public-comment-opportunities.

Any person may submit written comments on the proposed permit and may request a public hearing during the public comment period. These comments must raise any reasonably ascertainable issue with supporting arguments by the close of the public comment period (including any public hearing). The EPA accepts comments by mail to the EPA address and contact person above, by fax to 303-312-6064, and by email to R8AirPermitting@epa.gov. Please address comments with the subject "Comments on Proposed MNSR Permit for Chemtrade Logistics Riverton Sulfuric Acid Manufacturing Facility".

B. Public Hearing

A request for a public hearing must be in writing and must state the nature of the issues proposed to be raised at the hearing. The EPA will hold a hearing whenever there is, on the basis of requests, a significant degree of public interest in a draft MNSR permit. The EPA may also hold a public hearing at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the MNSR permit decision.

C. Final MNSR Permit Action

In accordance with 40 CFR 49.159, a final permit becomes effective 30 days after permit issuance, unless: (1) a later effective date is specified in the permit; or (2) appeal of the final permit is made as detailed in the next section; or (3) we may make the permit effective immediately upon issuance if no comments resulted in a change in the proposed permit or a denial of the permit. We will send notice of the final permit action to any individual who commented on the proposed permit during the public comment period. In addition, we will add the source to a list of final NSR permit actions which is posted on our website at http://www2.epa.gov/region8/nsr-and-psd-permits-issued-region-8. Anyone may request a copy of the final MNSR permit at any time by contacting the Region 8 Tribal Air Permit Program at (800) 227-8917 or sending an email to R8AirPermitting@epa.gov.

D. Appeals to the Environmental Appeals Board (EAB)

In accordance with 40 CFR 49.159, within 30 days after a final permit decision has been issued, any person who filed comments on the proposed permit or participated in the public hearing may petition the EAB to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when the Region has fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is, under Section 307(b) of the Act, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we deny or issue a final permit and agency review procedures are exhausted.

United States Environmental Protection Agency
Region 8 Air Program
1595 Wynkoop Street
Denver, CO 80202

Air Pollution Control
Synthetic Minor Source Permit to Construct

40 CFR 49.151

 # SMNSR-WR-000003-2013.001

Permit to Construct to establish legally and practically enforceable limitations and requirements on sources at an existing facility

Permittee:

Chemtrade Logistics

Permitted Facility:

Chemtrade Refinery Service, Inc.
(Sulfuric Acid Manufacturing Facility)
Wind River Indian Reservation
Fremont County, Wyoming

Summary

On December 24, 2013, the EPA received an application from Chemtrade Logistics (Chemtrade) requesting a synthetic minor permit for the Chemtrade Refinery Services, Inc. Riverton, Wyoming, sulfuric acid manufacturing facility (facility) in accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program.

This permit action applies to an existing facility operating on the Wind River Indian Reservation. The facility has two (2) primary sulfuric acid (H_2SO_4) production plants that operate differently to manufacture H_2SO_4 in varying concentrations. Plant #1 produces H_2SO_4 using elemental sulfur as a feedstock. Plant #2 produces H_2SO_4 by a regeneration process using spent acid and elemental sulfur (from the petroleum refining or other industries) as a feedstock.

This permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit is intended only to incorporate required emission limits and provisions from a January 12, 2009, federal Consent Decree (CD) with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at the facility (Case 3:09-cv-00067), which became effective on January 1, 2013.

The CD requires that Chemtrade control the sulfur dioxide (SO_2) emissions from two (2) existing combustion chambers at the facility, using a sodium based SO_2 scrubbing system. The CD established emission limits and various associated monitoring, performance testing, recordkeeping, and reporting requirements. The CD also requires the control of H_2SO_4 mist emissions from two (2) existing absorbing towers. This permit is proposing to incorporate the combustion chamber emission control requirements from the CD.

Upon compliance with this permit, the legally and practically enforceable reductions in SO_2 and H_2SO_4 mist emissions can be taken into account when determining the applicability of other Clean Air Act (CAA) requirements, such as the Prevention of Significant Deterioration (PSD) Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71 (Part 71).

The EPA has determined that issuance of this MNSR permit will not contribute to National Ambient Air Quality Standards (NAAQS) violations, or have potentially adverse effects on ambient air quality.

Table of Contents

I. Conditional Permit to Construct

A. General Information

Facility: Chemtrade Logistics, Chemtrade Refinery Services, Inc. (Riverton, Wyoming, Sulfuric Acid Manufacturing Plant)
Permit Number: SMNSR-WR-000003-2013.001
SIC Code and SIC Description: 2819 – Industrial Inorganic Chemicals, Not Elsewhere Classified

Site Location:
140 Goes In Lodge Road
Riverton, Wyoming 82501
Sec 9 T1S R4E
Wind River Indian Reservation
Fremont County, Wyoming
Latitude 42.9988889N, Longitude -108.416111W

Corporate Office Location
Chemtrade Logistics
155 Gordon Baker Road, Suite 300
Toronto, Ontario, Canada M2H 3N5

The equipment listed in this permit may only be operated by Chemtrade Logistics (Chemtrade) at the location described above.

B. Applicability

1. This permit is being issued under authority of the MNSR Permit Program.

2. The requirements in this permit have been created, at the Permittee's request to establish legally and practically enforceable restrictions for limiting opacity, SO_2, and H_2SO_4 mist emissions.

3. Any conditions established for this facility or any specific units at this facility pursuant to any permit issued under the authority of the PSD Permit Program or the MNSR Permit Program shall continue to apply.

4. By issuing this permit, the EPA does not assume any risk of loss which may occur as a result of the operation of the permitted facility by the Permittee, Owner, and/or Operator, if the conditions of this permit are not met by the Permittee, Owner, and/or Operator.

C. Emission Limits

1. The Permittee shall limit emissions from the exhaust stack of Plant #1 as specified in Table 1.

Table 1. Emission Limits for Plant #1

Maximum Emissions During Startups, Not to Exceed 26 hours per event						**Maximum Short-Term Emissions (pounds per ton (lb/ton) of 100% H_2SO_4 produced (average any consecutive 3-hour period))**		**Maximum Visible Emissions (% opacity)**	**Maximum Annual Emissions (tons in any consecutive 12-month period)**
SO_2 lb/ton 100% H_2SO_4 produced (by hours after startup)						SO_2	H_2SO_4 mist		SO_2
1-14	14-15	15-16	16-24	24-25	25-26				
15.0	12.0	9.0	6.0	4.7	3.4	1.9	0.15	<10	35.0

2. The Permittee shall limit emissions from the exhaust stack of Plant #2 as specified in Table 2.

Table 2. Emission Limits for Plant #2

Maximum Emissions During Startups, Not to Exceed 26 hours per event						**Maximum Short-Term Emissions (lb/ton 100% H_2SO_4 produced (average any consecutive 3-hour period))**		**Maximum Visible Emissions (% opacity)**	**Maximum Annual Emissions (tons in any consecutive 12-month period)**
SO_2 lb/ton 100% H_2SO_4 produced (by hours after startup)						SO_2	H_2SO_4 mist		SO_2
1-14	14-15	15-16	16-24	24-25	25-26				
15.0	12.0	9.0	6.0	4.7	3.4	2.1	0.15	<10	38.0

3. Emission limits shall apply at all times, unless otherwise specified in this permit.

D. Control and Operational Requirements

1. The Permittee shall operate and maintain each approved emission unit or activity, including any associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions of MNSR regulated pollutants and considering the manufacturer's recommended operating procedures (or procedures developed by the vendor or Permittee) at all times, including periods of startup, shutdown, maintenance, and malfunction. The EPA will determine whether the Permittee is using acceptable operating and maintenance

procedures based on information available, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility

2. The Permittee shall install, operate, and maintain a sodium bicarbonate (soda ash) based SO_2 scrubbing system on both Plant #1 and Plant #2 that is capable of controlling SO_2 emissions such that the emission limits in this permit are met.

3. The Permittee shall install, operate, and maintain an H_2SO_4 mist elimination system on both Plant #1 and Plant #2 that is capable of controlling H_2SO_4 mist emissions such that the emission limits in this permit are met.

4. The Permittee shall install, certify, calibrate, operate, and maintain a continuous emissions monitoring system (CEMS) in the scrubber exhaust stack of both Plant #1 and Plant #2 that is equipped with a converter inlet SO_2 analyzer and is capable of directly measuring, calculating, and recording the in-stack volumetric flow rate, the in-stack SO_2 emission rate concentrations, expressed as the average lb/ton of 100% H_2SO_4 produced in any consecutive 3-hour period, and the in-stack oxygen (O_2) concentration. Each CEMS shall be continuously operated at all times the plants are operating or shut down, to demonstrate compliance with the emission limits in this permit, except during CEMS breakdown, repairs, calibration checks, and zero span adjustments.

5. The Permittee shall operate each CEMS in accordance with the respective CEMS plans for each plant in Appendices B and C of this permit.

   (a) The Permittee shall take all steps necessary to avoid CEMS breakdowns and minimize CEMS downtime. This shall include, but is not limited to, operating and maintaining the CEMS in accordance with the CEMS plan, best practices, and maintaining an on-site inventory of spare parts or other supplies necessary to make rapid repairs to the equipment.

   (b) Alternative CEMS plans may be used upon receiving prior written approval of the alternative plan from the EPA. Any alternative CEMS plan shall describe how the Permittee will monitor compliance with the SO_2 emission limits in this permit, including the methodology that will be used to demonstrate compliance in the event of CEMS downtime lasting longer than 24 hours. The EPA may approve or disapprove, in whole or in part, the proposed alternative plan(s). The Permittee shall not implement any modified or alternative CEMS plans that it proposes unless and until the EPA approves the proposed plan or disapproves the proposed plan and requires the Permittee to follow the plan(s) in Appendices B and C of this permit.

6. The Permittee shall follow, for each emissions unit, and associated emissions control equipment and monitoring equipment covered under this permit, the manufacturer's recommended maintenance schedule and procedures, or equivalent procedures developed by the Permittee or vendor, to ensure optimum performance of each emissions unit and its respective emissions control system and monitoring system.

7. The Permittee may rebuild or replace an existing permitted H_2SO_4 manufacturing plant with a plant of the same design and configured to operate in the same manner as the plant being rebuilt or replaced. Any requirements that applied to the original plant that was rebuilt or replaced shall also apply to the rebuilt or replaced plant.

E. Performance Testing Requirements

1. Performance tests shall be conducted on both Plant #1 and Plant #2 at the facility for measuring the emission rates of SO_2 and H_2SO_4 mist, and for measuring visible emissions, to demonstrate compliance with the emission and opacity limits specified in this permit. The SO_2 and H_2SO_4 mist performance tests shall be conducted in accordance with the EPA Reference Method 8 and Performance Specification 2, in 40 CFR Part 60, Appendices B and C, respectively, or an alternative method approved by the EPA. The visual emissions performance tests shall be conducted in accordance with the EPA Reference Method 9 in 40 CFR Part 60, Appendix A. A continuous opacity monitoring system (COMS) may be used for demonstrating compliance with the opacity limit at either of the plants. The Permittee may submit to the EPA a written request for approval of an alternate test method, but shall only use that alternate test method after obtaining written approval from the EPA.

   (a) The initial performance tests shall be conducted within 90 calendar days of the effective date of this permit. The results of performance tests conducted prior to the effective date of this permit may be used to demonstrate compliance with the initial performance test requirement, provided the tests were conducted in an equivalent manner as the performance test requirements in this permit.
   (b) Subsequent performance tests meeting the performance test requirements in this permit shall be conducted whenever required by the EPA.
   (c) Performance tests shall be conducted within 90 calendar days of startup of all rebuilt or replaced H_2SO_4 manufacturing plants.

2. Performance tests conducted on Plant #1 or Plant #2 for measuring the emission rates of SO_2 and H_2SO_4 mist shall meet the following requirements:

   (a) Permittee shall take all steps necessary to assure accurate measurements of 100% H_2SO_4 production during each test run.

   (b) Each test shall consist of at least nine (9) method test runs and may serve as the CEMS relative accuracy test under Performance Specification 2.

   (c) During each test run, data shall be collected on all parameters necessary to document how emissions were measured or calculated (such as test run length, minimum sample volume, volumetric flow rate, 100% H_2SO_4 production rate, moisture and oxygen corrections, etc.).

   (d) Performance test plans shall be submitted to the EPA for approval 60 calendar days prior to the date the test is planned.

   (e) Performance test plans that have already been approved by the EPA for the emission units approved in this permit may be used in lieu of new test plans unless the EPA requires the submittal and approval of new test plans. The Permittee may submit new test plans for EPA approval at any time.

   (f) The test plans shall include and address the following elements:

      (i) Purpose of the test;
      (ii) Plant (#1 and/or #2) and any respective control systems to be tested;
      (iii) Expected plant operating rate(s) during the test;

(iv) Sampling and analysis procedures (sampling locations, test methods, laboratory identification);
(v) Quality assurance plan (calibration procedures and frequency, sample recovery and field documentation, chain of custody procedures); and
(vi) Data processing and reporting (description of data handling and quality control procedures, report content).

3. The Permittee shall not abort any tests that demonstrate non-compliance with the emission limits specified in this permit.

4. The Permittee shall notify the EPA at least 30 calendar days prior to scheduled performance testing. The Permittee shall notify the EPA at least 1 week prior to scheduled performance testing if the testing cannot be performed.

5. If the results of a complete and valid performance test of the emissions from Plant #1 or Plant #2 demonstrate noncompliance with the emission limits specified in this permit, the plant shall be shut down as soon as safely possible, and appropriate corrective action shall be taken (e.g., repairs, component cleaning, component replacement). The Permittee shall notify the EPA in writing within 24 hours of each such shut down. The plant must be retested within 7 days of being restarted and the emissions must meet the applicable limits in this permit. If the retest shows that the emissions continue to exceed the limits specified in this permit, the plant shall again be shut down as soon as safely possible, and the plant may not operate, except for purposes of startup and testing, until the Permittee demonstrates through testing that the emissions do not exceed the emission limits specified in this permit.

F. Monitoring Requirements

1. The Permittee shall monitor and record the in-stack SO_2 emission rate concentration from each Plant #1 and Plant #2, both expressed as lb/ton of 100% H_2SO_4 produced in any consecutive 3-hour time period, using a CEMS in accordance with the applicable CEMS Plan in Appendices B or C of this permit, to demonstrate continuous compliance with the short-term SO_2 emission limits in this permit.

2. To demonstrate continuous compliance with the annual SO_2 emission limits in this permit, the Permittee shall calculate the amount of SO_2 emitted in tons each calendar month that Plant #1 and Plant #2 operate under this permit, beginning with the first calendar month that this permit is effective, no later than the 15th day of the following calendar month. Calculations shall be conducted in accordance with the applicable CEMS plan in Appendices B or C. Emissions during the processes of startups, shutdowns, maintenance, and malfunctions shall be included in calculating the total tons per year emitted from each plant. Prior to 12 full months of operation under this permit, for each plant, the Permittee shall add the emissions for each month to the emissions for the preceding months operated under this permit. Thereafter, no later than the 15th day of each month, the Permittee shall calculate the amount of SO_2 emitted from each plant for the immediately preceding 12-month period.

3. At least once during each calendar week in which the permitted source operates, the Permittee shall perform a visible emissions survey of the scrubber exhaust stacks of Plant #1 and Plant #2 to demonstrate continuous compliance with the opacity limits in this permit. The survey shall be performed during daylight hours, while the facility is operating, and by an individual trained in EPA Reference Method 22 of 40 CFR Part 60, Appendix A. A COMS may be used for

demonstrating compliance with the opacity limit at either of the plants. Visible emissions are observed if a visible plume from the scrubber exhaust stack is observed for more than 2 minutes in any 1 hour. If visible emissions are detected during the survey (or by a COMS), the Permittee shall either:

(a) Take corrective action so that within 24 hours no visible emissions are detected from the scrubber exhaust stacks of both Plant #1 or Plant #2 while they are in operation; or
(b) Take corrective action and if within 24 hours visible emissions are still detected, for each plant that discharged visible emissions during the survey, demonstrate compliance with the opacity limits in this permit using EPA Reference Method 9 by an individual trained and certified in Method 9.

G. Recordkeeping Requirements

The Permittee shall keep the following records:

1. All specifications and maintenance requirements developed by the manufacturer, vendor, or Permittee for Plant #1, Plant #2, and each associated emission control and monitoring device required in this permit.

2. All calibration, maintenance, repairs, rebuilds or replacements conducted for Plant #1, Plant #2, and each associated emission control and monitoring device required in this permit.

3. The results of all required performance testing and monitoring in this permit. The records shall include the following:

   (a) The date, place, and time of sampling or measurements;
   (b) The date(s) analyses were performed;
   (c) The company or entity that performed the analyses;
   (d) The analytical techniques or methods used;
   (e) The results of such analyses or measurements; and
   (f) The operating conditions as existing at the time of sampling or measurement.

4. All monthly and 12-month consecutive SO_2 emissions for both Plant #1 and Plant #2 and all information used to calculate the values.

5. All deviations of permit requirements, a description of the probable cause of the deviation, and any corrective actions or preventative measures taken.

H. Records Retention Requirements

1. The Permittee shall retain all records required by this permit for a period of at least 5 years from the date the record was created.

2. Records shall be kept in the vicinity of the facility, such as at the facility, the location that has day-to-day operational control over the facility, or the location that has day-to-day responsibility for compliance of the facility.

I. Reporting Requirements

1. Annual Emission Reports

   (a) The Permittee shall submit a written annual report of the actual annual SO_2 emissions in tons from Plant #1 and Plant #2 each year no later than April 1st. The annual report shall cover the period for the previous calendar year. All reports must be certified to truth and accuracy by the person primarily responsible for CAA compliance for the Permittee.

   (b) The report shall be submitted to:

   U.S. Environmental Protection Agency, Region 8
   Office of Partnerships and Regulatory Assistance
   Tribal Air Permitting Program, 8P-AR
   1595 Wynkoop Street
   Denver, Colorado 80202

   The report may be submitted via electronic mail to r8AirPermitting@epa.gov.

2. All other documents required to be submitted under this permit, with the exception of the Annual Emission Reports, shall be submitted to:

   U.S. Environmental Protection Agency, Region 8
   Office of Enforcement, Compliance & Environmental Justice
   Air Toxics and Technical Enforcement Program, 8ENF-AT
   1595 Wynkoop Street
   Denver, Colorado 80202

   Documents may be submitted electronically to r8airreportenforcement@epa.gov.

3. The Permittee shall promptly submit to the EPA a written report of any deviations of permit requirements, a description of the probable cause of such deviations, and any corrective actions or preventative measures taken. A "prompt" deviation report is one that is postmarked or submitted via electronic mail to r8airreportenforcement@epa.gov as follows:

   (a) Within 30 days from the discovery of any deviation of the emission limits or operational limits that are left uncorrected for more than 24 hours after discovering the deviation; and
   (b) By April 1st for the discovery of a deviation of recordkeeping or other permit conditions during the preceding calendar year that do not affect the Permittee's ability to meet the emission limits.

4. The Permittee shall submit a written report for any required performance tests to the EPA within 60 days after completing the tests.

5. The Permittee shall submit any record or report required by this permit upon EPA request.

II. General Provisions

A. Conditional Approval:

Pursuant to the authority of 40 CFR 49.151, the EPA hereby conditionally grants this permit. This authorization is expressly conditioned as follows:

1. *Document Retention and Availability:* This permit and any required attachments shall be retained and made available for inspection upon request at the location set forth herein.

2. *Permit Application:* The Permittee shall abide by all representations, statements of intent and agreements contained in the application submitted by the Permittee. The EPA shall be notified 10 days in advance of any significant deviation from this permit application as well as any plans, specifications, or supporting data furnished.

3. *Permit Deviations:* The issuance of this permit may be suspended or revoked if the EPA determines that a significant deviation from the permit application, specifications, and supporting data furnished has been or is to be made. If the proposed source is constructed, operated, or modified not in accordance with the terms of this permit, the Permittee will be subject to appropriate enforcement action.

4. *Compliance with Permit:* The Permittee shall comply with all conditions of this permit, including emission limitations that apply to the affected emissions units at the permitted facility/source. Noncompliance with any permit term or condition is a violation of this permit and may constitute a violation of the CAA and is grounds for enforcement action and for a permit termination or revocation.

5. *Fugitive Emissions:* The Permittee shall take all reasonable precautions to prevent and/or minimize fugitive emissions during the construction period.

6. *National Ambient Air Quality Standards and PSD Increments:* The permitted source shall not cause or contribute to a NAAQS violation or a PSD increment violation.

7. *Compliance with Federal and Tribal Rules, Regulations, and Orders:* Issuance of this permit does not relieve the Permittee of the responsibility to comply fully with all other applicable federal and tribal rules, regulations, and orders now or hereafter in effect.

8. *Enforcement:* It is not a defense, for the Permittee, in an enforcement action, to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

9. *Modifications to Existing Permitted Emissions Units/Limits:* For proposed modifications, as defined at 40 CFR 49.152(d), that would increase an emissions unit's allowable emissions of pollutants above its existing permitted annual allowable emissions limit, the Permittee shall first obtain a permit modification pursuant to the MNSR regulations approving the increase. For a proposed modification that is not otherwise subject to review under the PSD or MNSR regulations, such proposed increase in the annual allowable emissions limit shall be approved through an administrative permit revision as provided at 40 CFR 49.159(f).

10. *Relaxation of Legally and Practically Enforceable Limits:* At such time that a new or modified source within this permitted facility/source or modification of this permitted facility/source becomes a major stationary source or major modification solely by virtue of a relaxation in any legally and practically enforceable limitation which was established after August 7, 1980, on the capacity of the permitted facility/source to otherwise emit a pollutant, such as a restriction on hours of operation, then the requirements of the PSD regulations shall apply to the source or modification as though construction had not yet commenced on the source or modification.

11. *Revise, Reopen, Revoke and Reissue, or Terminate for Cause:* This permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee, for a permit revision, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. The EPA may reopen this permit for a cause on its own initiative, e.g., if this permit contains a material mistake or the Permittee fails to assure compliance with the applicable requirements.

12. *Severability Clause:* The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.

13. *Property Rights:* This permit does not convey any property rights of any sort or any exclusive privilege.

14. *Information Requests:* The Permittee shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating this permit or to determine compliance with this permit. For any such information claimed to be confidential, the Permittee shall also submit a claim of confidentiality in accordance with 40 CFR Part 2, Subpart B.

15. *Inspection and Entry:* The EPA or its authorized representatives may inspect this permitted facility/source during normal business hours for the purpose of ascertaining compliance with all conditions of this permit. Upon presentation of proper credentials, the Permittee shall allow the EPA or its authorized representative to:

    (a) Enter upon the premises where this permitted facility/source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of this permit;
    (b) Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of this permit;
    (c) Inspect, during normal business hours or while this permitted facility/source is in operation, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
    (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or other applicable requirements; and
    (e) Record any inspection by use of written, electronic, magnetic and photographic media.

16. *Permit Effective Date:* This permit is effective immediately upon issuance unless comments resulted in a change in the proposed permit, in which case the permit is effective 30 days after issuance. The Permittee may notify the EPA, in writing, that this permit or a term or condition of it is rejected. Such notice should be made within 30 days of receipt of this permit and should include the reason or reasons for rejection.

17. *Permit Transfers:* Permit transfers shall be made in accordance with 40 CFR 49.159(f). The Air Program Director shall be notified in writing at the address shown below if the company is sold or changes its name.

U.S. Environmental Protection Agency, Region 8
Office of Partnerships and Regulatory Assistance
Tribal Air Permitting Program, 8P-AR
1595 Wynkoop Street
Denver, Colorado 80202

18. *Invalidation of Permit:* Unless this permitted source of emissions is an existing source, this permit becomes invalid if construction is not commenced within 18 months after the effective date of this permit, construction is discontinued for 18 months or more, or construction is not completed within a reasonable time. The EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between the construction of the approved phases of a phased construction project. The Permittee shall commence construction of each such phase within 18 months of the projected and approved commencement date.

19. *Notification of Startup:* The Permittee shall submit a notification of the anticipated date of initial startup of this permitted source to the EPA within 60 days of such date, unless this permitted source of emissions is an existing source.

B. Authorization:

Authorized by the United States Environmental Protection Agency, Region 8

_____

Darcy O'Connor Date
Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Appendix A

Definitions

All terms not defined herein shall have the meaning given them in the CAA, in 40 CFR parts 60, 61, and 63, in the PSD regulations at 40 CFR Part 52, or in the MNSR regulations at 40 CFR Part 49. The following terms shall have the specific meanings given them. Definitions in this section were taken or derived from the definitions for the equivalent word in 40 CFR Parts 60 and 63, or from commonly used English language dictionaries. For the purposes of this permit to construct, including associated Appendices A and B:

Facility means the site at which all of the emissions units and emissions-generating activities covered under this permit are located.

Maintenance means the routine recurring work required to keep an emissions unit in such condition that it may be continuously utilized, at its original or designed capacity and efficiency, for its intended purpose.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Mass cap means the maximum amount of SO_2 emissions for Plant #1 or Plant #2, expressed in tons of SO_2 emitted during each consecutive 12-month period consisting of the most recently concluded month and the 11 months immediately preceding.

Month means calendar month.

100% H_2SO_4 produced means the stoichiometric quantity of H_2SO_4 that would be produced at Plant #1 or Plant #2 if all SO_3 exiting the converter were used to produce H_2SO_4 monohydrate. For purposes of this definition, scrubber byproduct (if any) shall be considered to be included in "100% H_2SO_4 produced".

Operating periods means periods during which sulfur or sulfur-bearing compounds are being fed to the furnace of Plant #1 or Plant #2.

Permittee means the owner or operator of the permitted source.

Permitted source means the facility for which the EPA has issued this permit to construct.

Plant means, H_2SO_4 Manufacturing Plant #1 or Plant #2.

Shutdown means the cessation of operation of an affected facility for any purpose.

Startup means, with respect to Plant #1 or Plant #2, the period of time beginning when the feed of sulfur or sulfur-bearing compounds to the furnace commences and lasts for no more than 24 hours.

Sulfur or sulfur-bearing compounds means elemental sulfur, alkylation or other spent sulfuric acids, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge, but excludes hydrocarbon and conventional fossil fuels such as natural gas or fuel oil.

Sulfuric acid manufacturing plant means a process unit engaged in the production of H_2SO_4 and related products using the contact process.

Appendix B

CHEMTRADE REFINERY SERVICES, INC.
RIVERTON FACILITY: SULFURIC ACID PLANT #1
Continuous Emissions Monitoring System (CEMS) Plan for SO_2 Emissions
Single Absorption Sulfur Burning Plant with SO_2 Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all sulfur dioxide (SO_2) emission limits in this permit for the Sulfuric Acid Plant #1 at the Riverton, Wyoming Facility (Plant #1). The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in this permit, by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% H_2SO_4 produced. The system will use three analyzers: one to measure stack SO_2 concentration, one to measure stack oxygen (O_2) concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, shall be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B) \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B)} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$ = 100% H_2SO_4 Produced, tons per unit of time
M_{SO_2Stack} = Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack} = Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
Y = Stack O_2 concentration, fraction (dry basis)
B = Stack SO_2 concentration, fraction
$E_{lbs/ton}$ = lb SO_2 per ton 100% H_2SO_4 Produced
$98.0734\ {}^{lbs}/_{lb-mol}$ = Molecular weight of H_2SO_4
$64.058\ {}^{lbs}/_{lb-mol}$ = Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$ = $\frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$
$385.57\ \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68˚F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% H_2SO_4 production rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of O_2 to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% H_2SO_4 production rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

The terms used in this CEMS Plan that are defined in the Clean Air Act (CAA) or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in this permit. Terms used in this CEMS Plan that are defined in this permit shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the Permittee will conduct monitoring during all operating periods and during shutdown.

- Once every 5 minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of the SO_2 and O_2 analyzers, the SO_2 and O_2 measurements will be "frozen" at their pre-calibration level and these measurements will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is (are) not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

    - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all operating periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

    - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods. Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

- Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is (are) not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the 5-minute reading immediately preceding the affected analyzers(s)'s stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," the Permittee may either:

  (i) Directly measure the moisture content using a moisture meter; or
  (ii) Assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit (RATA).

Emissions Calculations

3-Hour Rolling Average

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every 5 minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling hour average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot 0.843 \cdot [0.209 - Y_i - B_i]}$$

Where:

Y_i : Stack O_2 concentration, fraction (dry basis) at measurement "*i*"

B_i : Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$: Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid}$: $\frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} : 3-hour average lb SO_2 per ton 100% H_2SO_4 produced *(i.e.,* the average of 36 measurements taken at 5-minute intervals)

Daily Mass SO_2 Emissions

The daily mass SO_2 emissions ($M_{SO_2 Day}$) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i : Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$: Stack volumetric flow rate, DSCFM at measurement "*i*"

M_{SO_2Day} : Mass emissions of SO_2 during a calendar day, lb

n : Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions

The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12\,Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12\,Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2Day\ j}$$

Where:

$M_{SO_2Day\ j}$: Mass emissions of SO_2 during calendar day "*j*", lb

d : Number days in the preceding 12 calendar months

$M_{SO_2 12\,Mo\ Sum}$: 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12\,Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Permit SO_2 Limits

Short-Term SO_2 Limits

The short-term limit shall not apply during startup, shutdown, or malfunction of Plant #1. During all other operating periods the Permittee shall be in compliance with the short-term SO_2 permit limit if E_{3hravg} does not exceed 1.90 lb of SO_2 per ton of 100% H_2SO_4 produced. If the Permittee contends that emissions during a malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 1.9 lb/ton after the period of the malfunction(s) end(s), the Permittee shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed malfunction(s).

Startup SO_2 Emission Limits

The Permittee shall be in compliance with the SO_2 emission limits during startup if E_{3hravg} does not exceed the limits for Plant #1 set forth in Table 1 of this permit.

Mass Cap for SO_2

The Permittee shall be in compliance with the mass cap if the 12-month rolling sum ($M_{SO_2\,12\,Mo\,Sum}$) is 35.0 tons (70,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in this permit, the Permittee shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS Plan are not operating. In each annual report required under this permit, the Permittee shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS plan when an analyzer is not operating.

Retention of all CEMS data, including data during startup, shutdown, and malfunction

The Permittee shall retain all data generated by its SO_2 and O_2 analyzers, including all data generated during startup, shutdown, and/or malfunction of Plant #1 in accordance with this permit.

Analyzer Specifications

The three analyzers shall meet the following specifications:

Table 1

Parameter	**Location**	**Range**
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer shall meet all applicable requirements of 40 CFR 60.11, 60.13, 40 CFR Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 CFR Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer shall meet 40 CFR Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 CFR Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer shall meet 40 CFR Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 CFR Part 60, Appendix F, Procedure 1.

Appendix C

CHEMTRADE REFINERY SERVICES, INC.
RIVERTON FACILITY: SULFURIC ACID PLANT #2
Continuous Emissions Monitoring System (CEMS) Plan for SO_2 Emissions
Single Absorption Sulfuric Acid Regeneration Plant with Air Injection and SO_2 Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in this permit for the Sulfuric Acid Plant #2 at the Riverton, Wyoming Facility (Plant #2). The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in this permit by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% H_2SO_4 produced (lb/ton). The system shall utilize three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, shall be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A - B \cdot (1+R)}{1 + R - (1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A - B \cdot (1+R)}{1 + R - (1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% H_2SO_4 production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
R	= Ratio of the flow rate of gas fed into first bed of the converter to the flow rate of dilution air injected into lower beds
$E_{lbs/ton}$	= lb SO_2 per ton 100% H_2SO_4 produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68˚F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% H_2SO_4 production rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% H_2SO_4 production rate. Because Plant #2 injects air into the lower passes of its converter, the equations have been adjusted to account for this added air.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

The terms used in this CEMS Plan that are defined in the Clean Air Act (CAA) or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in this permit. Terms used in this CEMS Plan that are defined in this permit shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring shall be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the Permittee shall conduct monitoring during all operating periods and during shutdown.

- Once every five minutes, the analyzers shall measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of the SO_2 analyzers, the SO_2 measurement shall be "frozen" at its pre-calibration level and this measurement shall be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) shall be filled in as follows:

    - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all operating periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

- Converter inlet gas either shall be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration shall be estimated using engineering judgment, at least once every 4 hours during all operating periods. The most recent 4-hour measurement/estimate shall be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

- Stack volumetric flow rate shall be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following shall be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the 5- minute reading immediately preceding the affected analyzer's stoppage shall be used to fill in the data gap.

- In order to secure data on a "dry basis," the Permittee may either;

  (i) Directly measure the moisture content using a moisture meter; or
  (ii) Assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA").

Emissions Calculations

3-Hour Rolling Average

For purposes of calculating a 3-hour rolling average, the system shall maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every 5 minutes, the system shall add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) shall be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i \cdot (1+R)}{1+R-1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

R = Average of the three most recent measurements of the ratio of the flow of dilution air to the flow of process gas to the converter

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced *(i.e.*, the average of 36 measurements taken at 5-minute intervals)

Daily Mass SO_2 Emissions

The daily mass SO_2 emissions ($M_{SO_2 Day}$) (which are based on a calendar day) shall be calculated using Equation 5.

Equation 5:

$$M_{SO_2 Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$M_{SO_2 Day}$ = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions

The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month shall be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Permit SO_2 Limits

Short-Term SO_2 Limits

The short-term limit shall not apply during periods of startup, shutdown, or malfunction. During all other operating periods, the Permittee will be in compliance with the short-term SO_2 permit limit if E_{3hravg} does not exceed 2.1 lb of SO_2 per ton of 100% H_2SO_4 produced. If the Permittee contends that emissions during a malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 2.1 lb/ton after the period of the malfunction(s) end(s), the Permittee shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed malfunction(s).

Startup SO_2 Emission Limits

The Permittee shall be in compliance with the SO_2 emission limits during startup if E_{3hravg} during startup does not exceed the limits for Plant #2 set forth in this permit.

Mass Cap for SO_2

The Permittee shall be in compliance with the mass cap if the 12-month rolling sum ($M_{SO_2 12\,Mo\ Sum}$) is 38.0 tons (76,000 lb) of SO_2 or less during each consecutive 12-month period.

Recordkeeping and Reporting

In addition to any requirements in this permit, the Permittee shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS Plan are not operating. In each annual report required under this permit, the Permittee specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

The Permittee shall retain all data generated by its SO_2 and volumetric flow rate analyzers, including all data generated during startup, shutdown, and/or malfunction of Plant #2 in accordance with this permit.

Analyzer Specifications

The two analyzers shall meet the following specifications:

Table 1

Parameter	**Location**	**Range**
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer shall meet all applicable requirements of 40 CFR 60.11, 60.13, 40 CFR Part 60, Appendix B, Performance Standard 2, and the Quality Assurance and Quality Control Procedures in 40 CFR Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 analyzer likewise shall meet all applicable requirements of 40 CFR Part 60, Appendix B, Performance Specification 2, and 40 CFR Part 60, Appendix F, Procedure 1, except as follows:

- The Permittee shall select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits (RATAs), as described in Section 5.1.1 of Appendix F, the Permittee shall conduct quarterly cylinder gas audits (i.e., four per year) on the converter inlet SO_2 analyzer.

The volumetric flow rate analyzer will meet 40 CFR Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 CFR Part 60, Appendix F, Procedure 1.

Public Notice: Request For Comments

Proposed Air Quality Permit to Construct
Chemtrade Logistics
Chemtrade Refinery Services, LLC

Notice issued: June 26, 2015

Written comments due:
5 p.m., July 27, 2015

Where is the facility located?
Wind River Indian Reservation
Chemtrade Refinery Services, LLC
Near Riverton at 140 Goes In Lodge Road in Fremont County, Wyoming
Latitude 42.9988889 N
Longitude -108.416111W

What is being proposed?
This permit action will apply to an existing facility operating on the Wind River Indian Reservation in Wyoming.

This facility is an existing sulfuric acid manufacturing facility. The facility is currently subject to enforceable emission limits for two (2) existing sulfuric acid manufacturing plants, which were established through a January 12, 2009 federal Consent Decree (CD) between Chemtrade Logistics, the EPA, and the Northern Arapaho Tribe (Case 3:09-cv-00067). 40 CFR 49.153(a)(3)(iv) of the Tribal Minor New Source Review (MNSR) Rule provides the EPA with the authority to transfer such emission limits to a MNSR permit so that they may apply permanently after expiration or termination of a CD. The permit the EPA is proposing to issue reflects the incorporation of the requirements established in the CD, as well as any other requirements deemed necessary for practical enforceability of the CD requirements.

Proposed Permit Requirements:
The permit proposes requirements to use air pollution controls and limit the emissions from two (2) existing combustion chambers and two (2) existing absorption towers operating at the facility. The permit proposes requirements to limit the emissions of sulfur dioxide (SO_2) from the existing combustion chambers, and sulfuric acid (H_2SO_4) mist from the existing absorption towers.

What are the effects on air quality?
These actions will have no adverse air quality impacts. The emissions at this existing facility will not be increasing due to this permit action. In addition, this action does not authorize the construction of any new emission sources, or emission increases from existing sources, nor does it otherwise authorize any other physical modifications to the facility or its operations.

Where can I send comments?
EPA accepts comments by mail, fax and e-mail.

US EPA Region 8 Air Program, 8P-AR
Attn: Federal Minor NSR Coordinator
1595 Wynkoop Street,
Denver, CO 80202
R8AirPermitting@epa.gov
Fax: 303-312-6064

How can I review documents?
You can review a paper or electronic copy of the proposed permits and related documents at the following locations:

Central Wyoming College Library
2660 Peck Avenue
Riverton, Wyoming 82501
(307) 855-2141
http://www.cwc.edu/resources/Library
Summer/School Break Hours: Mon – Fri, 7:30 a.m. to 5:00 p.m.
Contact: Nicole Pouget, Director of Library Services at (307) 855-2332 or npouget@cwc.edu

and

Riverton Public Library
1330 West Park Street
Riverton, Wyoming82501
Hours: Hours: Mon – Thu, 10:00 a.m. – 9:00 p.m., Fri & Sat, 1:00 p.m. – 4:00 p.m.
Contact: Gloria Brodle at (307) 856-3556, ext. 211

and

US EPA Region 8 Office:
1595 Wynkoop Street, Denver, CO 80202
Hours: Mon-Fri 8:00 a.m. – 5:00 p.m.
Contact: Claudia Smith at 303-312-6520 or smith.claudia@epa.gov

and

US EPA Region 8 Website:
http://www2.epa.gov/region8/air-permit-public-comment-opportunities

Permit number:
Chemtrade Refinery Services, LLC
SMNSR-WR-000003-2013.001

What happens next?
The EPA will review and consider all comments received during the comment period. Following this review, the EPA may issue the permits as proposed, issue modified permits based on comments, or deny the permits.

Tribal Minor New Source Review in Indian Country

United States Environmental Protection Agency

Region 8
Air Program
1595 Wynkoop Street
Denver, CO 80202
Phone 800-227-8917

Smith, Claudia

From: Odeh, Eyaad <eodeh@chemtradelogistics.com>
Sent: Tuesday, April 14, 2015 10:30 AM
To: Smith, Claudia
Cc: Trabing, Aaron
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Claudia,

Aaron Trabing is the site contact. Please update your records with his contact information.

Aaron Trabing – EHS Supervisor
(307) 856-9217
atrabing@chemtradelogistics.com

We did not request an alternative CEMS plan. We are following what is outlined in the CD and that language is acceptable for us.

Thanks,
Eyaad

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Tuesday, April 14, 2015 10:19 AM
To: Odeh, Eyaad
Cc: Trabing, Aaron
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Eyaad,

First, should you be in our records as the permitting and compliance contact, or is that Aaron Trabing?

Second, I am planning to propose the permit with the respective CEMS plans for each H_2SO_4 plant as they were published in the consent decree. Did Chemtrade ever propose and get approved any alternate plan when implementing the consent decree, or can I assume that those CEMS plans are working for you? I've also asked Scott Whitmore, but have not heard back from him yet.

Thanks for your assistance,

Claudia

From: Odeh, Eyaad [mailto:eodeh@chemtradelogistics.com]
Sent: Monday, March 30, 2015 5:47 PM
To: Smith, Claudia
Cc: Trabing, Aaron; Cane, Helen
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Claudia,

Thank you for asking the question and allowing us to clarify what is confidential and what is public. I've attached a public process flow diagram of both plants. The power point file you sent had a few immaterial errors that have been corrected.

Thanks,
Eyaad

CHEMTRADE

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

Responsible Care®
Our commitment to sustainability.

From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Thursday, March 26, 2015 3:48 PM
To: Odeh, Eyaad
Cc: Trabing, Aaron; Cane, Helen
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Eyaad,

I took over this permit action from my late colleague Kathleen Paser and I noticed that in our files is a power point file with 2 basic process flow diagrams (Plant #1 and Plant #2). I can see that there was a claim of confidentiality and I have a non-confidential version of the application to make available during the public

comment period, while we are treating the original application as confidential, under lock and key. Would the two basic process flow diagrams for Plant #1 and Plant #2 in the power point (attached) be the figures that were redacted from the original application, or can we provide these as part of the permit docket during the public comment period. As far as I can see, they do not seem to illustrate anything more than the description of the process in the non-confidential version of the application, but I wanted to make sure.

Thank you,

Claudia

From: Odeh, Eyaad [mailto:eodeh@chemtradelogistics.com]
Sent: Wednesday, March 11, 2015 4:15 PM
To: Smith, Claudia
Cc: Trabing, Aaron; Cane, Helen
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Claudia,

I spoke with Deirdre Rothery today and was happy to hear that our permit application has been moved up on the priority list. Please let me know how I can be of assistance. Chemtrade has successfully incorporated the terms of the Consent Decree into five other permits and we are willing to do whatever we can to expedite the process.

Regards,
Eyaad Odeh

CHEMTRADE

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

Responsible Care®
Our commitment to sustainability.

From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Tuesday, March 10, 2015 9:42 AM
To: Odeh, Eyaad
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Eyaad,

The permit in in our queue behind some higher priority permits for which construction is dependent on permit issuance. Since you have submitted your synthetic minor NSR application for your existing source, and the CD is still effective, you may continue to operate as a synthetic minor source, in accordance with 40 CFR 49.158(c)(4)(ii), and therefore, the permit action was not assigned a high priority. If you would like to discuss

the priority with Tribal Air Permitting Program management, you may contact Deirdre Rothery at (303) 312-6431 or rothery.deirdre@epa.gov.

I will keep you posted as soon as I know an anticipated public comment start date. If you have any further questions, contact me at any time.

Thank you,

Claudia

Claudia Young Smith
Environmental Scientist
US EPA Region 8 Air Program
Phone: (303) 312-6520
Fax: (303) 312-6064
http://www2.epa.gov/region8/air-permitting

****
US EPA Region 8
1595 Wynkoop Street
Mail Code 8P-AR
Denver, Colorado 80202
****

From: Odeh, Eyaad [mailto:eodeh@chemtradelogistics.com]
Sent: Monday, March 09, 2015 9:44 PM
To: Smith, Claudia
Cc: Savarese, Rob
Subject: FW: Chemtrade Riverton Tribal Minor NSR permit application

Hello Claudia,

As you are aware, we recently applied for termination of the CAA Consent Decree for our facility in Riverton, WY and received feedback that we need to wait until our permit is issued. Do you have a target date when we can expect a draft permit?

Thanks,
Eyaad

CHEMTRADE

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

Responsible Care®
Our commitment to sustainability.

From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Friday, June 06, 2014 9:23 AM
To: Pruett, Leon
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Leon,

We received the application on December 24, 2013. Since we did not do a completeness determination within 60 days, the application defaulted to complete 60 days after we received it. Kathy had started to draft the permit and technical support document but it is not finished yet. I have not had a chance to pick it up again yet, as we have several truly "pre-construction" permit applications to process that are holding up construction, and are therefore, the highest priority.

According to 40 CFR 49.158(c)(4)(ii), your source will continue to be considered a synthetic minor source until the permit has been issued, so the fact that the permit has not been issued yet does not implicate continued operation, even if the Consent Decree expires:

"(ii) Provided that you submit your application as required in paragraph (c)(2)(ii), (c)(2)(iii) or (c)(3) (as applicable) and any requested additional information as required in paragraph (c)(4)(i) of this section, your source will continue to be considered a synthetic minor source or synthetic minor HAP source (as applicable) until your synthetic minor source permit under this program has been issued. Issuance of your synthetic minor source permit under this program will be in accordance with the applicable requirements in §§49.154 and 49.155 and all other provisions under this section."

If you have any questions, please contact me any time. Thank you for your thoughts regarding Kathy, we miss her dearly.

Claudia

From: Pruett, Leon [mailto:LPruett@chemtradelogistics.com]
Sent: Friday, June 06, 2014 6:43 AM
To: Smith, Claudia
Cc: Pruett, Leon
Subject: FW: Chemtrade Riverton Tribal Minor NSR permit application

Claudia,

Can you give me an update on the permit application we submitted in December 2013?

I am sorry to hear about Kathy.

Leon

From: Rothery, Deirdre **On Behalf Of** Paser, Kathleen
Sent: Thursday, June 05, 2014 3:00 PM

To: Smith, Claudia; Langenfeld, Matthew
Subject: FW: Chemtrade Riverton Tribal Minor NSR permit application

Hi Claudia and Matt,

This just came in to Kathy's email box. I called Leon and shared the news about Kathy. He will let us know once he knows who will be replacing him.

Thanks,
Dee

From: Pruett, Leon [mailto:LPruett@chemtradelogistics.com]
Sent: Thursday, June 05, 2014 1:11 PM
To: Paser, Kathleen
Cc: Pruett, Leon
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Kathy,

I wanted to check and see if EPA had determined the Chemtrade application to be complete? Has there been any progress on the new air permit?

I also wanted to let you know that my last day with Chemtrade in Riverton, WY is the 16th of June. I have been transferred to Charlotte, NC. I am still with Chemtrade but have more facilities now. As soon as we have a replacement for me in Riverton I will let you know. It should be within the next week.

Thanks for being so great to work with. I really enjoyed it!

Sincerely, Leon

Leon C. Pruett, CSP
Riverton, Wyoming
(307) 857-4653
Cell: (307) 840-4529

From: Paser, Kathleen [mailto:Paser.Kathleen@epa.gov]
Sent: Monday, December 30, 2013 8:06 AM
To: Steven Branoff
Cc: Pruett, Leon; Michelle Senatore; Wortman, Eric; Smith, Claudia
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

The EPA Region 8 Air Program has received your application for a synthetic minor pre-construction permit to incorporate requirements of a Consent Decree. We received this application on December 20, 2013.

Kathy Paser
EPA Region 8 Air Program
1595 Wynkoop, 8P-AR
303-312-6526
paser.kathleen@epa.gov

From: Steven Branoff [mailto:sbranoff@Environcorp.com]
Sent: Friday, December 20, 2013 10:55 AM
To: Paser, Kathleen
Cc: R8AirPermitting; Pruett, Leon (LPruett@chemtradelogistics.com); Michelle Senatore
Subject: Chemtrade Riverton Tribal Minor NSR permit application

Kathy,

Hi – I hope all is well with you. Attached please find the synthetic minor permit application for the Chemtrade Refinery Services Inc. facility in Riverton, Wyoming, submitted under the Tribal Minor New Source Review permit program. Hard copies of the permit application have been mailed and should arrive at your office next week. We are requesting confidential treatment of a portion of the application, so we submitted 2 copies (one confidential and one public, marked accordingly).

Please feel free to contact me or Leon Pruett, copied here, with any questions or comments or if we can provide any additional information to assist your review.

Happy holidays.

Regards,
Steve

Steven Branoff | Principal Consultant
ENVIRON International Corporation
2200 Powell Street | 7th Floor
Emeryville, California 94608
T: (510) 420-2540 | F: (510) 655-9517 | M: (510) 410-2557
sbranoff@environcorp.com

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For further information, please contact the EPA Call Center at (866) 411-4EPA (4372). The TDD number is (866) 489-4900.

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Smith, Claudia

From: Pruett, Leon <LPruett@chemtradelogistics.com>
Sent: Friday, June 06, 2014 9:48 AM
To: Smith, Claudia
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Thanks Claudia

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If you have any questions, please contact me any time. Thank you for your thoughts regarding Kathy, we miss her dearly.

Claudia

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Cc: Pruett, Leon
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Sincerely, Leon

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Riverton, Wyoming
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Kathy Paser
EPA Region 8 Air Program

1595 Wynkoop, 8P-AR
303-312-6526
paser.kathleen@epa.gov

From: Steven Branoff [mailto:sbranoff@Environcorp.com]
Sent: Friday, December 20, 2013 10:55 AM
To: Paser, Kathleen
Cc: R8AirPermitting; Pruett, Leon (LPruett@chemtradelogistics.com); Michelle Senatore
Subject: Chemtrade Riverton Tribal Minor NSR permit application

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Please feel free to contact me or Leon Pruett, copied here, with any questions or comments or if we can provide any additional information to assist your review.

Happy holidays.

Regards,
Steve

Steven Branoff | Principal Consultant
ENVIRON International Corporation
2200 Powell Street | 7th Floor
Emeryville, California 94608
T: (510) 420-2540 | F: (510) 655-9517 | M: (510) 410-2557
sbranoff@environcorp.com

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ENVIRON

October 22, 2014

Claudia Smith
Air and Radiation Program
U.S. EPA Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

Re: Addition of UPA Stripper Vent
Chemtrade Refinery Services, Inc. (Riverton, Wyoming)

Dear Ms. Smith:

The Chemtrade Refinery Services Inc. facility located in Riverton, Wyoming is planning a modification to the existing Ultra Pure Acid (UPA) process. The change would involve the addition of new sources, although our calculations suggest that the potential to emit from these sources would be below the thresholds for the Tribal Minor New Source Review (Tribal Minor NSR) permit program found in 40 C.F.R. Part 49. The proposed project is described below. The enclosed figure shows the proposed new configuration of the UPA process, and the attached calculations show the basis of the new proposed emissions.

Under the current plant configuration, Chemtrade has experienced periodic issues with back pressure in the UPA process. The UPA stripping tower air vent line is currently directed to the inlet of the Plant 1 combustion air fan. This arrangement has led to damage to the combustion air fan due to acid droplets entrained in the vent line, contributing to the back pressure issues. The facility is proposing to redesign the UPA stripper vent line. This change will involve adding a water spray to the vent line in order to remove any entrained acid mist, followed by a vent knockout pot. The knockout pot will be equipped with a mist elimination pad and will allow the water and acid to be removed from the air in the vent line. The vent off of the knockout pot would be routed to the atmosphere in order to eliminate the potential of back pressure in the UPA from this vent line.

The facility previously submitted a synthetic minor air permit application under the Tribal Minor NSR program, which we understand is currently under review. Emission calculations for the proposed modification are included in Table 1. As shown in this table, the emissions from the proposed project are less than 10 ton SO_2/year trigger level for review under the Tribal Minor NSR program. As a result, we request that the new sources should be added to the permit for our facility, but we believe that no further review of this project should be required. We request written confirmation of this conclusion from U.S. EPA. Chemtrade does not plan to begin construction of this project until we receive this confirmation from you.

ENVIRON International Corp. 201 California Street, Suite 1200, San Francisco, CA 94111
V +1 415.796.1950 F +1 415.398.5812

environcorp.com

Thank you for your consideration. Please contact me at (510) 420-2540 or Aaron Trabing of Chemtrade at (307) 857-4653 with any questions or comments, or if we can provide any additional information to assist your review.

Sincerely,

Steve Branoff
Principal

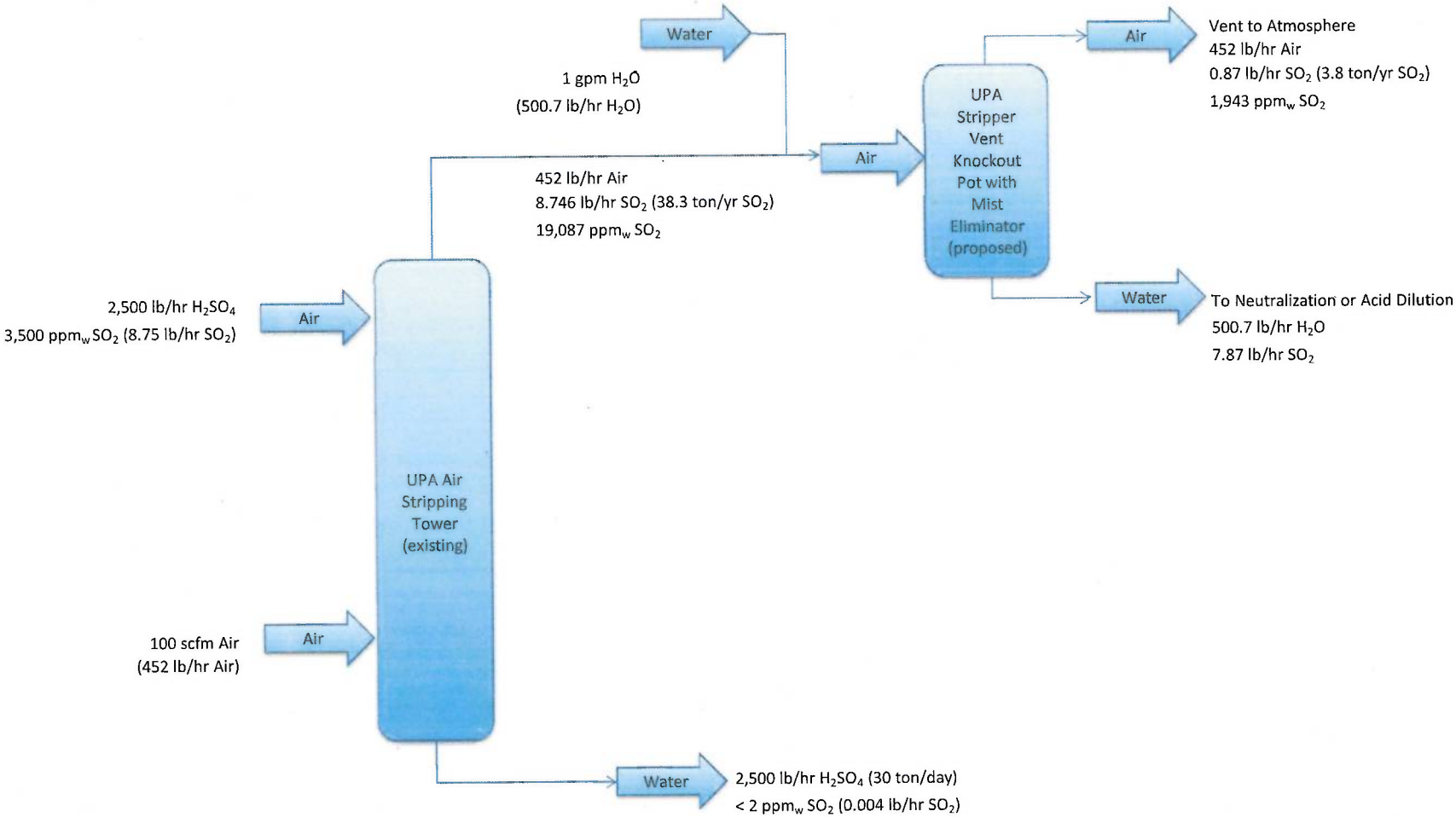
Cc: Aaron Trabing, Chemtrade Refinery Services

Enclosures

Table 1
Proposed Ultra Pure Acid (UPA) Process Modification Emissions
Chemtrade Refinery Services, Inc.
Riverton, Wyoming

UPA Process Operating Parameters	
Annual operation	8,760 hrs/yr
Daily operation	24 hrs/day
Inlet H_2SO_4 flow rate	2500 lb/hr
Inlet SO_2 concentration	3500 ppm_w
Inlet SO_2 flow rate	8.75 lb/hr
Inlet air flow rate	100 scfm
	452 lb/hr
UPA air stripping tower SO_2 capture efficiency	99.95%
UPA air stripper vent SO_2 control efficiency	90%
UPA Air Stripping Tower Outlet Parameters	
H_2SO_4 outlet flow rate	2500 lb/hr
	30 tons/day
SO_2 outlet concentration	<2 ppm_w
SO_2 outlet flow rate	0.004 lb/hr
UPA Stripper Vent Knockout Pot Inlet Parameters	
SO_2 inlet concentration	19087 ppm_w
SO_2 inlet flow rate	8.746 lb/hr
	38.3 tons/yr
Inlet air flow rate	452 lb/hr
Inlet water flow rate	1 gpm
	500.7 lb/hr
UPA Stripper Vent Knockout Pot Outlet to Neutralization/Acid Dilution	
Outlet water flow rate	500.7 lb/hr
SO_2 outlet flow rate	7.87 lb/hr
UPA Stripper Vent Knockout Pot Outlet to Atmosphere	
Outlet air flow rate	452 lb/hr
SO_2 outlet concentration	1943 ppm_w
SO_2 outlet emissions	0.87 lb/hr
	3.8 tons/yr
Emissions Comparison to Tribal Minor NSR Trigger Level	
SO_2 emissions	3.8 tons/yr
Tribal Minor NSR SO_2 trigger level	10 tons/yr
Tribal Minor NSR triggered?	**No**

Figure 1
Proposed Ultra Pure Acid (UPA) Process Configuration
Chemtrade Refinery Services, Inc.
Riverton, Wyoming



MEMO TO FILE

DATE: April 3, 2015

SUBJECT: Wind River Indian Reservation; Chemtrade Logistics, Chemtrade Refinery Services, Inc.; Environmental Justice

FROM: Victoria Parker-Christensen, EPA Region 8 Air Program

TO: Source Files:
205c AirTribal WR Chemtrade Logistics, Chemtrade Refinery Services, Inc., Acid Plant
SMNSR-WR-000003-2013.001
FRED # 105420

On February 11, 1994, the President issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order calls on each federal agency to make environmental justice a part of its mission by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

The EPA defines "Environmental Justice" as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The EPA's goal with respect to Environmental Justice in permitting is to enable overburdened communities to have full and meaningful access to the permitting process and to develop permits that address environmental justice issues to the greatest extent practicable under existing environmental laws. *Overburdened* is used to describe the minority, low-income, tribal and indigenous populations or communities in the United States that potentially experience disproportionate environmental harms and risks as a result of greater vulnerability to environmental hazards.

This memorandum describes EPA's efforts to identify environmental justice communities and assess potential effects in connection with issuing a Clean Air Act (CAA) Tribal Minor New Source Review (MNSR) permit in Fremont County within the exterior boundaries of the Wind River Indian Reservation.

Region 8 Air Program Determination

Based on the findings described in the following sections of this memorandum, we conclude that issuance of the aforementioned permit is not expected to have disproportionately high or adverse human health effects on overburdened communities in the vicinity of the facility on the Wind River Indian Reservation.

Permit Request

On December 24, 2013, the EPA received an application from Chemtrade Logistics (Chemtrade) requesting a synthetic MNSR permit for the Riverton Sulfuric Acid Manufacturing Plant (Acid Plant) in accordance the requirements of the MNSR permitting program at 40 CFR Part 49. The Acid Plant is an existing facility located within the exterior boundaries of the Wind River Indian Reservation in the central-western part of the State of Wyoming. The facility location is given below:

Sec 4 T1S R4E
Latitude: 42.9988889 N
Longitude: -108.416111 W
Fremont County

This permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit action is intended only to incorporate required emission limits and provisions from a January 12, 2009, federal Consent Decree (CD) with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at the facility (Case 3:09-cv-00067), which became effective on January 1, 2013.

The CD requires that Chemtrade control the sulfur dioxide (SO_2) emissions from two (2) existing combustion chambers at the facility, using a sodium based SO_2 scrubbing system. The CD established emission limits and various associated monitoring, performance testing, recordkeeping, and reporting requirements. This permit is proposing to incorporate the combustion chamber emission control requirements from the CD. The CD also requires the control of sulfuric acid mist (H_2SO_4) emissions from the two (2) existing absorbtion towers,

Upon compliance with this permit, the legally and practically enforceable reductions in SO_2 emissions can be taken into account when determining the applicability of other CAA requirements, such as the Prevention of Significant Deterioration (PSD) Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71.

Air Quality Review

The MNSR regulations at 40 CFR 49.154(d) require that an Air Quality Impact Assessment (AQIA) modeling analysis be performed if there is reason to be concerned that new construction would cause or contribute to a National Ambient Air Quality Standard (NAAQS) or PSD increment violation. If an AQIA reveals that the proposed construction could cause or contribute to a NAAQS or PSD increment violation, such impacts must be addressed before a pre-construction permit can be issued.

The emissions at this existing facility will not be increasing due to the MNSR permit action and the emissions will continue to be well controlled at all times. The proposed MNSR permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations and the

substantive requirements of the CD (emission controls and reductions) have already been fulfilled at this facility. In short, this action will have no adverse air quality impacts; therefore, we have determined that an AQIA modeling analysis is not required for the proposed MNSR permit.

For purposes of Executive Order 12898 on environmental justice, the EPA has recognized that compliance with the NAAQS is "emblematic of achieving a level of public health protection that, based on the level of protection afforded by a primary NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to the exposure to relevant criteria pollutants." *In re Shell Gulf of Mexico, Inc. & Shell Offshore, Inc.*, 15 E.A.D., slip op. at 74 (EAB 2010). This is because the NAAQS are health-based standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics.

Environmental Impacts to Potentially Overburdened Communities

This MNSR permit action does not authorize the construction of any new air emission sources, or air emission increases from existing units, nor does it otherwise authorize any other physical modifications to the associated facility or its operations. The air emissions at the existing facility will not increase due to the associated action.

Furthermore, the permit contains a provision stating, "*The permitted source shall not cause or contribute to a National Ambient Air Quality Standard violation or a PSD increment violation.*" Noncompliance with this permit provision is a violation of the permit and is grounds for enforcement action and for permit termination or revocation. As a result, we conclude that issuance of the aforementioned permit will not have disproportionately high or adverse human health effects on communities in the vicinity of the Acid Plant. A map of the area surrounding the facility showing total population based on the U.S. Census Bureau 2010 demographic data is attached to this memorandum.

Tribal Consultation and Public Participation

We offer Tribal government leaders an opportunity to consult on each proposed MNSR permit action. The Tribal Government Leaders are asked to respond to the EPA's offer to consult within 30 days. The Chairman of the Northern Arapaho and Eastern Shoshone Tribes (Tribes) were offered an opportunity to consult on this MNSR permit action via letters dated April 1, 2014. To date, we have not received any responses to our offers to consult on this MNSR permit action.

Given the presence of potentially overburdened communities in the vicinity of the facility, we are providing an enhanced public participation process for this permit.

1. Interested parties can subscribe to an EPA listserve that notifies them of public comment opportunities on the Wind River Indian Reservation for proposed air pollution control permits via email at http://www2.epa.gov/region8/air-permit-public-comment-opportunities.

2. All minor source applications (synthetic minor, modification to an existing facility, new true minor or general permit) are submitted to both the Tribes and us per the application instructions

(see http://www2.epa.gov/region8/tribal-minor-new-source-review-permitting).

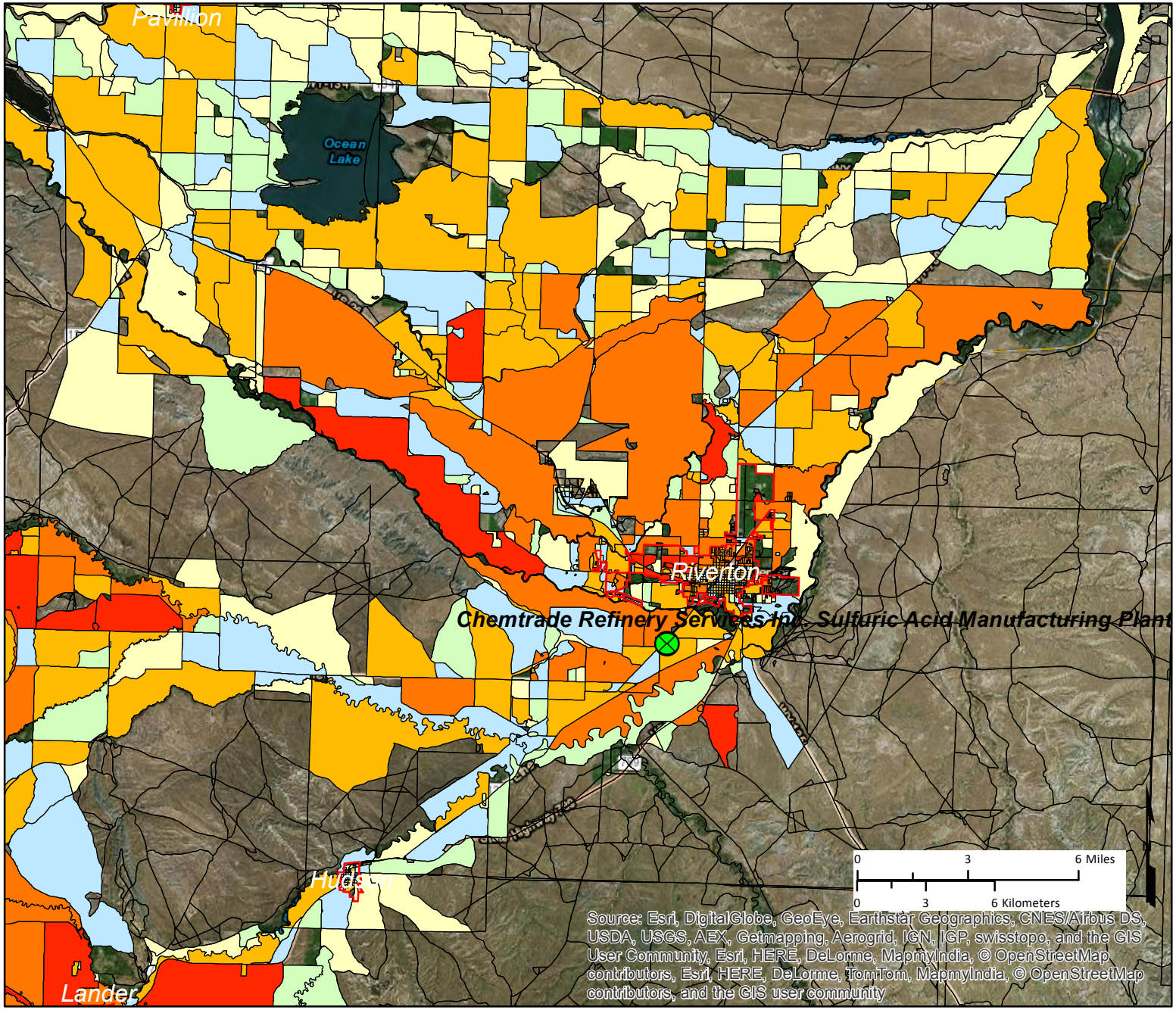
3. The Tribes has 10 business days to respond to us with questions and comments on the application.

4. In the event an AQIA is triggered, we email a copy of that document to the Tribes within 5 business days from the date we receive it.

5. We notify the Tribes of the public comment period for the proposed permit and provide copies of the notice of public comment opportunity to post in various locations of their choosing on the Reservation. We also notify the Tribes of the issuance of the final permit.

Attachment

Map of area surrounding ChemTrade Logistics Acid Plant with U.S. Census Bureau 2010 total population



Wind River Indian Reservation
CAA New Source Review Program
US Census Bureau 2010
Population Distrubution

MNSR Facilities

City Boundary

TOTAL_POPULATION

- 0
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 50
- 51 - 100
- 101 - 316

Date: April 3, 2015

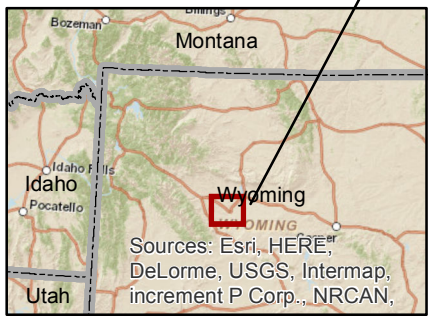
Map Projection: UTM, Meters, Zone 13N, NAD83.

Data Sources:

City Boundary - Navteq (2012);
Census Block Population - U.S. Census Bureau (2010);
County Boundary - U.S. Census Bureau (2010);
State Boundary - U.S. Census Bureau (2010);
Base - ESRI Imagery Webservice (2014).

Disclaimer: EPA makes no claim regarding the accuracy or precision of these data. Questions concerning the data should be referred to the source agency. This map does not necessarily represent EPA's position on any Indian Country boundaries or the jurisdictional status of any specific location.

Area Enlarged



EPA United States Environmental Protection Agency

REGION 8
serving the states & tribes of Colorado, Montana, Wyoming, Utah, North Dakota & South Dakota

MEMO TO FILE

DATE: April 6, 2015

SUBJECT: Wind River Indian Reservation; Chemtrade Logistics, Chemtrade Refinery Services, Inc.; Endangered Species Act

FROM: Victoria Parker-Christensen, EPA Region 8 Air Program

TO: Source Files:
205c AirTribal WR Chemtrade Logistics, Chemtrade Refinery Services, Inc., Acid Plant
SMNSR-WR-000003-2013.001
FRED # 105420

Pursuant to Section 7 of the Endangered Species Act (ESA), 16 U.S.C. §1536, and its implementing regulations at 50 CFR, part 402, the EPA is required to ensure that any action authorized, funded, or carried out by the Agency is not likely to jeopardize the continued existence of any Federally-listed endangered or threatened species or result in the destruction or adverse modification of such species' designated critical habitat. Under ESA, those agencies that authorize, fund, or carry out the federal action are commonly known as "action agencies." If an action agency determines that its federal action "may affect" listed species or critical habitat, it must consult with the U.S. Fish and Wildlife Service (FWS). If an action agency determines that the federal action will have no effect on listed species or critical habitat, the agency will make a "no effect" determination. In that case, the action agency does not initiate consultation with the FWS and its obligations under Section 7 are complete.

In complying with its duty under ESA, the EPA, as the action agency, examined the potential effects on listed species and designated critical habitat relating to issuing this Clean Air Act (CAA) Tribal Minor New Source Review (MNSR) permit.

Region 8 Air Program Determination

The EPA has concluded that the proposed synthetic MNSR permit action will have "*No effect"* on listed species or critical habitat. The proposed permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the associated facility or its operations. Because the EPA has determined that the federal action will have no effect, the agency made a *"No effect"* determination, did not initiate consultation with the FWS and its obligations under Section 7 are complete.

Permit Request

On December 24, 2013, the EPA received an application from Chemtrade Logistics (Chemtrade) requesting a synthetic MNSR permit for the Riverton Sulfuric Acid Manufacturing Plant (Acid Plant) in accordance the requirements of the MNSR permitting program at 40 CFR Part 49. The Acid Plant is an existing facility located within the exterior boundaries of the Wind River Indian Reservation in the central-western part of the State of Wyoming. The facility location is given below:

Sec 4 T1S R4E
Latitude: 42.9988889 N
Longitude: -108.416111 W
Fremont County

This permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit action is intended only to incorporate required emission limits and provisions from a January 12, 2009, federal Consent Decree (CD) with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at the facility (Case 3:09-cv-00067), which became effective on January 1, 2013.

The CD requires that Chemtrade control the sulfur dioxide (SO_2) emissions from two (2) existing combustion chambers at the facility, using a sodium based SO_2 scrubbing system. The CD established emission limits and various associated monitoring, performance testing, recordkeeping, and reporting requirements. This permit is proposing to incorporate the combustion chamber emission control requirements from the CD. The CD also requires the control of sulfuric acid mist (H_2SO_4) emissions from the two (2) existing absorbtion towers,

Upon compliance with this permit, the legally and practically enforceable reductions in SO_2 emissions can be taken into account when determining the applicability of other CAA requirements, such as the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71.

Conclusion

The EPA has concluded that the proposed synthetic MNSR permit action will have "*No effect"* on listed species or critical habitat for the following reasons:

1. The proposed permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the associated facility or its operations.
2. The emissions, approved at present, from the existing facility will not increase due to the associated permit action and the emissions will continue to be well controlled at all times.

Because the EPA has determined that the federal action will have no effect, the agency will make a *"No effect"* determination. In that case, the EPA does not initiate consultation with the FWS and its obligations under Section 7 are complete.

MEMO TO FILE

DATE: April 6, 2015

SUBJECT: Wind River Indian Reservation; Chemtrade Logistics, Chemtrade Refinery Services, Inc., National Historic Preservation Act

FROM: Victoria Parker-Christensen, EPA Region 8 Air Program

TO: Source Files:
205c AirTribal WR Chemtrade Logistics, Chemtrade Refinery Services, Inc., Acid Plant
SMNSR-WR-000003-2013.001
FRED # 105420

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment with regard to such undertakings. Under the ACHP's implementing regulations at 36 C.F.R. Part 800, Section 106 consultation is generally with state and tribal historic preservation officials in the first instance, with opportunities for the ACHP to become directly involved in certain cases. An "undertaking" is "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval." 36 C.F.R. § 800.16(y).

Under the NHPA Section 106 implementing regulations, if an undertaking is a type of activity that has the potential to cause effects on historic properties, assuming any are present, then federal agencies consult with relevant historic preservation partners to determine the area of potential effect (APE) of the undertaking, to identify historic properties that may exist in that area, and to assess and address any adverse effects that may be caused on historic properties by the undertaking. If an undertaking is a type of activity that does not have the potential to cause effects on historic properties, the federal agency has no further obligations. 36 C.F.R. § 800.3(a)(1).

This memorandum describes EPA's efforts to assess potential effects on historic properties in connection with issuing a draft Federal Tribal Minor New Source Review (MNSR) permit to Chemtrade Logistics (Chemtrade), located within the exterior boundaries of the Wind River Indian Reservation in Fremont County, Wyoming. As explained further below, EPA is finding that the proposed action does not have the potential to cause effects on historic properties, even assuming such historic properties are present.

Permit Request

On December 24, 2013, the EPA received an application from Chemtrade Logistics (Chemtrade) requesting a synthetic MNSR permit for the Riverton Sulfuric Acid Manufacturing Plant (Acid Plant) in accordance the requirements of the MNSR permitting program at 40 CFR Part 49. The Acid Plant is an

existing facility located within the exterior boundaries of the Wind River Indian Reservation in the central-western part of the State of Wyoming. The facility location is given below:

Sec 4 T1S R4E
Latitude: 42.9988889 N
Longitude: -108.416111 W
Fremont County

This permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit action is intended only to incorporate required emission limits and provisions from a January 12, 2009, federal Consent Decree (CD) with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at the facility (Case 3:09-cv-00067), which became effective on January 1, 2013.

The CD requires that Chemtrade control the sulfur dioxide (SO_2) emissions from two (2) existing combustion chambers at the facility, using a sodium based SO_2 scrubbing system. The CD established emission limits and various associated monitoring, performance testing, recordkeeping, and reporting requirements. This permit is proposing to incorporate the combustion chamber emission control requirements from the CD. The CD also requires the control of sulfuric acid mist (H_2SO_4) emissions from the two (2) existing absorbtion towers,

Upon compliance with this permit, the legally and practically enforceable reductions in SO_2 emissions can be taken into account when determining the applicability of other CAA requirements, such as the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71.

Finding of No Potential to Cause Effects

The EPA has reviewed the proposed action for potential impacts on historic properties. Because the permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations, the Agency finds that this project does not have the potential to cause effects on historic properties, even assuming any are present.

State and Tribal Consultation

Because this undertaking is a type of activity that does not have the potential to cause effects on historic properties, the EPA has no further obligations under Section 106 of the National Historic Preservation Act or 36 C.F.R. part 800.

Smith, Claudia

From: Odeh, Eyaad <eodeh@chemtradelogistics.com>
Sent: Monday, March 30, 2015 5:47 PM
To: Smith, Claudia
Cc: Trabing, Aaron; Cane, Helen
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application
Attachments: Riverton PFD.pdf

Claudia,

Thank you for asking the question and allowing us to clarify what is confidential and what is public. I've attached a public process flow diagram of both plants. The power point file you sent had a few immaterial errors that have been corrected.

Thanks,
Eyaad

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

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From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Thursday, March 26, 2015 3:48 PM
To: Odeh, Eyaad
Cc: Trabing, Aaron; Cane, Helen
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Eyaad,

I took over this permit action from my late colleague Kathleen Paser and I noticed that in our files is a power point file with 2 basic process flow diagrams (Plant #1 and Plant #2). I can see that there was a claim of confidentiality and I have a non-confidential version of the application to make available during the public comment period, while we are treating the original application as confidential, under lock and key. Would the two basic process flow diagrams for Plant #1 and Plant #2 in the power point (attached) be the figures that were redacted from the original application, or can we provide these as part of the permit docket during the public

comment period. As far as I can see, they do not seem to illustrate anything more than the description of the process in the non-confidential version of the application, but I wanted to make sure.

Thank you,

Claudia

From: Odeh, Eyaad [mailto:eodeh@chemtradelogistics.com]
Sent: Wednesday, March 11, 2015 4:15 PM
To: Smith, Claudia
Cc: Trabing, Aaron; Cane, Helen
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Claudia,

I spoke with Deirdre Rothery today and was happy to hear that our permit application has been moved up on the priority list. Please let me know how I can be of assistance. Chemtrade has successfully incorporated the terms of the Consent Decree into five other permits and we are willing to do whatever we can to expedite the process.

Regards,
Eyaad Odeh

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Tuesday, March 10, 2015 9:42 AM
To: Odeh, Eyaad
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Eyaad,

The permit in in our queue behind some higher priority permits for which construction is dependent on permit issuance. Since you have submitted your synthetic minor NSR application for your existing source, and the CD is still effective, you may continue to operate as a synthetic minor source, in accordance with 40 CFR 49.158(c)(4)(ii), and therefore, the permit action was not assigned a high priority. If you would like to discuss the priority with Tribal Air Permitting Program management, you may contact Deirdre Rothery at (303) 312-6431 or rothery.deirdre@epa.gov.

I will keep you posted as soon as I know an anticipated public comment start date. If you have any further questions, contact me at any time.

Thank you,

Claudia

Claudia Young Smith
Environmental Scientist
US EPA Region 8 Air Program
Phone: (303) 312-6520
Fax: (303) 312-6064
http://www2.epa.gov/region8/air-permitting

****
US EPA Region 8
1595 Wynkoop Street
Mail Code 8P-AR
Denver, Colorado 80202
****

From: Odeh, Eyaad [mailto:eodeh@chemtradelogistics.com]
Sent: Monday, March 09, 2015 9:44 PM
To: Smith, Claudia
Cc: Savarese, Rob
Subject: FW: Chemtrade Riverton Tribal Minor NSR permit application

Hello Claudia,

As you are aware, we recently applied for termination of the CAA Consent Decree for our facility in Riverton, WY and received feedback that we need to wait until our permit is issued. Do you have a target date when we can expect a draft permit?

Thanks,
Eyaad

Eyaad Odeh JD
Sr. Environmental Project Manager
E. eodeh@chemtradelogistics.com
C. (419) 290-1082

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From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
Sent: Friday, June 06, 2014 9:23 AM
To: Pruett, Leon
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Leon,

We received the application on December 24, 2013. Since we did not do a completeness determination within 60 days, the application defaulted to complete 60 days after we received it. Kathy had started to draft the permit and technical support document but it is not finished yet. I have not had a chance to pick it up again yet, as we have several truly "pre-construction" permit applications to process that are holding up construction, and are therefore, the highest priority.

According to 40 CFR 49.158(c)(4)(ii), your source will continue to be considered a synthetic minor source until the permit has been issued, so the fact that the permit has not been issued yet does not implicate continued operation, even if the Consent Decree expires:

"(ii) Provided that you submit your application as required in paragraph (c)(2)(ii), (c)(2)(iii) or (c)(3) (as applicable) and any requested additional information as required in paragraph (c)(4)(i) of this section, your source will continue to be considered a synthetic minor source or synthetic minor HAP source (as applicable) until your synthetic minor source permit under this program has been issued. Issuance of your synthetic minor source permit under this program will be in accordance with the applicable requirements in §§49.154 and 49.155 and all other provisions under this section."

If you have any questions, please contact me any time. Thank you for your thoughts regarding Kathy, we miss her dearly.

Claudia

From: Pruett, Leon [mailto:LPruett@chemtradelogistics.com]
Sent: Friday, June 06, 2014 6:43 AM
To: Smith, Claudia
Cc: Pruett, Leon
Subject: FW: Chemtrade Riverton Tribal Minor NSR permit application

Claudia,

Can you give me an update on the permit application we submitted in December 2013?

I am sorry to hear about Kathy.

Leon

From: Rothery, Deirdre **On Behalf Of** Paser, Kathleen
Sent: Thursday, June 05, 2014 3:00 PM
To: Smith, Claudia; Langenfeld, Matthew
Subject: FW: Chemtrade Riverton Tribal Minor NSR permit application

Hi Claudia and Matt,

This just came in to Kathy's email box. I called Leon and shared the news about Kathy. He will let us know once he knows who will be replacing him.

Thanks,
Dee

From: Pruett, Leon [mailto:LPruett@chemtradelogistics.com]
Sent: Thursday, June 05, 2014 1:11 PM
To: Paser, Kathleen
Cc: Pruett, Leon
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

Kathy,

I wanted to check and see if EPA had determined the Chemtrade application to be complete? Has there been any progress on the new air permit?

I also wanted to let you know that my last day with Chemtrade in Riverton, WY is the 16th of June. I have been transferred to Charlotte, NC. I am still with Chemtrade but have more facilities now. As soon as we have a replacement for me in Riverton I will let you know. It should be within the next week.

Thanks for being so great to work with. I really enjoyed it!

Sincerely, Leon

Leon C. Pruett, CSP
Riverton, Wyoming
(307) 857-4653
Cell: (307) 840-4529

From: Paser, Kathleen [mailto:Paser.Kathleen@epa.gov]
Sent: Monday, December 30, 2013 8:06 AM
To: Steven Branoff
Cc: Pruett, Leon; Michelle Senatore; Wortman, Eric; Smith, Claudia
Subject: RE: Chemtrade Riverton Tribal Minor NSR permit application

The EPA Region 8 Air Program has received your application for a synthetic minor pre-construction permit to incorporate requirements of a Consent Decree. We received this application on December 20, 2013.

Kathy Paser
EPA Region 8 Air Program
1595 Wynkoop, 8P-AR
303-312-6526
paser.kathleen@epa.gov

From: Steven Branoff [mailto:sbranoff@Environcorp.com]
Sent: Friday, December 20, 2013 10:55 AM
To: Paser, Kathleen
Cc: R8AirPermitting; Pruett, Leon (LPruett@chemtradelogistics.com); Michelle Senatore
Subject: Chemtrade Riverton Tribal Minor NSR permit application

Kathy,

Hi – I hope all is well with you. Attached please find the synthetic minor permit application for the Chemtrade Refinery Services Inc. facility in Riverton, Wyoming, submitted under the Tribal Minor New Source Review permit program. Hard copies of the permit application have been mailed and should arrive at your office next week. We are requesting confidential treatment of a portion of the application, so we submitted 2 copies (one confidential and one public, marked accordingly).

Please feel free to contact me or Leon Pruett, copied here, with any questions or comments or if we can provide any additional information to assist your review.

Happy holidays.

Regards,
Steve

Steven Branoff | Principal Consultant
ENVIRON International Corporation
2200 Powell Street | 7th Floor
Emeryville, California 94608
T: (510) 420-2540 | F: (510) 655-9517 | M: (510) 410-2557
sbranoff@environcorp.com


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********************** ATTACHMENT NOT DELIVERED  ******************

This Email message contained an attachment named
  image001.jpg
which may be a computer program. This attached computer program could
contain a computer virus which could cause harm to EPA's computers,
network, and data.  The attachment has been deleted.

This was done to limit the distribution of computer viruses introduced
into the EPA network.  EPA is deleting all computer program attachments
sent from the Internet into the agency via Email.

If the message sender is known and the attachment was legitimate, you
should contact the sender and request that they rename the file name
extension and resend the Email with the renamed attachment.  After
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receiving the revised Email, containing the renamed attachment, you can rename the file extension to its correct name.

For further information, please contact the EPA Call Center at (866) 411-4EPA (4372). The TDD number is (866) 489-4900.

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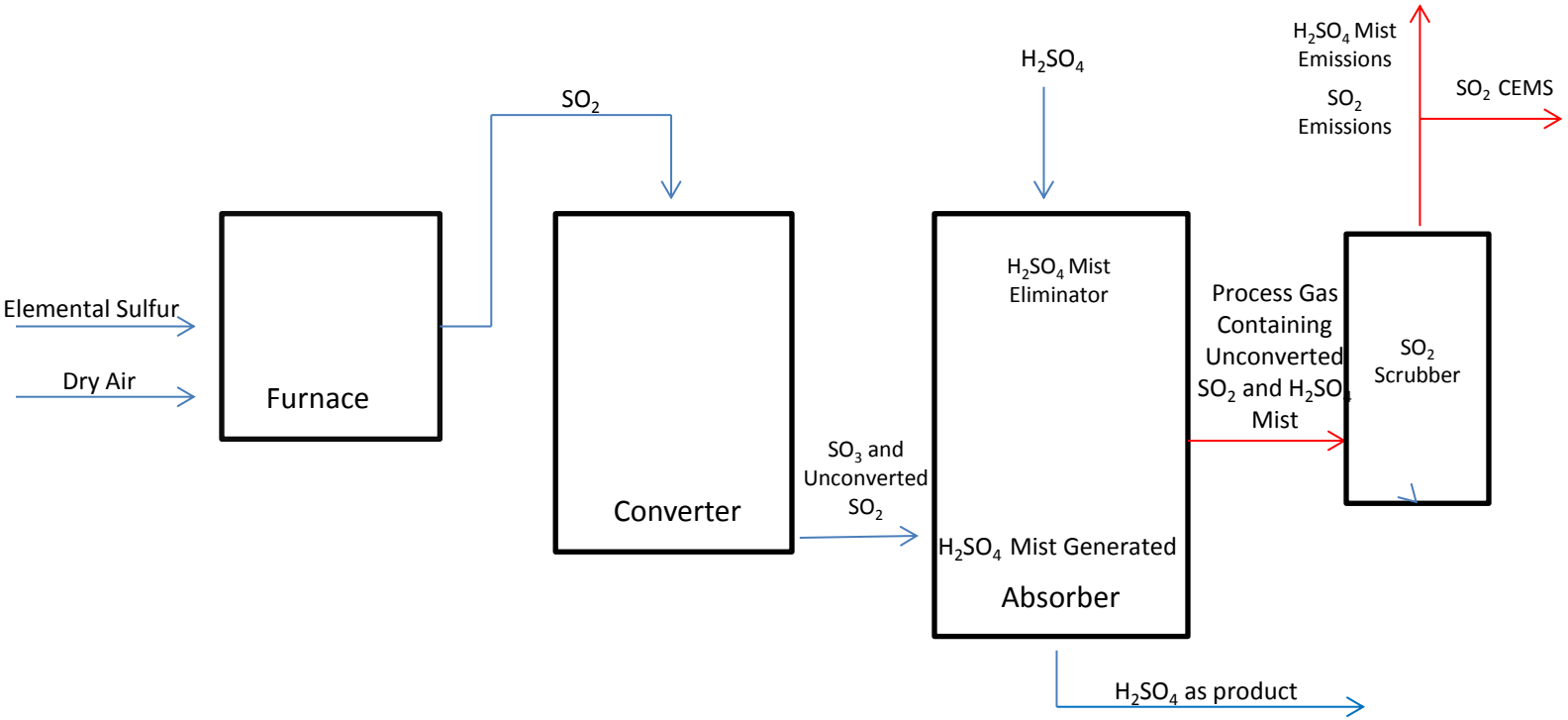


Figure 1 – Basic Process used in Plant #1

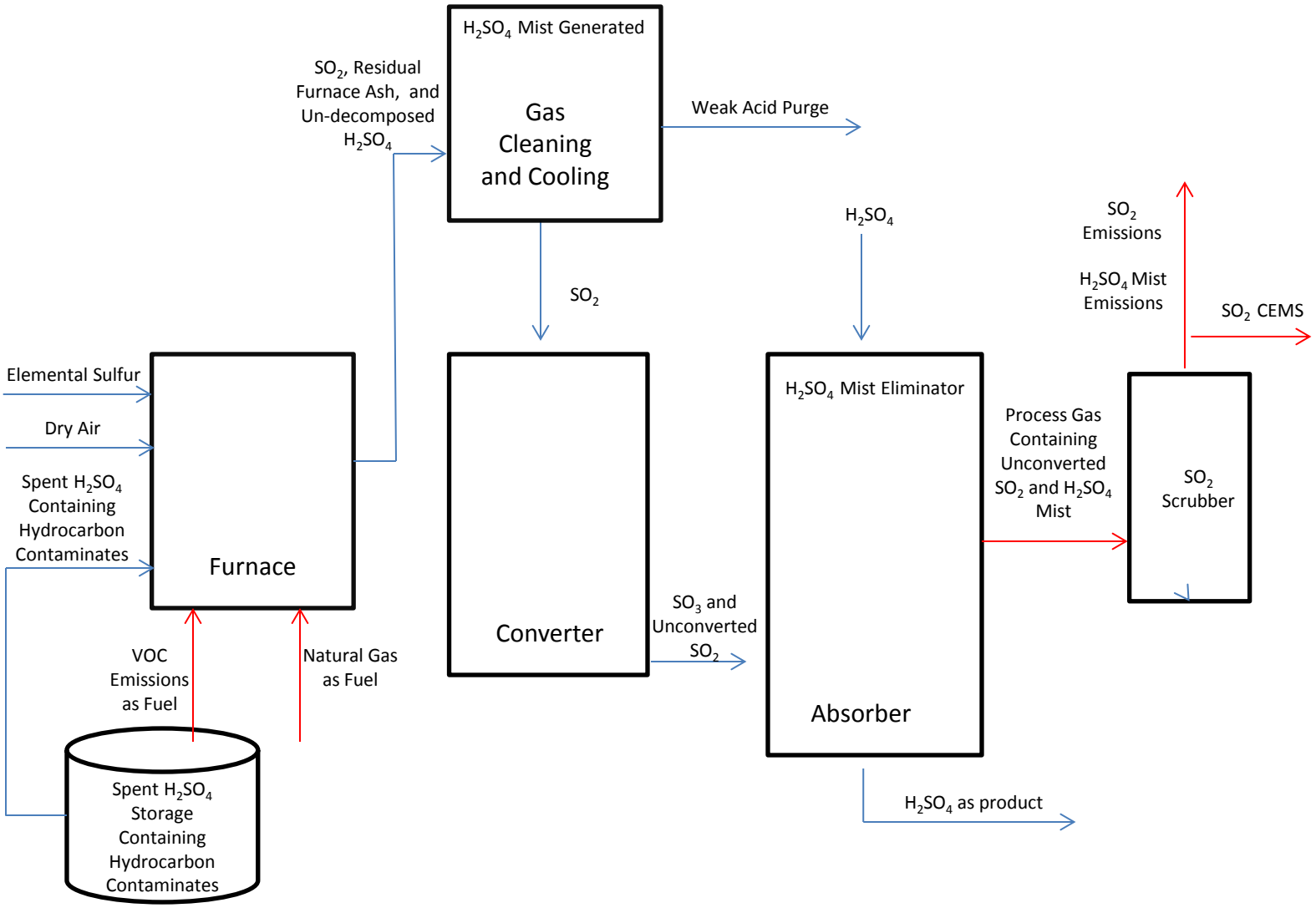


Figure 2 – Basic Regeneration Process used in Plant #2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8P-AR

Honorable Darwin St. Clair Jr., Chairman
Eastern Shoshone Tribe
P.O. Box 396
Ft. Washakie, Wyoming 82514

APR 1 2014

Re: Notification of Consultation and Coordination with Respect to the Proposal of an Air Pollution Control Construction Permit Pursuant to the Tribal Minor New Source Review Permit Program at 40 CFR Part 49 (MNSR)

Dear Chairman St. Clair,

The U.S. Environmental Protection Agency is initiating consultation and coordination with the Eastern Shoshone and Northern Arapaho Tribes with respect to proposal of a construction permit for the existing Chemtrade Refinery Services Inc's sulfuric acid manufacturing plant located on the Wind River Indian Reservation.

In 2009, Chemtrade entered into a consent decree with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at its facilities. With regard to the Chemtrade plant on the Wind River Indian Reservation, the consent decree established sulfur dioxide emission limits and various monitoring, performance testing, recordkeeping, and reporting requirements. In addition, the consent decree requires that Chemtrade obtain a construction approval permit pursuant to either the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 or the MNSR permit program to incorporate the requirements established in the consent decree. The issuance of this construction approval permit will fulfill Chemtrade's obligation with respect to this requirement.

This consultation and coordination process is being conducted based on the *EPA Policy on Consultation and Coordination with Indian Tribes* (www.epa.gov/tribal/consultation/consult-policy.htm). We invite you and your designated consultation representative(s) to participate in this process. Our anticipated timeline for the consultation and coordination period is expected to close 30 days after you receive this letter.

Whether or not you decide to accept this offer for government-to-government consultation, we plan to regularly coordinate and communicate with the Eastern Shoshone and Northern Arapaho Tribes' Environmental Director, Ryan Ortiz, for facilities located within the exterior boundaries of the Wind River Indian Reservation. If you would prefer to designate an alternative representative for communication on permitting matters, please notify us of that person's name and contact information. We will keep the Tribal government informed and will seek your input on this permit.

The EPA welcomes the opportunity to consult and coordinate with the Eastern Shoshone Tribe. If you choose to consult about this permitting action, we will work with your Tribal government to develop a consultation plan including a description of the process we would follow, opportunity for your input, and timeline for the Region to provide feedback and to complete the consultation. We will send a draft consultation plan for your review as soon as practicable after we receive your reply to this letter. The agency's goal will be to ensure that you have an opportunity to provide input into this permitting action either through the formal consultation process or through communications from your staff related to the permit.

Please reply in writing to this letter within the next 30 days if the Eastern Shoshone Tribe would like to engage in consultation on this permitting action. The official EPA contact for this consultation and coordination process is Kathy Paser, a permit engineer on my staff.

Thank you very much for your attention to this matter. Please contact me at (303) 312-6298, or your staff can contact Kathy Paser at (303) 312-6526 or paser.kathleen@epa.gov, if you have any questions on this action. We look forward to hearing from you on this important matter.

Sincerely,

Debra H. Thomas
Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance (OPRA)

cc:

Ryan Ortiz, Environmental Director, Wind River Environmental Quality Commission

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8P-AR

Honorable Darrell O'Neal, Chairman
Northern Arapaho Tribe
P.O. Box 396
Ft. Washakie, Wyoming 82514

APR 1 2014

Re: Notification of Consultation and Coordination with Respect to the Proposal of an Air Pollution Control Construction Permit Pursuant to the Tribal Minor New Source Review Permit Program at 40 CFR Part 49 (MNSR)

Dear Chairman O'Neal,

The U.S. Environmental Protection Agency is initiating consultation and coordination with the Eastern Shoshone and Northern Arapaho Tribes with respect to proposal of a construction permit for the existing Chemtrade Refinery Services Inc's sulfuric acid manufacturing plant located on the Wind River Indian Reservation.

In 2009, Chemtrade entered into a consent decree with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at its facilities. With regard to the Chemtrade plant on the Wind River Indian Reservation, the consent decree established sulfur dioxide emission limits and various monitoring, performance testing, recordkeeping, and reporting requirements. In addition, the consent decree requires that Chemtrade obtain a construction approval permit pursuant to either the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 or the MNSR permit program to incorporate the requirements established in the consent decree. The issuance of this construction approval permit will fulfill Chemtrade's obligation with respect to this requirement.

This consultation and coordination process is being conducted based on the *EPA Policy on Consultation and Coordination with Indian Tribes* (www.epa.gov/tribal/consultation/consult-policy.htm). We invite you and your designated consultation representative(s) to participate in this process. Our anticipated timeline for the consultation and coordination period is expected to close 30 days after you receive this letter.

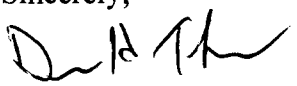
Whether or not you decide to accept this offer for government-to-government consultation, we plan to regularly coordinate and communicate with the Eastern Shoshone and Northern Arapaho Tribes' Environmental Director, Ryan Ortiz, for facilities located within the exterior boundaries of the Wind River Indian Reservation. If you would prefer to designate an alternative representative for communication on permitting matters, please notify us of that person's name and contact information. We will keep the Tribal government informed and will seek your input on this permit.

The EPA welcomes the opportunity to consult and coordinate with the Northern Arapaho Tribe. If you choose to consult about this permitting action, we will work with your Tribal government to develop a consultation plan including a description of the process we would follow, opportunity for your input, and timeline for the Region to provide feedback and to complete the consultation. We will send a draft consultation plan for your review as soon as practicable after we receive your reply to this letter. The agency's goal will be to ensure that you have an opportunity to provide input into this permitting action either through the formal consultation process or through communications from your staff related to the permit.

Please reply in writing to this letter within the next 30 days if the Northern Arapaho Tribe would like to engage in consultation on this permitting action. The official EPA contact for this consultation and coordination process is Kathy Paser, a permit engineer on my staff.

Thank you very much for your attention to this matter. Please contact me at (303) 312-6298, or your staff can contact Kathy Paser at (303) 312-6526 or paser.kathleen@epa.gov, if you have any questions on this action. We look forward to hearing from you on this important matter.

Sincerely,



Debra H. Thomas
Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance (OPRA)

cc:

Ryan Ortiz, Environmental Director, Wind River Environmental Quality Commission

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8P-AR

APR 1 2014

Honorable Ron Oldman, Co-Chairman
Northern Arapaho Tribe
P.O. Box 396
Ft. Washakie, Wyoming 82514

Re: Notification of Consultation and Coordination with Respect to the Proposal of an Air Pollution Control Construction Permit Pursuant to the Tribal Minor New Source Review Permit Program at 40 CFR Part 49 (MNSR)

Dear Chairman Oldman,

The U.S. Environmental Protection Agency is initiating consultation and coordination with the Eastern Shoshone and Northern Arapaho Tribes with respect to proposal of a construction permit for the existing Chemtrade Refinery Services Inc's sulfuric acid manufacturing plant located on the Wind River Indian Reservation.

In 2009, Chemtrade entered into a consent decree with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at its facilities. With regard to the Chemtrade plant on the Wind River Indian Reservation, the consent decree established sulfur dioxide emission limits and various monitoring, performance testing, recordkeeping, and reporting requirements. In addition, the consent decree requires that Chemtrade obtain a construction approval permit pursuant to either the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 or the MNSR permit program to incorporate the requirements established in the consent decree. The issuance of this construction approval permit will fulfill Chemtrade's obligation with respect to this requirement.

This consultation and coordination process is being conducted based on the *EPA Policy on Consultation and Coordination with Indian Tribes* (www.epa.gov/tribal/consultation/consult-policy.htm). We invite you and your designated consultation representative(s) to participate in this process. Our anticipated timeline for the consultation and coordination period is expected to close 30 days after you receive this letter.

Whether or not you decide to accept this offer for government-to-government consultation, we plan to regularly coordinate and communicate with the Eastern Shoshone & Northern Arapaho Tribes' Environmental Director, Ryan Ortiz, for facilities located within the exterior boundaries of the Wind River Indian Reservation. If you would prefer to designate an alternative representative for communication on permitting matters, please notify us of that person's name and contact information. We will keep the Tribal government informed and will seek your input on this permit.

The EPA welcomes the opportunity to consult and coordinate with the Northern Arapaho Tribe. If you choose to consult about this permitting action, we will work with your Tribal government to develop a consultation plan including a description of the process we would follow, opportunity for your input, and timeline for the Region to provide feedback and to complete the consultation. We will send a draft consultation plan for your review as soon as practicable after we receive your reply to this letter. The agency's goal will be to ensure that you have an opportunity to provide input into this permitting action either through the formal consultation process or through communications from your staff related to the permit.

Please reply in writing to this letter within the next 30 days if the Northern Arapaho Tribe would like to engage in consultation on this permitting action. The official EPA contact for this consultation and coordination process is Kathy Paser, a permit engineer on my staff.

Thank you very much for your attention to this matter. Please contact me at (303) 312-6298, or your staff can contact Kathy Paser at (303) 312-6526 or paser.kathleen@epa.gov, if you have any questions on this action. We look forward to hearing from you on this important matter.

Sincerely,

Debra H. Thomas
Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance (OPRA)

cc:

Ryan Ortiz, Environmental Director, Wind River Environmental Quality Commission

December 19, 2013

Kathleen Paser
Air and Radiation Program
U.S. EPA Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

Re: Tribal Minor New Source Review Permit Application for Chemtrade Refinery Services, Inc.

Dear Ms. Paser:

Enclosed please find the synthetic minor air permit application for the Chemtrade Refinery Services Inc. facility located in Riverton, Wyoming, submitted under the 40 CFR Part 49.151 Tribal Minor New Source Review permit program.

The facility is located on the Wind River Indian Reservation and currently operates under the Title V Permit to Operate No. V-WR-00003-2006.00 issued by U.S. EPA Region 8. We understand that the 2009 Consent Decree (Case 3:09-cv-00067) requires the enclosed permit application to be submitted by July 1, 2014, so we believe this submittal is timely.

The attached submission contains trade secrets exempt from public disclosure under Federal laws and regulations.[1] The processes, mechanisms and compounds reflected in the attached Air Permit Application qualify as trade secrets because they are known only to certain individuals at Chemtrade Refinery Services. Moreover, they are not known by Chemtrade Refinery Services' competitors and provide Chemtrade Refinery Services with a business advantage over its competitors.

ENVIRON is submitting two copies of the permit application. One copy is marked "Confidential Business Information" and includes process flow diagrams over which Chemtrade claims protection from disclosure to parties other than U.S. EPA. The second copy of the permit application excludes the process flow diagrams and is unmarked. Consistent with Federal regulations, we have not redacted any information qualifying as air pollution emissions data.

Thank you for your consideration. Please contact me at (510) 420-2540 or Leon Pruett of Chemtrade at (307) 857-4653 with any questions or comments, or if we can provide any additional information to assist your review.

Sincerely,

Steve Branoff
Principal

[1] 5 U.S.C § 552(b)(4); 40 C.F.R. Part 2 (exempting privileged or confidential trade secrets and commercial or financial information from disclosure).

ENVIRON International Corp. 201 California Street, Suite 1200, San Francisco, CA 94111
V +1 415.796.1950 F +1 415.398.5812

environcorp.com

Cc:
Federal Minor NSR Permit Coordinator, U.S. EPA Region 8
Leon Pruett, Chemtrade Refinery Services

Enclosure

PUBLIC / NON-CONFIDENTIAL



Chemtrade Refinery Services Inc.
Riverton, Wyoming Facility

40 CFR Part 49.151 Tribal Minor New Source Review Permit Application

Prepared for:
Chemtrade Refinery Services Inc.
140 Goes In Lodge Road
Riverton, Wyoming 82501

Prepared by:
ENVIRON International Corporation
Emeryville, California

Date:
December 2013

Project Number:
03-32340A

ENVIRON

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Acronyms and Abbreviations

CBI	Confidential Business Information
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
°F	Degrees Fahrenheit
ft^3	Cubic Feet
GIS	General Information and Summary
GPM	Gallons Per Minute
H_2SO_4	Sulfuric Acid, Sulfuric Acid Mist
HAPs	Hazardous Air Pollutants
kPa	Kilopascals
KSP	Koch Sulfur Products
Lb	Pound
MMBtu/hr	Million British Thermal Units Per Hour
MSDS	Material Safety Data Sheet
N_2O	Nitrous Oxide
NOx	Nitrogen Oxides
NSPS	New Source Performance Standards
Pb	Lead
PFD	Process Flow Diagram
ppb	Parts Per Billion
ppm	Parts Per Million
psi	Pounds Per Square Inch
PTE	Potential To Emit
SBS	Sodium Bisulfite Solution
SCC	Standard Classification Code
SO_2	Sulfur Dioxide
SO_3	Sulfur Trioxide
TPD	Tons Per Day
TPY	Tons Per Year
UPA	Ultra-Pure Sulfuric Acid
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
VOL	Volatile Organic Liquid
yd^3	Cubic Yards

1. Introduction And Overview

This application for a synthetic minor permit under the Part 49.151-161 Tribal New Source Review permit program is submitted by the Chemtrade Refinery Services Inc. ("Chemtrade") sulfuric acid manufacturing plant in Riverton, Wyoming to USEPA Region 8. Chemtrade originally submitted a Title V renewal application in May 2006, as per 40 CFR Part 71, Section 71.4(b). Subsequently, in 2009 Chemtrade entered into a Consent Decree with United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe related to air emissions at the facility. A copy of the Consent Decree is included in this application as **Appendix A**. In addition to establishing monitoring, performance testing, recordkeeping, and reporting requirements that have or will become effective in the next few years, this Consent Decree includes new emission limits that limit the facility's potential to emit below the Federal major source thresholds. The purpose of this Part 49.151-161 Tribal New Source Review permit application is to obtain a synthetic minor source permit for the Chemtrade Riverton facility and to incorporate the requirements from the Consent Decree effective no later than the dates prescribed. In addition, this application includes information on facility upgrades to reduce sulfur dioxide (SO_2) emissions in accordance with the Consent Decree. There is no new construction proposed for the facility.

The plant, which occupies 38.3 acres, was constructed by the United States government and began operation in 1958. The plant was purchased by Western Nuclear in 1967 and subsequently by Koch Sulfur Products (KSP) in 1990. On April 17, 2002, ownership, operation, and control of the facility was transferred from KSP to Peak Sulfur, Inc. On December 1, 2005, Peak Sulfur, Inc. Riverton, Wyoming changed to Chemtrade Refinery Services Inc. As currently permitted, the facility is a major source of criteria pollutants located on fee-owned land within the boundaries of the tribal lands of the Wind River Indians. An initial Part 71 Title V permit (V-WR-0003-00) was issued to the facility by the United States Environmental Protection Agency (USEPA), Region 8 on November 1, 2001 and became effective on December 1, 2001. **Table 1-1** summarizes the permit changes that have been made since the issuance of the original Part 71 Title V permit. In accordance with paragraphs 45 and 46 of the Consent Decree, this application for a synthetic minor permit is being submitted to the USEPA by July 1, 2014.

The Riverton, Wyoming Chemtrade operation utilizes two primary processes to manufacture sulfuric acid. The first process is the traditional contact process in which elemental sulfur is oxidized to form sulfur dioxide (SO_2), which is then reacted in the presence of a catalyst to form sulfur trioxide (SO_3). The SO_3 is then reacted with sulfuric acid to form concentrated sulfuric acid of varying strengths. The sulfuric acid can then be used to form ultra-pure acid that is used in the electronics industry.

The second major process employed at the site involves the processing (regeneration) of spent sulfuric acid. The plant receives bulk shipments of spent acid and stores the spent acid onsite in a large above ground storage tank. The spent acid is about 90 percent sulfuric acid and typically contains impurities including about three to seven percent hydrocarbons on average. Because the spent acid is an aqueous/volatile organic compound (VOC) mixture, it is constantly agitated in the tank by a bottom-mounted pump to prohibit phase separation for safety and quality control reasons. The spent acid is processed in a combustion chamber that uses natural

gas as fuel. The resulting SO_2 is then reacted in the presence of a catalyst to form SO_3, which is circulated through sulfuric acid to form new acid of varying strengths.

In addition, two ancillary processes take facility exhaust gas as a feed stream to produce two additional commercial products, sodium bisulfite solution (SBS) and 50 percent sulfuric acid (weak acid). These processes were installed in 2012 to reduce facility SO_2 emissions by January 1, 2013, in accordance with the Consent Decree. These changes did not significantly change the nature or increase the quantity of pollutant discharge; in fact the new systems upgrades actually reduce SO_2 emissions. Chemtrade reported these facility upgrades to USEPA Region 8 in October 2012 and received confirmation in January 2013 that no revisions were required to the facility's National Pollutant Discharge Elimination System (NPDES) permit at that time.[1,2]

Sources of emissions (significant emission units) at the facility include the following:

- Plant #1 Combustion Chamber (EU1)
- Plant #1 Absorbing Tower (EU2)
- Main (Plants #l and #2) Cooling Tower (EU3)
- UPA Cooling Tower (EU4)
- Plant #2 Combustion Chamber (EU5)
- Plant #2 Absorbing Tower (EU6)
- Plant #2 Heater (EU7)
- Spent Acid Storage Tank (EU9a)
- Auxiliary Storage Tank (EU9b)
- Auxiliary Boiler (EU10)

Finally, there are other exempt and trivial emission activities that generate no or negligible amounts of criteria pollutants.

Emission units and facility-wide emissions are listed in **Section 3.0** (Emission Units and Emissions Estimates) and **Form NEW**. Potential to emit (PTE) calculations are presented in **Appendix B** and 2012 actual emissions are presented in **Appendix C**. As currently permitted under Title V, the plant is a major source for criteria pollutants and a minor source of hazardous air pollutants (HAPs). This permit application incorporates Consent Decree emission limits that would make the facility a synthetic minor source for criteria pollutants.

The general structure of this application is as follows:

- Section 1.0 Introduction and Overview

[1] Slack, Dennis. Letter to Stephanie Greek, USEPA Region 8. October 1, 2012.
[2] Ben-Khaled, Monia. USEPA Region 8. "In reference to the October 3, 2012 Letter." Message to Leon Pruett. January 3, 2013. E-mail.

- Section 2.0 General Facility Information
- Section 3.0 Emission Units and Emissions Estimates
- Section 4.0 Proposed Synthetic Minor Source Requirements
- Section 5.0 Other USEPA Region 8 Tribal Minor New Source Review Requirements

USEPA Region 8's Tribal Minor New Source Review application forms are included with this report. Supporting information requested as attachments to the forms are included in this report and its appendices.

The process flow diagrams (PFDs) in **Section 2.6** contain Confidential Business Information (CBI) that Chemtrade requests not be released to the general public. Chemtrade is claiming CBI protection under the guidelines specified in 40 CFR Part 2**,** Subpart B, Confidentiality of Business Information.

1.1 Jurisdiction

On July 1, 2011, the USEPA published the final rule for Review of New Sources and Modifications in Indian Country (40 CFR Part 49.151-161) in the Federal Register at 76 FR 38748. The Chemtrade facility is located in Indian Country within the exterior boundaries of the Wind River reservation and is therefore under the jurisdiction of this rule. Accordingly, Chemtrade is submitting this application for a synthetic minor permit under the Part 49.151-161 Tribal New Source Review permit program and in accordance with the requirements of the Consent Decree.

Chemtrade is assuming, for purposes of this application, that the Wyoming SIP and the Wyoming regulations do not apply to the facility due to its location within an Indian reservation. Chemtrade will continue to comply with all applicable federal regulations identified in this application.

1.2 Request To Include Federally Enforceable SO_2 Limit In Permit

In its initial Part 71 Title V permit application, Chemtrade requested a federally enforceable permit condition that limits the SO_2 emissions from each plant to 2000 parts per million (ppm) based on a 2-hour averaging period. The 2000 ppm SO_2 limit was included in the initial Part 71 Title V permit and we understand that this limit remained in effect until the SO_2 limits in the Consent Decree became effective on January 1, 2013 (see Section 4.0).

2. General Facility Information

This section contains general identifying information for the facility, including the following:

- USEPA Form NEW and Form SYNMIN
- Facility location map
- Detailed facility description
- Facility plot plan
- Detailed process description
- Process Flow Diagrams (PFDs)

Specific details on individual emission units, applicable requirements, compliance demonstration techniques and methodologies, and emission calculations are contained in subsequent sections.

2.1 USEPA Region 8 Federal Minor New Source Review Program in Indian Country Application Forms

The required general facility information including owner, operator, emission unit identifiers and processes, and facility emissions totals are presented in the accompany applications forms **Form NEW** and **Form SYNMIN**. The required attachments specified in these forms are presented in subsequent sections and appendices.

2.2 Facility Location

The facility is located at 140 Goes in Lodge Road in Fremont County, Wyoming. The 38.3-acre site is situated on land owned by Chemtrade and surrounded by the Wind River Indian Reservation. The precise geographic location of the facility is as follows:

Latitude:	42°59’55”	Longitude:	108°24’57”
UTM Northing:	4,763,840 meters	UTM Easting:	710,770 meters

A USGS topographic map showing the location of the facility is attached as **Figure 2-1**.

2.3 Facility Description

Between 1958 and 1959, two 100 ton/day sulfuric acid plants (Plants #1 and #2) were built at the site by the United States government. The acid was to be used for a uranium milling operation. The plants were operated by Susquehanna-Western. In 1967, the plants were purchased by Western Nuclear, which operated the acid plant site. KSP purchased the facility, consisting of two separate sulfuric acid plants, in 1991 from Chemical Marketing Services. On April 17, 2002, ownership, operation, and control of the facility was transferred from KSP to Peak Sulfur, Inc. On December 1, 2005, Peak Sulfur, Inc. Riverton, Wyoming changed to Chemtrade Refinery Services Inc.

Plant #1 uses elemental sulfur to produce sulfuric acid. Plant #2 uses elemental sulfur and spent sulfuric acid (from the petroleum refining or other industries) to produce sulfuric acid. Plant #1 has the capability of producing ultra-pure sulfuric acid (UPA). In 2004, a sodium based SO_2 scrubbing system was added to control SO_2 emissions from Plant #1 and Plant #2.

One storage tank at the site is currently used for storage of spent acid (EU9a). VOC emissions from this tank are controlled via a closed vent system using the Plant #2 combustion chamber (EU5) as the VOC control device. The facility also maintains a permit for a 10.5 MMBtu/hr auxiliary boiler (EU10) that is subject to NSPS Subpart Dc. This boiler is included in the facility's current Part 71 Title V permit.

Significant sources of combustion at the facility include the Plant #1 combustion chamber (EU1), Plant #2 combustion chamber (EU5), the Plant #2 heater (EU7), and the auxiliary boiler (EU10). All of these sources burn natural gas . The Plant #2 combustion chamber burns hydrocarbons contained in the spent acid, including vapors from the spent acid storage tank(s). The VOC content of the spent acid feedstock is variable and typically contains an average of approximately three to seven percent hydrocarbon by weight, on average. This material is burned in the Plant #2 combustion chamber during processing; emissions from the combustion of the hydrocarbon portion of the spent acid are accounted for using emission factors for the combustion of distillate oil in boilers rated at less than 100 MMBtu/hr.

Significant process sources at the facility include two combustion chambers (EU1 and EU5, in which the sulfuric acid manufacturing process begins) and two absorbing towers (Plant #1 tower, EU2; Plant #2 tower, EU6). Additionally, significant emission sources that support operations include two cooling towers (Main cooling tower, EU3; UPA cooling tower, EU4), the spent acid storage tank (EU9a), and the auxiliary storage tank (EU9b).

The facility receives raw materials by truck. Elemental sulfur and spent acid are trucked by various suppliers from which Chemtrade purchases the materials.

Sulfuric acid and sodium bisulfite solution produced at the facility may be stored onsite in one of several above ground storage tanks. These product storage tanks do not contain volatile organic compounds and are insignificant sources of emissions due to the low vapor pressure of the stored liquids.

The facility also has exempt and trivial sources that are used to support quality assurance testing, production, and operation. These include, but are not limited to, all mobile sources, bench scale laboratory activities, internal combustion engines used for landscaping purposes, tanks storing low vapor pressure materials, and tanks in closed loop systems. **Subsections 3.5 and 3.6**, Exempt and Trivial Activities, respectively, present these sources in more detail.

2.4 Facility Plot Plan

The plot plan included as **Figure 2-2** shows a general layout of the facility. The plan shows the location of each emission unit or activity that is present at the facility, with the exception of unpaved roads.

2.5 Process Descriptions

The Chemtrade facility has two sulfuric acid production units that operate differently. **Subsection 2.5.1** contains the process description for Plant #1, which produces sulfuric acid using elemental sulfur as a feedstock. In addition, Plant #1 has one oleum tower and a UPA plant, both of which are closed systems and are not emissions sources. **Subsection 2.5.2** contains a detailed description for Plant #2, which produces sulfuric acid by the regeneration process using spent acid and elemental sulfur as a feedstock. **Subsection 2.5.3** contains a description of the production of sodium bisulfite solution and weak acid, the two processes installed in 2012 to reduce SO_2 emissions in accordance with the Consent Decree. **Subsection 2.5.4** contains a description of the utilities and storage equipment that include significant emission units.

The concentrations, temperature, and other values provided in the process descriptions are approximate and may vary somewhat under normal operating conditions.

2.5.1 Plant #1 Process Description

Plant #1 has two emission units, the combustion chamber (EU1) and the absorbing tower (EU2), that both exhaust through a common stack. Elemental molten sulfur is pumped continuously into the EU1 combustion chamber to produce SO_2. Combustion air is then taken directly from the atmosphere into a blower and discharged to a packed drying tower with 99% sulfuric acid in circulation as a drying agent to remove moisture. The gas leaving the sulfur furnace contains approximately 10% SO_2. This gas stream is cooled in a waste heat boiler[3] to approximately 450 degrees Fahrenheit (°F). A gas bypass around the waste heat boiler allows the reheating of the gas to approximately 800 °F before entering the converter.

The converter contains four beds of catalyst with cooling occurring between each bed. The converter is an enclosed process and not a source of emissions. The gas enters the first bed at 800 °F and 64% of the SO_2 is converted to SO_3**.** The gas then enters the second bed and the conversion increases to 87%**.** The gas enters the third bed and the conversion increases to 96%. The gas enters the fourth and final bed and the conversion increases to 98%. Dilution air is introduced between the second and third beds, and the third and fourth beds. The cooling between the first and second beds is achieved by a heat exchanger that preheats the combustion air going to the sulfur furnace.

The converter exit gas is cooled to between 450 °F and 500 °F in an economizer, preheating the boiler feed water. The cooled gas stream enters the 30% oleum tower where the SO_3 is partially absorbed in a circulating stream of 30% to 35% oleum (fuming sulfuric acid). The effluent gas from the 30% oleum tower is passed through the final absorbing tower (EU2) in a circulating stream of 99% sulfuric acid. The SO_3 combines with water to form additional sulfuric acid. The gas stream is then passed through mist eliminators before entering the bottom of a two-stage SO_2 scrubbing tower. The SO_2 scrubber is designed to reduce the effluent SO_2 concentrations using a soda ash solution.

[3] The waste heat boiler is not a combustion source or a process source and has no emissions. It is a heat exchanger that operates to exchange heat between non-contact cooling water in pipes or tubes and the process gases that pass through the interior.

The 30% oleum system is a closed-loop system to supply SO_3 gas as a feedstock to the high purity sulfuric acid unit, which is also a closed system and is not an emissions source.

2.5.2 Plant #2 Process Description

Plant #2 has three emission units, the combustion chamber (EU5), the absorbing tower (EU6), and the heater (EU7). The process for regeneration of spent sulfuric acid can be divided into two areas: 1) decomposition and gas cleaning; and 2) contact section, where cleaned SO_2 is converted to concentrated sulfuric acid.

2.5.2.1 Decomposition And Gas Cleaning (Regeneration) Section

The design capacity of Plant #2 is 100 TPD of sulfuric acid, expressed as 100% acid. Spent acid is fed to the Plant #2 combustion chamber (EU5) from the 3,000 ton spent acid storage tank (EU9a or EU9b). The spent acid is atomized into the furnace by two air-atomized and one gas-atomized spray nozzles. In the furnace, the spent acid is decomposed at a minimum of 1800 °F to sulfur dioxide, carbon dioxide, oxygen, and water. The decomposition reaction is highly endothermic, requiring a considerable amount of heat. Heat is provided by the burning of natural gas, elemental sulfur, and the hydrocarbon content of the spent acid.

The Plant #2 heater (EU7) is used for cold plant startup, as a means of bringing the catalyst bed to its 800 °F operating temperature. Once the proper temperature is achieved, the heater (EU7) is turned off.

The furnace exit gas is cooled in the waste heat boiler[4], producing about 275 psi saturated steam. The gas leaving the boiler is further cooled by direct contact with a weak sulfuric acid circulation solution in a venturi contactor to about 175 °F. The venturi scrubbing system removes some of the undecomposed sulfuric acid and residual furnace ash.

The cooled gas leaves the venturi scrubber separator and enters two graphite shell and tube gas coolers to cool the gas to a 90 °F temperature range.

The final step of the gas cleaning process is the removal of residual sulfuric acid mist and solids from the gas in a lead tube electrostatic mist precipitator. The electrostatic mist precipitator is a process control device and is not used as a emission control device.

2.5.2.2 Contact Section

The cleaned SO_2 gas from the regeneration section is dried by direct contact with a circulating 99% sulfuric acid stream in the packed drying tower. The dry SO_2 gas passes through an entrainment separator before leaving the tower and entering the main gas blower. Ambient air is dried in the air drying tower by direct contact with 99% sulfuric acid and used to dilute the SO_2 gas entering the main blower to a concentration of about 9.55% to 10.6% SO_2 for SO_2 to SO_3 conversion.

[4] The waste heat boiler is not a combustion source or a process source and has no emissions. It is a heat exchanger that operates to exchange heat between non-contact cooling water in pipes or tubes and the process gases that pass through the interior.

Cold SO_2 gas from the blower is heated to the converter inlet temperature of approximately 800 °F in gas-to-gas heat exchangers. The converter is made up of four beds of catalyst with cooling between each layer to maintain optimum conversion of SO_2 to SO_3. The gas enters the first bed of the converter where 64% of the SO_2 is converted to SO_3. The gas is cooled again before entering the second bed where the conversion increases to 87%**.** The gas is cooled again by adding quench air in the third bed and the conversion is increased to 96%. The gas is again cooled by quench air in the fourth bed where final conversion of SO_2 occurs, increasing conversion to 98%.

Gas leaves the fourth bed of the converter and is cooled in the tube side of the air preheat exchanger while preheating the furnace combustion air. The gas is further cooled in the tube side of the cold heat exchanger before entering the absorbing tower (EU6).

In the packed absorbing tower (EU6), SO_3 contained in the gas is absorbed into a circulating stream of 99% sulfuric acid. The unabsorbed gas passes through mist eliminators before entering the bottom of a two-stage SO_2 scrubbing tower. The SO_2 scrubber is designed to reduce the effluent SO_2 concentrations using a soda ash solution.

2.5.3 Sodium Bisulfite Solution and Weak Acid Production

As described above, in accordance with the Consent Decree requirement to reduce SO_2 emissions by January 1, 2013, in 2012 Chemtrade installed two ancillary processes to take facility exhaust containing SO_2 gas and produce two additional commercial products, sodium bisulfite solution and 50 percent sulfuric acid (weak acid). The sodium bisulfite solution is made from SO_2 gas from the existing scrubbers in the scrubber building. Weak acid is made from an existing stream in the existing gas cleaning building and sends it to a mechanical filtration unit in an attached addition to the gas cleaning building. As with the original sulfuric acid product, the weak acid and sodium bisulfite solution produced at the facility are stored onsite in above ground storage tanks. Like the original sulfuric acid product, these products do not contain volatile organic compounds and are insignificant sources of emissions due to the low vapor pressure of the stored liquids.

2.5.4 Utilities and Storage

2.5.4.1 Cooling Towers

The facility is equipped with two cooling towers that are used to dissipate heat from non-contact cooling water that is used as a heat transfer medium in the processes. The larger cooling tower (main cooling tower) is used in conjunction with the sulfuric acid manufacturing processes carried out in Plant #1 and Plant #2. Water is circulated in pipes and vessels throughout the processes in Plant #1 and Plant #2 to transfer heat from process streams. A primary example of this heat transfer is seen in the acid cooling boilers.

The main cooling tower (EU3) that services Plant #1 and Plant #2 has a flow rate of 3,400 gallons of water per minute (gpm). This water is treated with biocide (to prevent biological growth), an inhibitor (to prevent the buildup of scale and hardness), and possibly small amounts of sulfuric acid to regulate the pH. None of the chemical additives contain compounds that are hazardous air pollutants.

The smaller cooling tower (UPA cooling tower, EU4) is used to service only the UPA portion of Plant #1 and has a flow rate of 1,500 gpm. The same additives, in proportionally smaller volumes, are added to the water used in this cooling tower.

2.5.4.2 Storage Tanks

Two storage tanks (EU9a and EU9b) can be used to store spent acid that is a feedstock for Plant #2, or other materials such as fresh acid or weak acid. Each tank has a storage capacity of approximately 406,000 gallons. Although customarily called "spent acid", this material is actually a dilute acid that has previously been used in an industrial application and typically contains approximately 85% to 95% sulfuric acid (H_2SO_4). Spent acid commonly contains a small percentage of VOC (3% to 7%).

Tank EU9a is the primary spent acid storage tank and is equipped with VOC controls. VOC emissions from EU9a are controlled by the Plant #2 combustion chamber, EU5. EU9b was taken out of service in 2001, but was placed back in service in 2009 to store fresh acid, which contains no VOCs. EU9b can be used for spent acid storage as necessary as a backup or auxiliary tank. Prior to using EU9b to store material with a volatile organic liquid (VOL) vapor pressure higher than 5.2 kPa, VOC emissions from EU9b would be controlled through the Plant #2 combustion chamber.

2.5.4.3 Auxiliary Boiler

The plant owns an auxiliary boiler (EU10), which will provide occasional steam, primarily needed when Plant #1 is not operating. EPA has determined that NSPS Subpart Dc would apply to the operation of this unit, and the applicable requirements from this regulation are included in the existing Part 71 Title V permit. This boiler is included in the facility's current Part 71 Title V permit and will not require any further permitting action prior to installation at the facility.

2.6 Process Flow Diagrams

This subsection contains process flow diagrams (PFDs) that are labeled as Confidential Business Information (CBI) and are not authorized for release to any parties other than USEPA without written permission from Chemtrade. The processes depicted are:

- Plant #1 sulfuric acid manufacturing (**Figure 2-3**)
- Plant #1 Ultra-Pure sulfuric acid manufacturing (**Figure 2-4**)
- Plant #2 sulfuric acid manufacturing (**Figure 2-5**)

3. Emission Units And Emission Estimates

For purposes of this application, the facility is divided into eleven emission units. Details of these emission units are provided in **Table 3-1**. Facility emissions totals are presented in Form NEW and Appendices B and C. Potential to Emit calculation spreadsheets are presented in Appendix B. Actual emissions for 2012 are presented in Appendix C. These documents provide emissions for all applicable regulated air pollutants: particulate matter (PM, PM_{10}, and $PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), lead (Pb), sulfuric acid mist (H_2SO_4) total hazardous air pollutants (HAPs), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and carbon dioxide equivalent (CO_2e).

3.1 Fuel Burning Sources

The facility has four fuel burning emission units:

- Plant #1 Combustion Chamber (EU1)
- Plant #2 Combustion Chamber (EU5)
- Plant #2 Heater (EU7)
- Auxiliary Boiler (EU10)

3.1.1 Plant #1 Combustion Chamber

During normal operation, elemental sulfur is the raw material feedstock to the Plant #1 combustion chamber. The sulfur is burned in the combustion chamber to form SO_2 gas, which is subsequently converted into SO_3 gas over a catalyst in the converter. This SO_3 gas is then reacted with water in an absorber tower to form the sulfuric acid product.

During cold start-ups, before the elemental sulfur feedstock is charged to the plant, the converter catalyst must first be heated to the required reaction temperature of approximately 800°F for the SO_2 to SO_3 conversion reaction to take place. This heating is done by firing natural gas in the combustion chamber in place of sulfur until the entire catalyst bed in the converter reaches the reaction temperature. After the reaction temperature is achieved, the natural gas burner is removed and the sulfur burner is inserted. Once initiated, the reactions which occur to convert the elemental sulfur first into SO_2, then into SO_3, and finally into the sulfuric acid product, are exothermic and self-sustaining.

The furnace is not equipped with a gas flow meter. Therefore, the amount of natural gas used by this emission unit for start-up will be estimated using engineering judgment. It is estimated that on an hourly basis, the Plant #1 combustion chamber uses at most 10,000 cubic feet of natural gas[5].

[5] The heat input rating of Plant #1 is 10.2 MMBtu/hr. The MMBtu/hr rating can be converted to cubic feet of natural gas per hour using a natural gas heat content of 1,020 Btu/cf.

(10.2 MMBtu/hr x 10^6 Btu/MMBtu / 1020 Btu/cf = 10,000 cf/hr)

3.1.2 Plant #2 Combustion Chamber

In processing spent sulfuric acid, Plant #2 requires the combustion of natural gas to provide heat to decompose the spent sulfuric acid. The combustion chamber is equipped with a natural gas burner that has an estimated heat input capacity of approximately 19 MMBtu/hour[6]. In addition, the furnace is equipped with three atomization nozzles that atomize the spent sulfuric acid. One of these nozzles uses natural gas instead of air to atomize the liquid. This provides an additional heat input capacity of approximately 3.8 MMBtu/hour. Thus, the total heat input capacity for natural gas combustion is approximately 22.8 MMBtu/hour.

Plant #2 uses spent sulfuric acid as the primary combustion chamber feedstock to manufacture sulfuric acid. Since the spent acid may contain an average of approximately three to seven percent by weight hydrocarbons, the hydrocarbon from the spent acid can be considered a fuel source. Chemtrade estimates that the maximum combustion rate of hydrocarbon is 48.3 gallons per hour. The accompanying emissions calculations in Appendix B present the maximum hydrocarbon usage (other than natural gas) and the estimated actual hydrocarbon usage (other than natural gas) for this emission unit.

3.1.3 Plant #2 Heater

This emission unit provides heat to Plant #2 during cold startups. The catalyst bed must be heated to approximately 800 °F prior to its use, otherwise the catalyst will be fouled and sufficient conversion of SO_2 to SO_3 will not be accomplished. After the catalyst bed is brought up to operating temperature, processing begins normal operation and the Plant #2 heater is no longer used until the next cold startup. The heat input capacity of this unit (based on the manufacturer's maximum fuel use rating and an assumed heating value of 1,020 Btu/scf for natural gas) is rated at approximately 5 MMBtu/hour.

3.1.4 Auxiliary Boiler

The facility owns an auxiliary boiler (EU10) that can provide steam when needed. This boiler is included in the facility's current Part 71 Title V permit. This boiler is rated 10.5 MMBtu/hour and will be operated if needed for steam supply. The auxiliary boiler is needed primarily to maintain the UPA production of Plant #1 during shutdown of Plant #2. Plant #1 does not produce enough steam by itself to maintain UPA production and normally depends on Plant #2 to provide excess steam to meet the need.

3.2 Process Sources

The facility has the following process sources:

- Plant #1 Combustion Chamber (EU1)
- Plant #1 Absorbing Tower (EU2)
- Plant #2 Combustion Chamber (EU5)
- Plant #2 Absorbing Tower (EU6)

[6] In 1987 when Plant #2 was converted to have the ability to burn spent acid, John Zink Co. provided a gas pressure versus heat release curve from which it is estimated that at 10 psig the heat release is 15.1 MMBtu/hr. Assuming a combustion efficiency of 80 percent, the heat input capacity is estimated to be approximately 19 MMBtu/hr.

3.2.1 Plant #1

Plant #1 is comprised of the equipment required to manufacture sulfuric acid from elemental sulfur. The major pieces of equipment included in Plant #1 are the sulfur furnace combustion chamber (EU1), sulfur storage tank, sulfur pit, waste heat boiler, heat exchanger, converter, economizer, drying tower, absorbing tower (EU2), pump tanks, 30% oleum tower, tail gas scrubber, and product acid cooler. All of the pollutants generated by EU1 and EU2 are vented through the Plant #1 stack located on the tail gas scrubber. The process is essentially a closed system with the exception of this exhaust point. The process description and PFD in **Section 2.0** provide more detail with respect to the Plant #1 equipment and how it is interconnected.

Another major component of Plant #1 is the UPA plant. This facility removes all contaminants from industrial grade sulfuric acid to levels less than 100 parts per billion (ppb). The resulting UPA product is 96 percent strength sulfuric acid. The UPA facility is not a significant source of air pollutants. The laboratory activities are the primary sources of emissions, all of which are exempt for Part 49.151-161 permitting purposes. The UPA plant is a closed loop process. Consequently, the UPA plant is not included as a separate emission unit in this application.

The facility receives elemental sulfur by tank truck from various sources. The material is off-loaded into the sulfur pit (RT-32) and storage tank (RT-31) from which it enters the sulfur burner. The resulting SO_2 is then carried through the remainder of the process to manufacture sulfuric acid and oleum.

Plant #1 is designed to produce 100 tons of product per day, expressed as 100% sulfuric acid. This corresponds to approximately 30 tons of elemental sulfur processed through the plant. Other than the small amount of natural gas used by the sulfur burner during cold startup (see **Section 3.1.1**), elemental sulfur is the only raw material used in Plant #1.

3.2.2 Plant #2

Plant #2 is comprised of the equipment required to manufacture sulfuric acid from spent sulfuric acid and elemental sulfur. The major pieces of equipment that comprise Plant #2 include the combustion chamber (EU5), gas cleaning building, waste heat boiler, heat exchangers, electrostatic precipitator, converter, drying tower, pump tanks, absorbing tower (EU6), and tail gas scrubber. The Plant #2 heater (EU7) is included in **Section 3.1.2**. All of the pollutants generated by EU5 and EU6 are vented through the main Plant #2 stack located on the tail gas scrubber. The process is essentially a closed system with the exception of this exhaust point. The process description and PFD in **Section 2.0** provide more detail with respect to the Plant #2 equipment and how it is interconnected.

Spent sulfuric acid and elemental sulfur is received by truck. The spent acid is offloaded to the spent sulfuric acid tank from which it is piped directly to the Plant #2 furnace. Elemental sulfur is piped directly to the Plant #2 furnace. For safety and quality control reasons, the spent sulfuric acid tank is continuously agitated to keep the hydrocarbon and aqueous components of the spent acid in suspension. The furnace is equipped with a natural gas burner and three atomization nozzles. There are three air atomization nozzles for spent burning. The gases (primarily SO_2) that result from the Plant #2 combustion chamber proceed through the closed

process to form sulfuric acid. As with the product from Plant #1, the product is stored or loaded into tank trucks for delivery to customers.

Plant #2 is designed to produce 100 tons of sulfuric acid per day, expressed as 100% sulfuric acid. Depending on the sulfuric acid content of the spent acid feedstock, this corresponds to approximately 110 tons of spent sulfuric acid processed through the plant per day on average, although production rates will vary.

3.3 Cooling Towers

The two cooling towers at the facility are designated as the main cooling tower (EU3) and the UPA cooling tower (EU4). They are induced draft cooling towers, meaning that the draft is mechanically assisted. Non-contact cooling water that is used to draw heat away from the processes in Plant #1, Plant #2, and the UPA portion of Plant #1 is cascaded through or over the cooling tower apparatus to dissipate heat to the atmosphere. As this occurs, particulate matter in the form of mist or "drift" leaves the cooling towers and enters the atmosphere. This material contains entrained minerals and small amounts of the additives used to condition the non-contact cooling water (biocides, inhibitors, pH adjusters). Deposition of the drifted material and subsequent evaporation can leave deposits of these materials.

The larger of the two cooling towers, the main cooling tower (EU3) is used to cool non-contact cooling water from Plant #1 and Plant #2; it has a flow rate of 3,400 gpm. The smaller cooling tower, the UPA cooling tower (EU4), with a flow rate of 1,500 gpm, is used to cool the non-contact cooling water from the UPA portion of Plant #1.

Particulates are emitted from the cooling towers and are assumed to be in the size range of PM_{10}.

3.4 Storage Tanks

Two storage tanks (EU9a and 9b), approximately 406,000 gallons each, can store spent acid used as feedstock for Plant #2, or other materials such as fresh acid or weak acid. The auxiliary storage tank (EU9b) is a redundant tank that can be used as needed for storage or when EU9a is out of service. VOC emissions from EU9a, which currently stored spent acid, are controlled by the Plant #2 combustion chamber, EU5. EU9b was taken out of service in 2001, but was placed back in service to store fresh acid in 2009. If this storage tank is used to store spent acid, VOC emissions will be controlled by the Plant #2 combustion chamber, EU5.

3.5 Exempt Sources

Certain equipment and activities are specifically exempt from Part 49.151-161 permitting requirements. **Table 3-2** presents those equipment and activities at the facility that are specifically exempt because they are listed in Section 49.153(c).

3.6 Trivial Sources

Table 3-3 lists equipment and activities at the facility that generate no or negligible amounts of criteria pollutants. These include, but are not limited to, tanks storing low vapor pressure materials and tanks in closed loop systems. These are not emission units because they have

no or trivial level emissions; therefore, these sources are not included in the facility-wide emissions totals.

4. Proposed Synthetic Minor Source Requirements

Chemtrade entered into a Consent Decree with the United States of America, the States of Louisiana and Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe which was filed in the United States District Court for the Northern District of Ohio Western Division in January 2009. The Consent Decree includes new emission limits and various monitoring, performance testing, recordkeeping, and reporting requirements that have or will become effective at the facility within the next few years.

The Consent Decree includes requirements to limit SO_2 emissions on an hourly and annual basis that became effective on January 1, 2013. These emission limits reduce the facility's potential to emit SO_2 to below the Federal major source threshold. Since the facility's potential to emit is below the Federal major source thresholds for all other regulated air pollutants, the facility would become a synthetic minor source with the incorporation of these SO_2 emission limits into a Federal permit. The Consent Decree also states that NSPS Subpart H (Standards of Performance for Sulfuric Acid Plants) applies to the facility and requires the facility to comply with the requirements of the subpart, including limits on sulfuric acid mist and opacity, by January 1, 2013. The purpose of this Part 49.151-161 Tribal New Source Review permit application is to obtain a synthetic minor source permit for the Chemtrade Riverton facility by incorporating the requirements of the Consent Decree into a Federal pre-construction permit, as prescribed by the Consent Decree.

A detailed list of the Consent Decree requirements that the facility is requesting to include in its synthetic minor source permit is included in this section. This section also fulfills the Form SYNMIN requirement to list the proposed testing, monitoring, recordkeeping, and reporting requirements to be used to demonstrate and assure compliance with the proposed limitations.

4.1 Consent Decree Requirements Proposed For Incorporation Into Permit

Requirement from Consent Decree[1,2]	Emission Units Affected	Compliance Demonstration Method
SO_2 Limits		
16. Riverton 1 Sulfuric Acid Plant. By no later than January 1, 2013, Chemtrade shall comply with the following SO_2 emission requirements at the Riverton 1 Sulfuric Acid Plant: a. Short-Term Limit: 1.9 lb/ton. b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours. c. Mass Cap: 35.0 tons/year. Chemtrade shall commence monitoring by January 1, 2013, but shall have until January 1, 2014, to meet this limit, and until January 15, 2014, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.	EU1	• Monitoring with SO_2 CEMS; • Monitoring of stack O_2 concentration and stack volumetric flow rate; • Implementation of Appendix D in the SO_2 CEMS Plan; and • Performance testing described below.
17. Riverton 2 Sulfuric Acid Plant. By no later than January 1, 2013, Chemtrade shall comply with the following SO_2 emission requirements at the Riverton 2 Sulfuric Acid Plant: a. Short-Term Limit: 2.1 lb/ton. b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours. c. Mass Cap: 38.0 tons/year. Chemtrade shall commence monitoring by January 1, 2013, but shall have until January 1, 2014, to meet this limit and until January 15, 2014, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.	EU5	• Monitoring with SO_2 CEMS; • Monitoring of stack O_2 concentration and stack volumetric flow rate; • Implementation of Appendix E in the SO_2 CEMS Plan; and • Performance testing described below.

Requirement from Consent Decree[1,2]	Emission Units Affected	Compliance Demonstration Method
Acid Mist Limits		
Chemtrade shall comply with the NSPS, Subpart H sulfuric acid mist emission limitation of 0.15 lb/ton of 100% Sulfuric Acid Produced, as set forth at 40 C.F.R. § 60.83, for the Riverton 1 and 2 plants by January 1, 2013 Compliance with the acid mist limit shall be demonstrated using the performance test required by Paragraph 34. The acid mist performance tests required under Paragraph 34 may be undertaken at the same time as the performance tests for the SO_2 limits required under Paragraph 35 and scheduled under Paragraph 33.	EU2, EU6	Performance testing described below
NSPS Applicability		
25. The Riverton 1 and 2 plants shall be considered an affected facility for purposes of NSPS 40 C.F.R. Part 60, Subpart H, by January 1, 2013. After such date, each Sulfuric Acid Plant shall comply with all applicable requirements for affected facilities under the NSPS 40 C.F.R. Part 60, Subparts A and H, or with the requirements of the Consent Decree (if more stringent). A continuous opacity monitoring system ("COMS") may be used for monitoring compliance with the opacity limit found at 40 C.F.R. § 60.83(a)(2). Satisfactory compliance with notice and compliance demonstration obligations set forth in the Consent Decree shall be deemed to satisfy all applicable initial notification and compliance demonstration requirements of NSPS Subparts A & H	EU1, EU2, EU5, EU6	• Compliance with existing Title V permit conditions related to 40 CFR 60 Appendix A (Conditions II.G.(a) and (b)); • Compliance with emission limits, emissions monitoring, performance testing, notification and reporting requirements described in this Table (including compliance with the SO_2 CEMS Plan); and • Compliance with the opacity requirements described in Table 5-2.
27. Best Practices. At all times, including periods of Startup, Shutdown, and Malfunction, Chemtrade shall to the extent practicable maintain and operate the Riverton 1 and Riverton 2 Sulfuric Acid Plants, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.	EU1, EU2, EU5, EU6	Implement the Operations and Maintenance Plan described below.

Requirement from Consent Decree[1,2]	Emission Units Affected	Compliance Demonstration Method
Emissions Monitoring		
28. Installation, Certification, and Calibration. By no later than January 1, 2013, Chemtrade shall install, certify, and calibrate an SO_2 continuous emissions monitoring system ("CEMS") capable of directly measuring the SO_2 emission rate expressed as lb/ton of 100% Sulfuric Acid Produced.	EU1, EU5	Implementation of the SO_2 CEMS Plan described below.
29. Responsibility for Emissions Monitoring. After January 1, 2013, Chemtrade shall operate and maintain the CEMS.	EU1, EU5	Implementation of the SO_2 CEMS Plan described below.
30. Continuous Operation of CEMS and Minimization of CEMS Downtime. After January 1, 2013, and except during CEMS breakdowns, repairs, calibration checks, and zero span adjustments, the CEMS shall be in continuous operation during all Operating Periods and Shutdowns to demonstrate compliance with the SO_2 emission limits. Chemtrade shall take all steps necessary to avoid CEMS breakdowns and minimize CEMS downtime. This shall include, but is not limited to, operating and maintaining the CEMS in accordance with best practices and maintaining an on-site inventory of spare parts or other supplies necessary to make rapid repairs to the equipment.	EU1, EU5	Implementation of the SO_2 CEMS Plan described below.
31. SO_2 CEMS Plans. CEMS Plans that describe how Chemtrade shall monitor compliance with the SO_2 emission limits, including the methodology that they shall use to demonstrate compliance in the event of CEMS downtime lasting longer than 24 hours, are attached in Appendices D and E of the Consent Decree. On and after January 1, 2013, Chemtrade shall implement the CEMS Plans in Appendices D and E of the Consent Decree.	EU1, EU5	Implementation of the SO_2 CEMS Plan by January 1, 2013.
32. Modified or Alternative CEMS Plans for Riverton 2 Sulfuric Acid Plant. Chemtrade may secure relief from the requirement, in the applicable CEMS Plan, to install a Converter Inlet SO_2 Analyzer by complying with the provisions of this Paragraph. A decision to seek relief from the requirement to install a Converter Inlet SO_2 Analyzer is within the discretion of Chemtrade. a. Basis for Proposing a CEMS Plan that Does not Include the Use of a Converter Inlet SO_2 Analyzer. Chemtrade may propose a CEMS Plan that does not include the use of a Converter Inlet SO_2 Analyzer ("Alternative CEMS Plan") only if all of	EU5	Submission of the appropriate proposal (for a Modified CEMS Plan) or report (for an Alternative CEMS Plan) to U.S. EPA and the Northern Arapaho Tribe.

Requirement from Consent Decree[1,2]	Emission Units Affected	Compliance Demonstration Method
the following conditions are met: i. Chemtrade has undertaken best efforts to use a Converter Inlet SO_2 Analyzer in compliance with the requirements of the applicable CEMS Plan; ii. Either the use of a Converter Inlet SO_2 Analyzer is technically infeasible or a Converter Inlet SO_2 Analyzer cannot be configured in such a way as to allow Chemtrade to measure SO_2 converter inlet concentration with sufficient accuracy; and iii. Modifications to the applicable CEMS Plan and/or Performance Specifications for the Converter Inlet SO_2 Analyzer would not allow Chemtrade to alleviate the conditions that resulted in technical infeasibility or inaccuracy in measurement. b. Modified CEMS Plan. If modifications to the applicable CEMS Plan and/or Performance Specifications for the Converter Inlet SO_2 Analyzer will allow Chemtrade to use a Converter Inlet SO_2 Analyzer to measure converter inlet SO_2 concentration, Chemtrade shall submit a proposal to U.S. EPA and the Northern Arapaho Tribe, in the manner set forth in Section XV (Notices) of the Consent Decree, to modify the applicable CEMS Plan rather than propose an alternative that does not include the use of a Converter Inlet SO_2 Analyzer. U.S. EPA, after consultation with the Northern Arapaho Tribe, will either approve or disapprove, in whole or in part, the proposed modification(s). c. Technical Infeasibility and Alternative CEMS Plan Report. If all of the conditions in Subparagraph 32.a are satisfied, Chemtrade may submit a Technical Infeasibility and Alternative CEMS Plan Report, to U.S. EPA and the Northern Arapaho Tribe, in the manner set forth in Section XV (Notices) of the Consent Decree, that includes detailed descriptions of the following: i. The efforts that Chemtrade undertook to use a Converter Inlet SO_2 Analyzer in compliance with the applicable CEMS Plan, including a detailed description of all of the efforts Chemtrade and its equipment vendors, contractors, and/or consultants undertook to install, certify, maintain, and/or operate the Converter Inlet SO_2 Analyzer, together with any supporting documentation;		

Requirement from Consent Decree[1,2]	Emission Units Affected	Compliance Demonstration Method
ii. All potential remedies considered by Chemtrade and/or its equipment vendors, contractors, and/or consultants to install, certify, maintain, and/or operate a Converter Inlet SO_2 Analyzer; iii. The relevant events and considerations that led Chemtrade to conclude that either the use of a Converter Inlet SO_2 Analyzer was technically infeasible or a Converter Inlet SO_2 Analyzer could not be configured in such a way to allow Chemtrade to measure SO_2 converter inlet concentration with sufficient accuracy, including all related correspondence with equipment vendors, contractors, and/or consultants, and any other supporting documentation; iv. The modifications to the applicable CEMS Plan and/or Performance Specifications that Chemtrade considered to evaluate whether the conditions that resulted in technical infeasibility or measurement inaccuracy could be alleviated; v. The alternative plan that Chemtrade proposes for measuring converter inlet SO_2 concentration or otherwise measuring the emission rate expressed as lb/ton ("Alternative CEMS Plan"); vi. Justifications for the proposed Alternative CEMS Plan; vii. Procedures that Chemtrade proposes for verifying the accuracy and performance of the proposed Alternative CEMS Plan; and viii. Any other information that Chemtrade deems relevant. d. U.S. EPA Review and Approval of Alternative CEMS Plans. Chemtrade shall provide all information requested by U.S. EPA or the Northern Arapaho Tribe after Chemtrade's submission of the Technical Infeasibility and Alternative CEMS Plan Report. U.S. EPA, after consultation with the Northern Arapaho Tribe, will either approve or disapprove, in whole or in part, Chemtrade's proposed Alternative CEMS Plan. If U.S. EPA plans to disapprove all of part of a proposed Alternative CEMS Plan, U.S. EPA first will consult with Chemtrade to determine if a mutually-agreeable CEMS Plan (whether it be the original CEMS Plan attached to this Decree, a Modified CEMS Plan, or an Alternative CEMS Plan) can be agreed to.		

Requirement from Consent Decree[1,2]	Emission Units Affected	Compliance Demonstration Method
After consultation with Chemtrade, U.S. EPA will require Chemtrade to implement either the original CEMS Plan, a U.S. EPA-approved Modified CEMS Plan, or a U.S. EPA-approved Alternative CEMS Plan. In no event will U.S. EPA approve an Alternative CEMS Plan it deems to be inferior to the monitoring procedures specified in 40 C.F.R. Part 60, Subpart H. The basis for any decision by U.S. EPA to disapprove, in whole or in part, any Alternative CEMS Plan will be the failure to satisfy one or more of the conditions in Subparagraph 32.a. Within thirty (30) days after receipt of a U.S. EPA notice disapproving an Alternative CEMS Plan or directing Chemtrade to implement any CEMS Plan with which Chemtrade disagrees, Chemtrade must invoke Section XI of the Consent Decree (Dispute Resolution) or will be deemed to have accepted U.S. EPA's decision. e. Chemtrade shall implement any Modified or Alternative CEMS Plans that it proposes under Subparagraphs 32.b or 32.c unless and until: (i) a different Plan is mutually agreed to by Chemtrade and U.S. EPA (after consultation with the Northern Arapaho Tribe) and Chemtrade consents to implement this Plan; or (ii) Chemtrade is required, by Court Order issued through dispute resolution proceedings (Section XI of the Consent Decree), to implement a Plan. f. Timing for Proposing a Modified or Alternative CEMS Plan. If Chemtrade seeks to propose a Modified or Alternative CEMS Plan, Chemtrade shall submit its request to U.S. EPA and the Northern Arapaho Tribe, in the manner set forth in Section XV (Notices) of the Consent Decree, by no later than four (4) months prior to the compliance dates for the Short-Term SO_2 Limits in Paragraphs 16 and 17. In the request, Chemtrade shall comply with the requirements of Paragraph 32.b (for a Modified CEMS Plan) or 32.c (for an Alternative CEMS Plan).		

Notes:

[1]The corresponding paragraph number from the Consent Decree is identified at the beginning of each requirement listed in this table

[2]See below for definitions of key terms used in the requirements listed in this table

Definitions:

"100% Sulfuric Acid Produced" shall mean the stoichiometric quantity of sulfuric acid that would be produced at a Covered Sulfuric Acid Plant if all sulfur trioxide (SO3) exiting the converter were used to produce sulfuric acid monohydrate. For purposes of this definition, scrubber byproduct (if any) shall be considered to be included in "100% Sulfuric Acid Produced."

"Acid mist" shall mean the pollutant sulfuric acid mist as measured by Method 8 of 40 C.F.R 60, Appendix A consistent with 40 C.F.R. § 60.81(b).

"Consent Decree" or "Decree" shall mean the Consent Decree between Chemtrade Logistics (US), Inc., Chemtrade Refinery Services Inc., and Marsulex, Inc. and the United States of America, the State of Louisiana, the State of Ohio, the Oklahoma Department of Environmental Quality, and the Northern Arapaho Tribe.

"Converter Inlet SO2 Analyzer" shall mean an analyzer that measures the concentration of SO2 that is fed into the first bed. of the converter at a Sulfuric Acid Plant.

"Day" shall mean a calendar day unless expressly stated to be a working day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in whole or in part by poor maintenance or careless operation.

"Mass Cap" shall mean the maximum amount of SO_2 emissions for a Sulfuric Acid Plant expressed in tons of sulfur dioxide emitted during each 12-month period consisting of the most recently concluded month and the eleven months immediately preceding it. Compliance with the Mass Cap shall be calculated in accordance with the CEMS Plans attached to this Consent Decree. as Appendices A-E. In determining compliance with the Mass Cap, all SO_2 emissions from a Covered Sulfuric Acid Plant, including emissions during times of Startup, Shutdown, and Malfunction, shall be counted.

"Month" shall mean calendar month.

"Operating Periods" shall mean periods during which Sulfur or Sulfur-Bearing Compounds are being fed to the furnace

"Short-Term Limit" shall mean a 3-hour rolling average sulfur dioxide emission limit expressed in terms of pounds of sulfur dioxide emitted per ton of 100% Sulfuric Acid Produced ("lb/ton"); compliance with the Short-Term Limit shall be calculated in accordance with the CEMS Plans attached to theis Consent Decree as Appendices A-G. The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction.

"Shutdown" shall mean the cessation of operation of a Covered Sulfuric Acid Plant for any reason. Shutdown begins at the time the feed of Sulfur or Sulfur-Bearing Compounds to the furnace ceases and ends at the earlier of three hours later or when the flow rate on the stack volumetric flow rate analyzer falls below 10% of span.

"Startup" shall mean, with respect to any Covered Sulfuric Acid Plant, the period of time beginning when the feed of Sulfur or Sulfur-Bearing Compounds to the furnace commences and lasting for no more than 24 hours.

"Sulfur or Sulfur-Bearing Compounds" shall mean elemental sulfur, alkylation or other spent sulfuric acids, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge, but they exclude hydrocarbon and conventional fossil fuels such as natural gas or fuel oil.

"Sulfuric Acid Plant" shall mean a process unit engaged in the production of sulfuric acid and related products using the contact process.

4.2 Additional NSPS Subpart H Requirements Proposed to be Added

Regulatory Requirement	Emission Unit	Compliance Demonstration Method
40 CFR 60.83(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which: (2) Exhibit 10 percent opacity, or greater.	EU2, EU6	U.S. EPA Method 9.
40 CFR 60.85(b) The owner or operator shall determine compliance with the SO_2, acid mist, and visible emission standards in §§60.82 and 60.83 as follows: (1) The emission rate (E) of acid mist or SO_2 shall be computed for each run using the following equation: E=(CQsd)/(PK) where: E=emission rate of acid mist or SO_2kg/metric ton (lb/ton) of 100 percent H2SO4produced. C=concentration of acid mist or SO_2, g/dscm (lb/dscf). Qsd=volumetric flow rate of the effluent gas, dscm/hr (dscf/hr). P=production rate of 100 percent H_2SO_4, metric ton/hr (ton/hr). K=conversion factor, 1000 g/kg (1.0 lb/lb). (2) Method 8 shall be used to determine the acid mist and SO_2 concentrations (C's) and the volumetric flow rate (Qsd) of the effluent gas. The moisture content may be considered to be zero. The sampling time and sample volume for each run shall be at least 60 minutes and 1.15 dscm (40.6 dscf). (3) Suitable methods shall be used to determine the production rate (P) of 100 percent H_2SO_4 for each run. Material balance over the production system shall be used to confirm the production rate. (4) Method 9 and the procedures in §60.11 shall be used to determine opacity.	EU1, EU2, EU5, EU6	Associated recordkeeping and reporting required in 40 CFR 60 Subpart A.

Regulatory Requirement	Emission Unit	Compliance Demonstration Method
40 CFR 60.83(c) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section: (1) If a source processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen, the following procedure may be used instead of determining the volumetric flow rate and production rate: (i) The integrated technique of Method 3 is used to determine the O_2 concentration and, if required, CO_2 concentration. (ii) The SO_2 or acid mist emission rate is calculated as described in §60.84(d), substituting the acid mist concentration for C_s as appropriate.	EU1, EU2, EU5, EU6	Associated recordkeeping and reporting required in 40 CFR 60 Subpart A

5. Other USEPA Region 8 Tribal Minor New Source Review Requirements

This section contains the Air Quality, Endangered Species Act, and National Historic Preservation Act reviews required as described in the EPA Region 8 Application for New Construction (Form NEW).

5.1 Air Quality Review

The purpose of this permit application is to comply with the permit application submittal requirement of the Consent Decree. There is no new construction proposed for the facility; therefore, no new impacts on air quality are expected. Further, while the facility is currently classified as a Title V major source, this permit application requests a synthetic minor source permit to limit the facility's potential to emit to below the major source thresholds. Therefore, this permit application proposes to reduce potential air quality impacts.

5.2 Endangered Species Act Review

There is no new construction proposed for the facility; therefore, no new impacts on endangered species are expected.

5.3 National Historic Preservation Act Review

There is no new construction proposed for the facility; therefore, no new impacts on cultural resources are expected.

Tables

Table 1-1
Summary of Permit Changes
Chemtrade Refinery Services Inc.
Riverton, Wyoming

Date	Type of Revision	Section Number, Condition Number	Description of Revision
November 1, 2001	Initial Permit Issued		
May 24, 2002	Administrative permit amendment	Section I.A	Change in facility ownership from Koch Sulfur Products Company to Peak Sulfur, Inc., and change in responsible official to William J. Sichko, Jr.
April 12, 2004	Administrative permit amendment and minor permit modification	Section I.A	Changed company contact and revised process description
April 12, 2004	Administrative permit amendment and minor permit modification	Section I.B, Table 1	Updated emission unit descriptions
April 12, 2004	Administrative permit amendment and minor permit modification	Section III.A(b)	Added language to the permit shield
February 17, 2006	Administrative permit amendment	Section I.A	Name change from Peak Sulfur, Inc. Riverton, Wyoming facility to Chemtrade Logistics Chemtrade Refinery Services, Inc. Updated company contact information.
September 29, 2011	First Renewal Permit Issued		

Table 3-1
Emission Units
Chemtrade Refinery Services Inc.
Riverton, Wyoming

Emission Unit ID #	Emission Unit Description	Fuel/Feedstock
EU1	Plant #1 Combustion Chamber P1 Sulfur Nozzle P1 Natural Gas Burner	Elemental Sulfur Natural Gas
EU2	Plant #1 Absorbing Tower	SO_3 Gas Stream
EU3	Main Cooling Tower (Serves Plant #1 and Plant #2)	Non-contact Cooling Water
EU4	Plant #1 UPA Cooling Tower	Non-contact Cooling Water
EU5	Plant #2 Combustion Chamber P2 Spent Acid Nozzles P2 Natural Gas Burner	Spent Acid Natural Gas
EU6	Plant #2 Absorbing Tower	SO_3 Gas Stream
EU7	Plant #2 Heater	Natural Gas
EU9a	Spent Acid Storage Tank	Spent Sulfuric Acid or Other Material
EU9b	Auxiliary Storage Tank	Spent Sulfuric Acid or Other Material
EU10	Auxiliary Boiler	Natural Gas

Table 3-2
Exempt Sources
Chemtrade Refinery Services Inc.
Riverton, Wyoming

Unit Number	Exempt Sources Listed in 40 CFR Part 49.153(c)[1]
1	Mobile sources (including employee vehicles, contractor vehicles, truck traffic, front end loader(s), and other mobile industrial equipment)
2	Ventilating units for comfort that do not exhaust air pollutants into the ambient air from any manufacturing or other industrial processes
3	Non-commercial food preparation
4	Consumer use of office equipment and products
5	Janitorial services and consumer use of janitorial products
6	Internal combustion engines used for landscaping purposes (lawn mowers, edgers, etc.)
7	Bench scale laboratory activities, except for laboratory fume hoods or vents

Note:

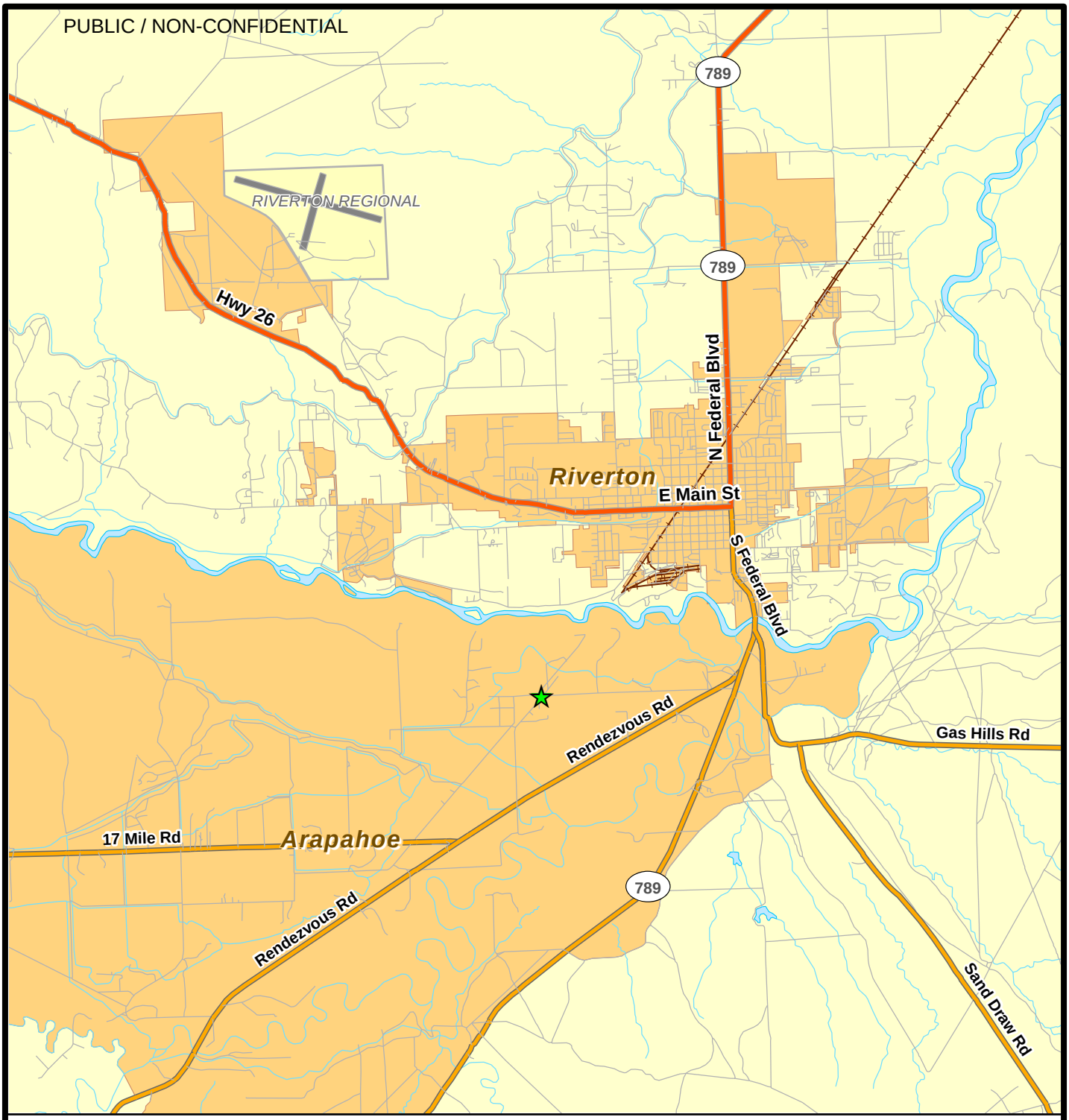
[1] 40 CFR Part 49.153(c) states that these specific emissions units and activities are exempt from the permitting program. Chemtrade is providing a list of this activities at the facility for informational purposes only.

Table 3-3
Trivial Sources
Chemtrade Refinery Services Inc.
Riverton, Wyoming

Unit Number	Trivial Activities	Reason
1	Soda Ash Storage and Handling	Soda ash delivered by truck pneumatically, silo completely enclosed with the exception of silo vent
2	Lime Handling and Storage	Lime delivered by truck, silo completely enclosed and equipped with baghouse
3	Spent Acid Off-loading	Low vapor pressure material in enclosed space
4	Sulfur storage tank and sulfur storage pit	Low vapor pressure material in enclosed space
5	Sulfuric acid storage and loading (storage tanks ranging in size from about 50 tons to 3,000 tons)	Low vapor pressure material in enclosed space
6	One (1) 30% oleum tower	Closed loop system in place - no emissions
7	Three (3) Ultra-Pure storage tanks	Low vapor pressure material in enclosed space
8	One (1) nitrate storage tank	Low vapor pressure material in enclosed space
9	Process and circulation pump tanks	Low vapor pressure material in enclosed space
10	Mineral spirits parts cleaner	Small source with small make-up
11	250 gallon turbine oil storage tank	Low vapor pressure; small volume
12	Barrels of clean oil	Low vapor pressure; small volume
13	Paint cabinet with miscellaneous closed containers of paint, thinner, etc.	Closed containers
14	Miscellaneous 5-gallon buckets of hydraulic oil	Low vapor pressure; small volume
15	Laboratory activities	Small scale/volume; low vapor pressure
16	Cabinet of miscellaneous containerized chemicals	Closed containers
17	Welding and soldering equipment	Activity scale
18	Air compressors and pneumatic tools	Electric motors; no pollutants
19	Battery charging	Small scale; closed activity
20	Continuous emission monitor (SO_2) vents	Small quantity emissions
21	Natural gas pressure regulator vents	Small scale emissions
22	Bench scale laboratory equipment and maintenance thereof	Small scale activity and emissions
23	QA/QC or inspection equipment	Unquantifiably small emissions
24	Steam vents and pressure relief valves	Water/steam
25	Steam leaks	Water/steam
26	One (1) 350 gallon gasoline storage tank	Minimal standing/working losses
27	One (1) 350 gallon diesel storage tank	Minimal standing/working losses
28	Miscellaneous gas storage (i.e., nitrogen, argon, etc.)	Gaseous materials stored at the site are under pressure and have no emissions under normal operations
29	Miscellaneous small storage tanks	Minimal standing/working losses

Figures

PUBLIC / NON-CONFIDENTIAL



Legend

★ Chemtrade Refinery Services Facility

N

1 0.5 0 1 Miles

ENVIRON

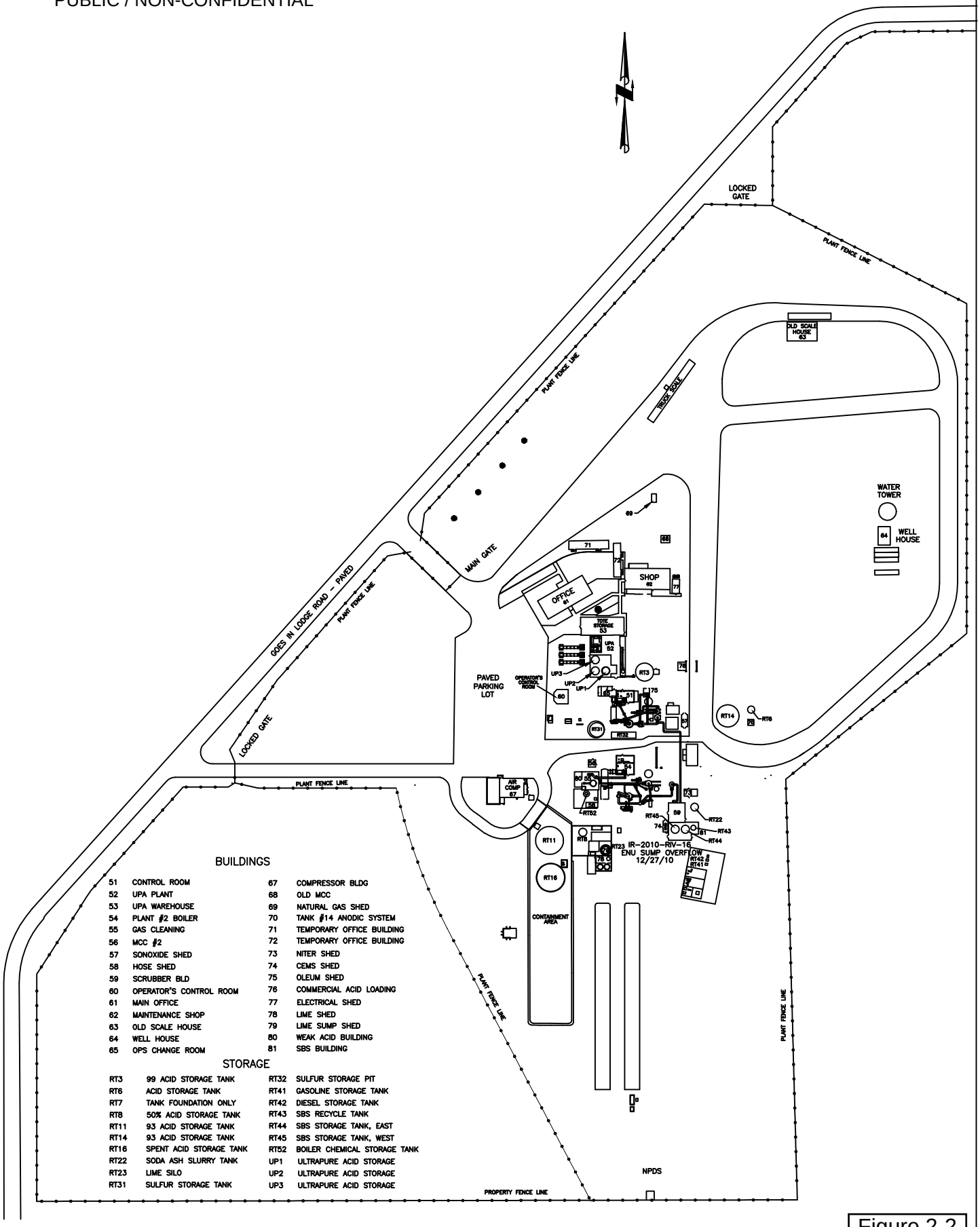
Facility Location
Chemtrade Refinery Services, Inc
Riverton, Wyoming

Figure

2-1

Drafter:	Date:	Contract Number:	Approved:	Revised:

PUBLIC / NON-CONFIDENTIAL



BUILDINGS

51	CONTROL ROOM	67	COMPRESSOR BLDG
52	UPA PLANT	68	OLD MCC
53	UPA WAREHOUSE	69	NATURAL GAS SHED
54	PLANT #2 BOILER	70	TANK #14 ANODIC SYSTEM
55	GAS CLEANING	71	TEMPORARY OFFICE BUILDING
56	MCC #2	72	TEMPORARY OFFICE BUILDING
57	SONOXIDE SHED	73	NITER SHED
58	HOSE SHED	74	CEMS SHED
59	SCRUBBER BLD	75	OLEUM SHED
60	OPERATOR'S CONTROL ROOM	76	COMMERCIAL ACID LOADING
61	MAIN OFFICE	77	ELECTRICAL SHED
62	MAINTENANCE SHOP	78	LIME SHED
63	OLD SCALE HOUSE	79	LIME SUMP SHED
64	WELL HOUSE	80	WEAK ACID BUILDING
65	OPS CHANGE ROOM	81	SBS BUILDING

STORAGE

RT3	99 ACID STORAGE TANK	RT32	SULFUR STORAGE PIT
RT6	ACID STORAGE TANK	RT41	GASOLINE STORAGE TANK
RT7	TANK FOUNDATION ONLY	RT42	DIESEL STORAGE TANK
RT8	50% ACID STORAGE TANK	RT43	SBS RECYCLE TANK
RT11	93 ACID STORAGE TANK	RT44	SBS STORAGE TANK, EAST
RT14	93 ACID STORAGE TANK	RT45	SBS STORAGE TANK, WEST
RT16	SPENT ACID STORAGE TANK	RT52	BOILER CHEMICAL STORAGE TANK
RT22	SODA ASH SLURRY TANK	UP1	ULTRAPURE ACID STORAGE
RT23	LIME SILO	UP2	ULTRAPURE ACID STORAGE
RT31	SULFUR STORAGE TANK	UP3	ULTRAPURE ACID STORAGE

Figure 2-2

DATE	NO.	REVISION	DRWN	CHK'D	APV'D
11 FEB 13	9	ADDED NEW CONTROL ROOM	LGL		
21 JAN 12	8	ADDED THIRD TEMPORARY OFFICE BUILDING	LGL		
23 JAN 12	7	ADDED CONSENT DECREE BUILDINGS	LGL		
14 DEC 10	6	REMOVED OLD LOADING RACK	LGL		
29 JUL 10	5	UPDATED SITE PLAN	LGL		

DRAWN BY: LGL | CHECKED BY: | APPROVED BY:
DATE: 21 OCT 05 | SCALE: 1"=100' | DRAWING NO. TER 1 | REV. 9

CHEMTRADE
140 6063 N LODGE ROAD RIVERTON, WY 82501
PLOT PLAN
SHEET 1 OF 1

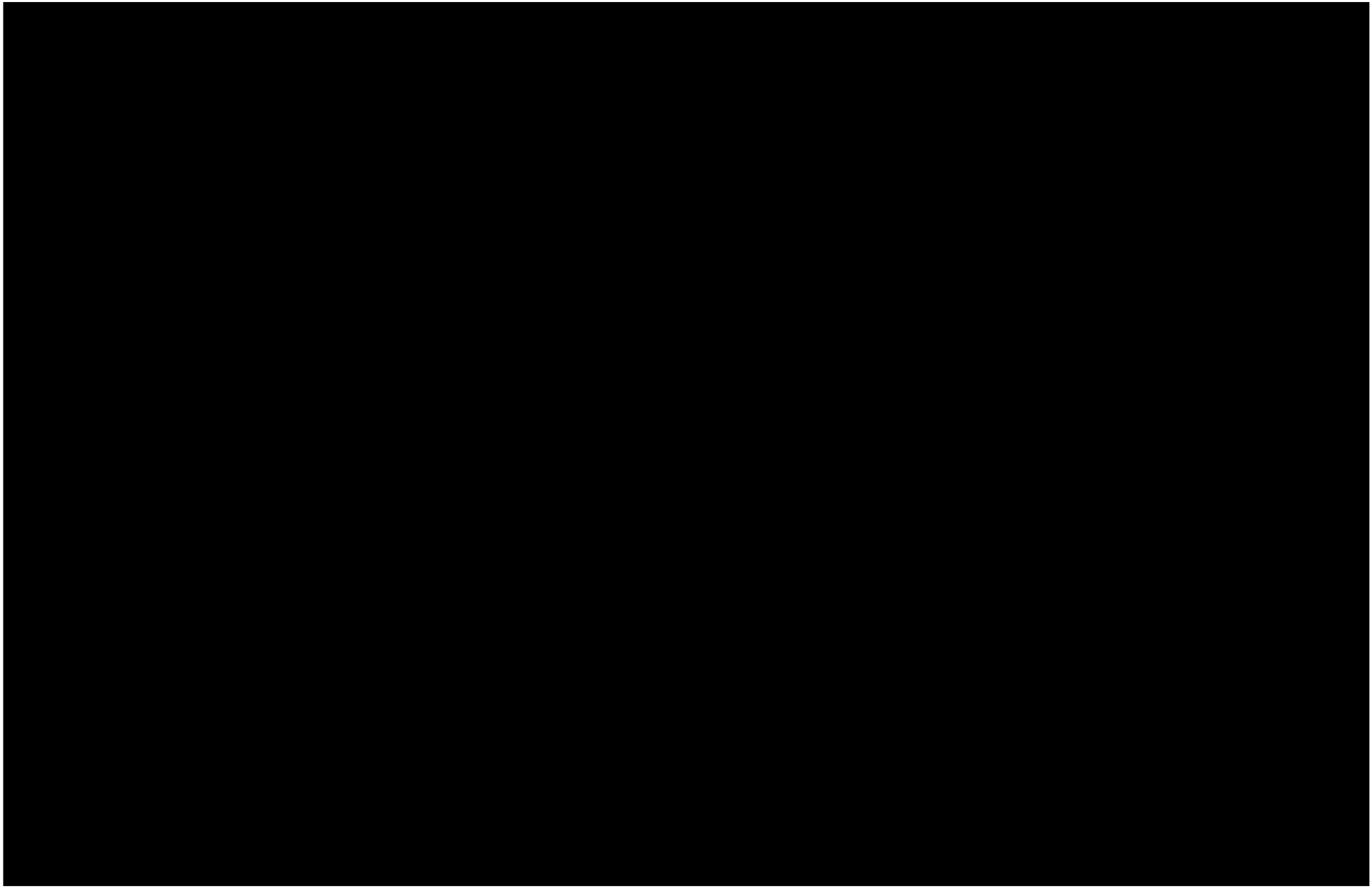


Figure 2-3

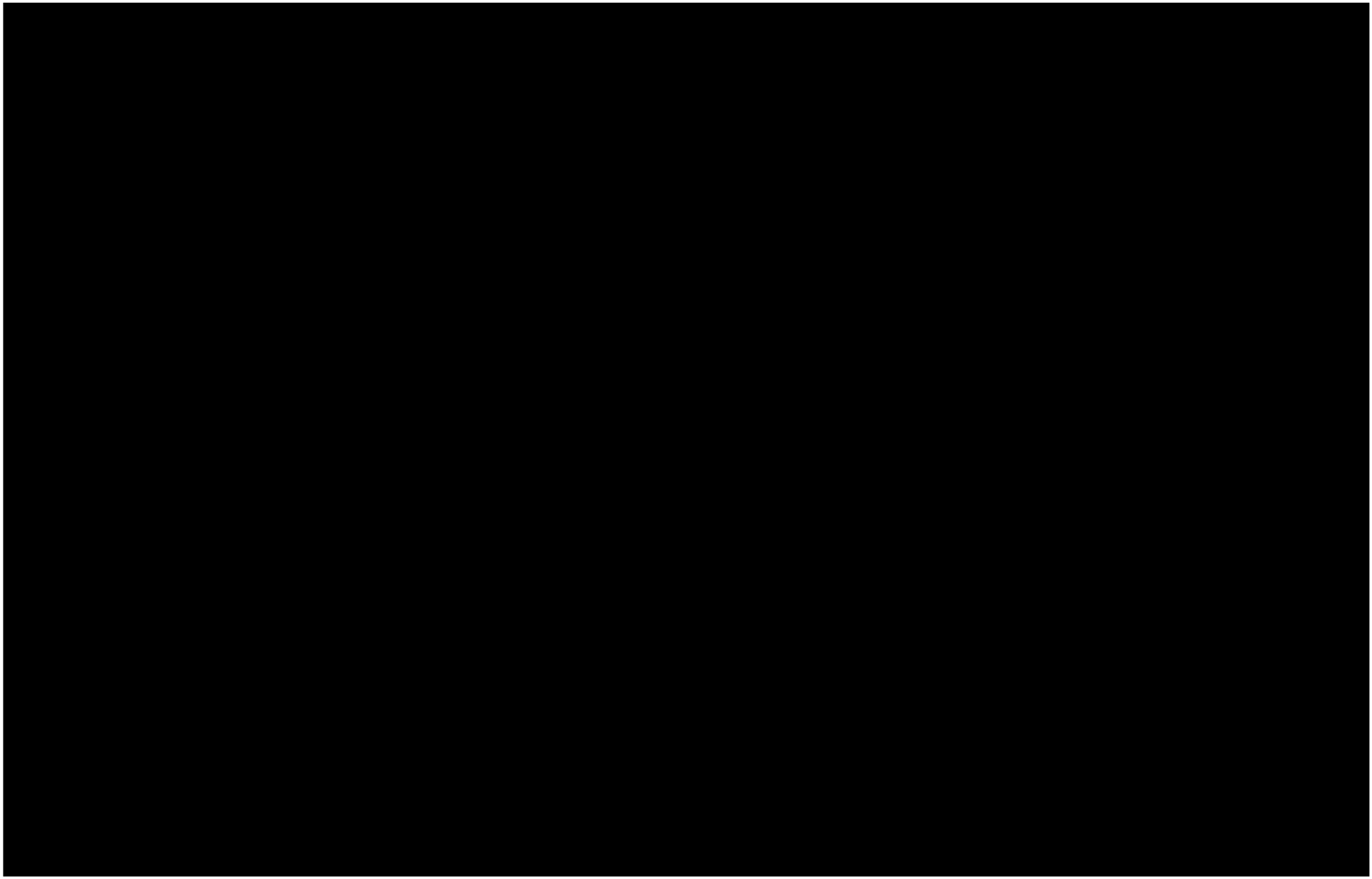


Figure 2-4

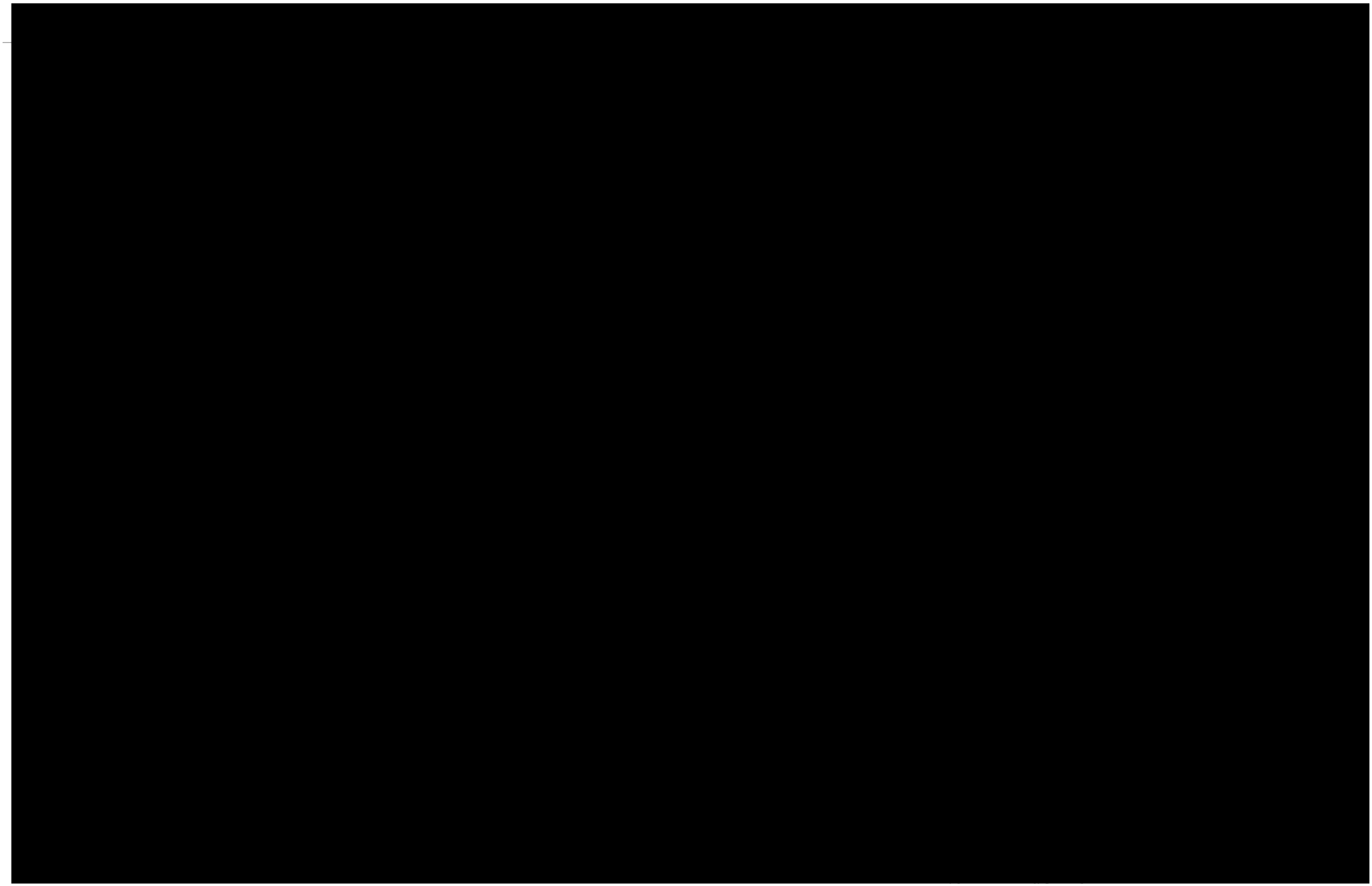


Figure 2-5

Forms

OMB Control No. Pending
Approval expires Pending

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
FEDERAL MINOR NEW SOURCE REVIEW PROGRAM IN INDIAN COUNTRY
40 CFR 49.151

Application for New Construction

(Form NEW)

Please check all that apply to show how you are using this form:

- ☐ **Proposed Construction of a New Source**
- ☐ **Proposed Construction of New Equipment at an Existing Source**
- ☐ **Proposed Modification of an Existing Source**
- ♦ **Other – Please Explain**

Use of this information request form is voluntary and not yet approved by the Office of Management and Budget. The following is a check list of the type of information that Region 8 will use to process information on your proposed project. While submittal of this form is not required, it does offer details on the information we will use to complete your requested approval and providing the information requested may help expedite the process. Use of application forms for this program is currently under Office of Management and Budget review and these information request forms will be replaced/updated after that review is completed.

Please submit information to following two entities:

Federal Minor NSR Permit Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129
R8airpermitting@epa.gov

For more information, visit:
http://www2.epa.gov/region8/tribal-minor-new-source-review-permitting

The Tribal Environmental Contact for the specific reservation:

If you need assistance in identifying the appropriate Tribal Environmental Contact and address, please contact:

R8airpermitting@epa.gov

A. GENERAL SOURCE INFORMATION

1. (a) **Company Name** Chemtrade Logistics (b) **Operator Name** Helen Cane, Plant Manager		2. **Source Name** Chemtrade Refinery Services, Inc.	
3. Type of Operation Sulfuric Acid Manufacturing		4. Portable Source? ☐ Yes ♦ No 5. Temporary Source? ☐ Yes ♦ No	
6. NAICS Code 325188		7. SIC Code 2819	
8. Physical Address (home base for portable sources) 140 Goes In Lodge Road, Riverton, WY 82501			
9. Reservation* Wind River	10. County* Fremont	11a. Latitude* 42°59’55”	11b. Longitude* 108°24’57”
12a. Quarter Quarter Section*	12b. Section* 9	12c. Township* 1 South	12d. Range* 4 East

*Provide all proposed locations of operation for portable sources

B. PREVIOUS PERMIT ACTIONS (Provide information in this format for each permit that has been issued to this source. Provide as an attachment if additional space is necessary)

Source Name on the Permit Koch Sulfur Products Company/Sulfuric Acid Manufacturing Plant
Permit Number (xx-xxx-xxxxx-xxxx.xx) V-WR-0003-00.00
Date of the Permit Action November 1, 2001 (Initial Permit Issued)

Source Name on the Permit Chemtrade Logistics, Chemtrade Refinery Services Inc./Sulfuric Acid Manufacturing Plant
Permit Number (xx-xxx-xxxxx-xxxx.xx) V-WR-0003-00.01, V-WR-0003-00.02, V-WR-0003-00.03
Date of the Permit Action 2002 - 2006 (Administrative Permit Amendments)

Source Name on the Permit Chemtrade Refinery Services Inc./Sulfuric Acid Manufacturing Plant
Permit Number (xx-xxx-xxxxx-xxxx.xx) V-WR-00003-2006.00
Date of the Permit Action September 29, 2011 (First Renewal Permit Issued)

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)
Date of the Permit Action

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)

C. CONTACT INFORMATION

Company Contact	Title
Mailing Address 155 Gordon Baker Road, Suite 300, Toronto, Ontario, Canada M2H 3N5	
Email Address	
Telephone Number (416) 496-5856	Facsimile Number (416) 496-9942
Operator Contact (if different from company contact) Helen Cane	Title Plant Manager
Mailing Address 140 Goes In Lodge Road, Riverton, WY 82501	
Email Address hcane@chemtradelogistics.com	
Telephone Number (307) 857-4645	Facsimile Number (307) 856-7842
Source Contact Helen Cane	Title Plant Manager
Mailing Address 140 Goes In Lodge Road, Riverton, WY 82501	
Email Address hcane@chemtradelogistics.com	
Telephone Number (307) 857-4645	Facsimile Number (307) 856-7842
Compliance Contact Leon Pruett	Title ES&H Manager
Mailing Address 140 Goes In Lodge Road, Riverton, WY 82501	
Email Address LPruett@chemtradelogistics.com	
Telephone Number (307) 857-4653	Facsimile Number (307) 856-7842

D. ATTACHMENTS

Include all of the following information (see the attached instructions)

□ **FORM SYNMIN -** New Source Review Synthetic Minor Limit Request Form, if synthetic minor limits are being requested.

□ Narrative description of the proposed production processes. This description should follow the flow of the process flow diagram to be submitted with this application.

□ Process flow chart identifying all proposed processing, combustion, handling, storage, and emission control equipment.

□ A list and descriptions of all proposed emission units and air pollution-generating activities.

□ Type and quantity of fuels, including sulfur content of fuels, proposed to be used on a daily, annual and maximum hourly basis.

□ Type and quantity of raw materials used or final product produced proposed to be used on a daily, annual and maximum hourly basis.

□ Proposed operating schedule, including number of hours per day, number of days per week and number of weeks per year.

□ A list and description of all proposed emission controls, control efficiencies, emission limits, and monitoring for each emission unit and air pollution generating activity.

□ **Criteria Pollutant Emissions -** Estimates of Current Actual Emissions, Current Allowable Emissions, Post-Change Uncontrolled Emissions, and Post-Change Allowable Emissions for the following air pollutants: particulate matter, PM_{10}, $PM_{2.5}$, sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compound (VOC), lead (Pb) and lead compounds, fluorides (gaseous and particulate), sulfuric acid mist (H_2SO_4), hydrogen sulfide (H_2S), total reduced sulfur (TRS) and reduced sulfur compounds, including all calculations for the estimates.

These estimates are to be made for each emission unit, emission generating activity, and the project/source in total.

□ **Air Quality Review**

□ **ESA (Endangered Species Act)**

□ **NHPA (National Historic Preservation Act)**

E. TABLE OF ESTIMATED EMISSIONS

The following tables provide the total emissions in tons/year for all pollutants from the calculations required in Section D of this form, as appropriate for the use specified at the top of the form.

E(i) – Proposed New Source

Pollutant	Potential Emissions (tpy)	Proposed Allowable Emissions (tpy)	
PM	**N/A**	**N/A**	PM - Particulate Matter PM_{10} - Particulate Matter less than 10 microns in size $PM_{2.5}$ - Particulate Matter less than 2.5 microns in size SO2 - Sulfur Oxides NOx - Nitrogen Oxides CO - Carbon Monoxide VOC - Volatile Organic Compound Pb - Lead and lead compounds Fluorides - Gaseous and particulates H_2SO_4 - Sulfuric Acid Mist H_2S - Hydrogen Sulfide TRS - Total Reduced Sulfur RSC - Reduced Sulfur Compounds
PM_{10}	**N/A**	**N/A**	
$PM_{2.5}$	**N/A**	**N/A**	
SO_2	**N/A**	**N/A**	
NO_x	**N/A**	**N/A**	
CO	**N/A**	**N/A**	
VOC	**N/A**	**N/A**	
Pb	**N/A**	**N/A**	
Fluorides	**N/A**	**N/A**	
H_2SO_4	**N/A**	**N/A**	
H_2S	**N/A**	**N/A**	
TRS	**N/A**	**N/A**	
RSC	**N/A**	**N/A**	

Emissions calculations must include fugitive emissions if the source is one the following listed sources, pursuant to CAA Section 302(j):

(a) Coal cleaning plants (with thermal dryers);
(b) Kraft pulp mills;
(c) Portland cement plants;
(d) Primary zinc smelters;
(e) Iron and steel mills;
(f) Primary aluminum ore reduction plants;
(g) Primary copper smelters;
(h) Municipal incinerators capable of charging more than 250 tons of refuse per day;
(i) Hydrofluoric, sulfuric, or nitric acid plants;
(j) Petroleum refineries;
(k) Lime plants;
(l) Phosphate rock processing plants;
(m) Coke oven batteries;
(n) Sulfur recovery plants;
(o) Carbon black plants (furnace process);
(p) Primary lead smelters;
(q) Fuel conversion plants;
(r) Sintering plants;
(s) Secondary metal production plants;
(t) Chemical process plants
(u) Fossil-fuel boilers (or combination thereof) totaling more than 250 million British thermal units per hour heat input;
(v) Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels;
(w) Taconite ore processing plants;
(x) Glass fiber processing plants;
(y) Charcoal production plants;
(z) Fossil fuel-fired steam electric plants of more that 250 million British thermal units per hour heat input, and
(aa) Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.

E(ii) – Proposed New Construction at an Existing Source or Modification of an Existing Source

Pollutant	Current Actual Emissions (tpy)	Current Allowable Emissions (tpy)	Post-Change Potential Emissions (tpy)	Post-Change Allowable Emissions (tpy)
PM	9.64 (2012 actuals)	20.68	20.68	20.68
PM_{10}	9.64 (2012 actuals)	20.68	20.68	20.68
$PM_{2.5}$	9.64 (2012 actuals)	20.68	20.68	20.68
SO_2	563.4 (2012 actuals)	74.60	74.60	74.60
NO_x	6.77 (2012 actuals)	43.49	43.49	43.49
CO	8.87 (2012 actuals)	14.95	14.95	14.95
VOC	1.83 (2012 actuals)	1.12	1.12	1.12
Pb	0 (2012 actuals)	2.9E-04	2.9E-04	2.9E-04
Fluorides	N/A	N/A	N/A	N/A
H_2SO_4	7.23 (2012 actuals)	5.48	5.48	5.48
H_2S	N/A	N/A	N/A	N/A
TRS	N/A	N/A	N/A	N/A
RSC	N/A	N/A	N/A	N/A

PM - Particulate Matter
PM_{10} - Particulate Matter less than 10 microns in size
$PM_{2.5}$ - Particulate Matter less than 2.5 microns in size
SO_2 - Sulfur Oxides
NOx - Nitrogen Oxides
CO - Carbon Monoxide
VOC - Volatile Organic Compound
Pb - Lead and lead compounds
Fluorides - Gaseous and particulates
H_2SO_4 - Sulfuric Acid Mist
H_2S - Hydrogen Sulfide
TRS - Total Reduced Sulfur
RSC - Reduced Sulfur Compounds

The public reporting and recordkeeping burden for this collection of information is estimated to average 20 hours per response, unless a modeling analysis is required. If a modeling analysis is required, the public reporting and recordkeeping burden for this collection of information is estimated to average 60 hours per response .Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Instructions

Use of This Form

- Proposed new construction or modifications should first be evaluated to determine if the change is major under the major NSR program using the procedures at 40 CFR 52.21 (i.e., baseline actual to projected actual applicability test). If the proposed construction does not qualify as a major under that test, then it may be subject to the requirements of the minor NSR rule at 40 CFR 49.151.

Helpful Definitions from the Federal Minor NSR Rule (40 CFR 49) – This is not a comprehensive list.

- *40 CFR 49.152(d) - Modification* means any physical or operational change at a source that would cause an increase in the allowable emissions of the affected emissions units for any regulated NSR pollutant or that would cause the emission of any regulated NSR pollutant not previously emitted.

  The following exemptions apply:

  (1) A physical or operational change does not include routine maintenance, repair, or replacement.

  (2) An increase in the hours of operation or in the production rate is not considered an operational change unless such increase is prohibited under any federally-enforceable permit condition or other permit condition that is enforceable as a practical matter.

  (3) A change in ownership at a source is not considered a modification.

- *40 CFR 49.152(d) - Allowable emissions* means ‘‘allowable emissions’’ as defined in §52.21(b)(16), except that the allowable emissions for any emissions unit are calculated considering any emission limitations that are enforceable as a practical matter on the emissions unit’s potential to emit.

- *52.21(b)(16) - Allowable emissions* means the emissions rate of a stationary source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:

  (i) The applicable standards as set forth in 40 CFR parts 60 and 61;

  (ii) The applicable State Implementation Plan emissions limitation, including those with a future compliance date; or

  (iii) The emissions rate specified as a federally enforceable permit condition, including those with a future compliance date.

A. General Source Information

1. Company Name & Operator Name (if different): Provide the complete company and operator names. For corporations, include divisions or subsidiary name, if any.

2. Source Name: Provide the source name. Please note that a source is a site, place, location, etc… that may contain one or more air pollution emitting units.

3. Type of Operation: Indicate the generally accepted name for the operation (i.e., asphalt plant, gas station, dry cleaner, sand & gravel mining, oil and gas wellsite, tank battery, etc.).

4. Portable Source: Does the source operate in more than one location? Some examples of portable sources include asphalt batch plants and concrete batch plants.

5. Temporary Source: A temporary source, in general, would have emissions that are expected last less than 12 months. Do you expect to cease operations within the next 12 months?

6. NAICS Code: North American Industry Classification System. The NAICS Code for your source can be found at the following link → North American Industry Classification System (http://www.census.gov/epcd/naics/nsic2ndx.htm#S1).

7. SIC Code: Standard Industrial Classification Code. Although the new North American Industry Classification System (NAICS) has replaced the SIC codes, much of the Clean Air Act permitting processes continue to use these codes. The SIC Code for your source can be found at the following link → Standard Industrial Classification Code (http://www.osha.gov/pls/imis/sic_manual.html).

8. Physical Address: Provide the actual address of where the source is operating, not the mailing address. Include the State and the ZIP Code.

9. Reservation: Provide the name of the Indian reservation within which the source is operating.

10. County: Provide the County within which the source is operating.

11a & 11b. Latitude & Longitude: These are GPS (global positioning system) coordinates. This information can be provided in decimal format or degree-minute-second format.

12a – 12d. Section-Township-Range: Please provide these coordinates in 1/4 Section/Section/Township/Range. (e.g., SW ¼, NE ¼ /S36/T10N/R21E).

B. Current Permit Information

Provide a list of all permits that have been issued to your source. This should include any Federal Minor New Source Review (MNSR), Prevention of Significant Deterioration (PSD) or Non-Attainment New Source Review (NA NSR) permits, in addition to the most recent Part 71 permit. The permit number must be included with each permit identified.

C. Contact Information

Please provide the information requested in full.

1. Company Contact: List the full name (last, middle initial, first) of the owners of the source or the company contact.

2. Operator Contact: Provide the name of the operator of the source if it is different from the company contact.

3. Source Contact: The source contact must be the local contact authorized to receive requests for data and information.

4. Compliance Contact: The compliance contact must be the local contact responsible for the source's compliance with this rule. If this is the same as the Source Contact please note this on the form.

D. Attachments

This section lists the information needed to complete the requested approval. This information should be accompanied by the supporting information listed on the form and described below. The information should be presented in enough detail to document how the source is currently operating and/or how it is proposed to operate.

☐ **FORM SYNMIN**

If synthetic minor limits are being requested, a synthetic Minor Limit Application should be included with this application.

☐ Narrative description of the proposed production processes.

1. The narrative description should follow the flow of the process flow diagram to be submitted with this application. This needs to be as comprehensive as possible to help in understanding the proposed source and how it will be operated. For example:

What are the raw materials?
What are the properties of the raw materials?
Does the production process include heating, drying, the application of chemicals, etc?
How will the raw materials be affected by this process?
What are the out puts from each step of the process (i.e., crushed ore, dry gas, water, etc…)?
Etc….

2. The proposed operating schedule presented in terms of hours per day, days per week, and weeks per year.
3. A list of the type and quantity of fuels and/or raw materials used. Each fuel and raw material should be described in enough detail to indicate its basic chemical components.

☐ A process flow chart identifying all proposed processing, combustion, handling, storage, and emission control equipment (include the unit identification # or code). This flow chart should illustrate the detailed narrative description requested above.

☐ List and describe all proposed units, emission units and air pollution-generating activities. At a minimum, provide the following:

1. The hourly, daily and annual maximum operating rates for each operating unit, production process, and activity.
2. The hourly, daily and annual maximum firing rates for each fuel and combustion equipment.
3. The capacity for storage units and the hourly, daily and annual maximum throughput of material in the storage units.
4. Material and product handling equipment and the hourly, daily and annual maximum throughput of material and product.

5. Tank designs, tank storage capacities, hourly, daily and annual maximum throughput of material and product.

☐ Type and quantity of fuels, including sulfur content of fuels, proposed to be used on a daily, annual and maximum hourly basis.

☐ Type and quantity of raw materials used or final product produced proposed to be used on a daily, annual and maximum hourly basis.

☐ Proposed operating schedule, including number of hours per day, number of days per week and number of weeks per year.

☐ A list and description of all proposed emission controls, control efficiencies, emission limits, and monitoring for each emission unit and air pollution generating activity.

1. Include manufacturer specifications and guarantees for each control device.

Criteria Pollutant Emissions Estimates

☐ Estimates of Current Actual Emissions, Current Allowable Emissions, Post-Change Uncontrolled Emissions, and Post-Change Allowable Emissions for the following air pollutants: particulate matter, PM_{10}, $PM_{2.5}$, sulfur oxides (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compound (VOC), lead (Pb) and lead compounds, ammonia (NH_3), fluorides (gaseous and particulate), sulfuric acid mist (H_2SO_4), hydrogen sulfide (H_2S), total reduced sulfur (TRS) and reduced sulfur compounds, including all calculations for the estimates.

1. These estimates are to be made for each emission unit, emission generating activity, in addition to total emissions.

2. The information should include all of the supporting calculations, assumptions and references. Emission estimates must address all emission units and pollutants proposed and/or affected by the limitation and be presented in short term (e.g. pounds per hour) as well as annual (tons per year) units.

3. Any emission estimates submitted to the Regional Administrator must be verifiable using currently accepted engineering criteria. The following procedures are generally acceptable for estimating emissions from air pollution sources:

   - Source-specific emission tests;
   - Mass balance calculations;
   - Published, verifiable emission factors that are applicable to the source. (i.e. manufacturer specifications)
   - Other engineering calculations; or
   - Other procedures to estimate emissions specifically approved by the Regional Administrator.

4. Guidance for estimating emissions can be found at http://www.epa.gov/ttn/chief/efpac/index.html.

Current Actual Emissions: Current actual emissions for a pollutant is expressed in tpy and generally is calculated by multiplying the actual hourly emissions rate in pounds per hour

(lbs/hr) times actual hours operated (which is the number of hours in a year) and dividing by 2,000 (which is the number of pounds in a ton).

1. For an **existing air pollution source (permitted and unpermitted)** that operated prior to the application submittal, the current actual emissions are the actual rate of emissions for the preceding calendar year and must be calculated using the actual operating hours, production rates, in-place control equipment, and types of materials processed, stored, or combusted during the preceding calendar year. The emission estimates must be based upon actual test data or, in the absence of such data, upon procedures acceptable to the Regional Administrator.

Current Allowable Emissions: Current allowable emissions for a pollutant is expressed in tpy and generally is calculated by multiplying the allowed hourly emissions rate in pounds per hour (lbs/hr) times allowed hours (which is the number of hours in a year) and dividing by 2,000 (which is the number of pounds in a ton).

1. "Allowed" means the source is restricted by permit conditions that limit its emissions and are enforceable as a practical matter (i.e., allowable emissions). The allowable emissions for any emissions unit are calculated considering any emissions limitations that are enforceable as a practical matter on the unit's PTE.

2. For an **existing permitted air pollution source** that operated prior to the application submittal, the current allowable emissions are the allowable rate of emissions for the preceding calendar year and must be calculated using the permitted operating hours, production rates, in-place control equipment, and types of materials processed, stored, or combusted during the preceding calendar year.

3. For an **existing air pollution source** that does not have an established allowable emissions level prior to the modification must report the pre-change uncontrolled emissions.

Post-Change Potential Emissions (Potential uncontrolled emissions from proposed project): This is the maximum capacity of a source to emit a pollutant under its physical and operational design. This is expressed in tpy and generally is calculated by multiplying the maximum hourly emissions rate in pounds per hour (lbs/hr) times 8,760 hours (which is the number of hours in a year) and dividing by 2,000 (which is the number of pounds in a ton).

Post-Change Allowable Emissions: A source's allowable emissions for a pollutant is expressed in tpy and generally is calculated by multiplying the allowed hourly emissions rate in pounds per hour (lbs/hr) times allowed hours (which is the number of hours in a year) and dividing by 2,000 (which is the number of pounds in a ton).

1. Unless the source is restricted by permit conditions or other requirements that are enforceable as a practical matter, the post-change allowable emissions would be equivalent to post-change uncontrolled emissions. For the post-change allowable emissions a lower level of allowable emissions may be proposed.

2. For physical or operational changes at minor sources and for minor physical or operational changes at major sources, the total increase in allowable emissions resulting from your proposed change would be the sum of following:

    - For each new emissions unit that is to be added, the emissions increase would be the potential to emit of each unit.

- For each emissions unit with an allowable emissions limit that is to be changed or replaced, the emissions increase would be the allowable emissions of the emissions unit after the change or replacement minus the allowable emissions prior to the change or replacement. However, this may not be a negative value. If the allowable emissions of an emissions unit would be reduced as a result of the change or replacement, use zero in the calculation.
- For each unpermitted emissions unit (i.e., a unit without any emissions limitations before the change) that is to be changed or replaced, the emissions increase would be the allowable emissions of the unit after the change or replacement minus the potential to emit prior to the change or replacement. However, this may not be a negative value. If the allowable emissions of an emissions unit would be reduced as a result of the change or replacement, use zero in the calculation.

☐ Air Quality Review

Provide a narrative description of the current air quality conditions and the expected impact the permitted source would have on that air quality. Factors to include in the qualitative discussion are meteorology, terrain, elevation, distance to ambient air, expected emissions, stack heights, etc…

Your reviewing authority may require you to provide additional information used to determine impacts that may result from your new source or modification. You may be required to conduct and submit an Air Quality Impact Analysis (AQIA) using dispersion modeling in accordance with 40 CFR part 51, Appendix W. If required, and the AQIA demonstrates that construction of your source or modification would cause or contribute to a NAAQS or PSD increment violation, you will also required to further reduce its impact before you could obtain a permit.

☐ ESA

The Endangered Species Act requires us, in consultation with the U.S. Fish and Wildlife Service and/or the NOAA Fisheries Service, to ensure that actions we authorize are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species.

To expedite the approval of your proposed construction, we encourage you to identify any listed species that you may be readily aware of that could be affected by your proposal. The following website has been provided to assist you:

http://www.fws.gov/endangered/

Simply enter the State and County in which you propose to construct to obtain a general listing.

☐ NHPA

The National Historic Preservation Act requires us, in consultation with State and/or Tribal Historic Preservation Officers to ensure that actions we authorize are not likely to affect cultural resources.

To expedite the approval of your proposed construction, we encourage you to identify any cultural resources that you may be readily aware of that could be affected by your proposal. The following website has been provided to assist you:

http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome

Simply enter the State and County in which you propose to construct to obtain a general listing.

OMB Control No. Pending
Approval expires Pending

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
FEDERAL MINOR NEW SOURCE REVIEW PROGRAM IN INDIAN COUNTRY
40 CFR 49.151

Application For Synthetic Minor Limit

(Form SYNMIN)

Use of this information request form is voluntary and not yet approved by the Office of Management and Budget. The following is a check list of the type of information that Region 8 will use to process information on your proposed project. While submittal of this form is not required, it does offer details on the information we will use to complete your requested approval and providing the information requested may help expedite the process. Use of application forms for this program is currently under Office of Management and Budget review and these information request forms will be replaced/updated after that review is completed.

Please submit information to following two entities:

Federal Minor NSR Permit Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129
R8airpermitting@epa.gov

For more information, visit:
http://www2.epa.gov/region8/tribal-minor-new-source-review-permitting

The Tribal Environmental Contact for the specific reservation:

If you need assistance in identifying the appropriate Tribal Environmental Contact and address, please contact:

R8airpermitting@epa.gov

A. GENERAL INFORMATION

Company Name Chemtrade Logistics	**Source Name** Chemtrade Refinery Services, Inc.
Company Contact or Owner Name Helen Cane	Title Plant Manager
Mailing Address 140 Goes In Lodge Road, Riverton, WY 82501	
Email Address hcane@chemtradelogistics.com	
Telephone Number 307-857-4645	Facsimile Number 307-856-7842

B. ATTACHMENTS

For each criteria air pollutant, hazardous air pollutant and for all emission units and air pollutant-generating activities to be covered by a limitation, include the following:

☐ **Item 1 -** The proposed limitation and a description of its effect on current actual, allowable and the potential to emit.
☐ **Item 2 -** The proposed testing, monitoring, recordkeeping, and reporting requirements to be used to demonstrate and assure compliance with the proposed limitation.
☐ **Item 3 -** A description of estimated efficiency of air pollution control equipment under present or anticipated operating conditions, including documentation of the manufacturer specifications and guarantees.
☐ **Item 4 -** Estimates of the Post-Change Allowable Emissions that would result from compliance with the proposed limitation, including all calculations for the estimates.
☐ **Item 5 –** Estimates of the potential emissions of Greenhouse Gas (GHG) pollutants:

Instructions

Use this form to provide general and summary information about the synthetic minor NSR source (source or plant) on Tribal lands and to indicate the emissions limitations requested. Submit this form once, in addition to FORM NEW, for each synthetic minor NSR source on Tribal lands.

1. Who Can Request Federally-Enforceable Limitations Under the Tribal NSR Authority?

The Tribal NSR Rule applies only to sources located within the exterior boundaries of an Indian reservation in the United States of America or other lands as specified in 40 CFR part 49, collectively referred to as "Indian country". So, to use the authority in the Tribal NSR Rule to create federally-enforceable limitations, a source must be located within Indian country. Land ownership status (for example, whether the land is owned by a Tribal member or whether the land is owned in fee or in trust) does not affect how the rule applies.

2. Who Might Want to Request Federally-Enforceable Limitations?

The primary reason for requesting federally-enforceable limitations is to avoid an otherwise applicable federal Clean Air Act program, rule or requirement. Many federal Clean Air Act programs use a source's "potential to emit" (PTE) air pollution to determine which rules or requirements apply. A source's PTE is based on the maximum annual operational (production, throughput, etc) rate of the source taking into consideration the capacity and configuration of the equipment and operations. Emission or operational limits can also be taken into consideration as maximums if they are federally enforceable. So, using a synthetic minor NSR permit to establish federally enforceable limitations can lower a source's PTE and possibly allow the source to avoid certain federal Clean Air Act requirements.

Three examples of federal Clean Air Act programs that use PTE to determine whether they apply are (1) the Prevention of Significant Deterioration (PSD) construction permitting program, (2) the Title V operating permit program, and (3) the Maximum Achievable Control Technology (MACT) program. For example, existing sources that are considered "major" for Title V (meaning they have the potential to emit air pollution at levels defined in that rule as "major") must apply for a Title V operating permit. If a source accepts a federally-enforceable limitation through a synthetic minor NSR permit that reduces their PTE to below the "major" threshold, and the source does not meet any of the other requirements that would trigger applicability to the part 71 program, then the source no longer needs a Title V operating permit. When planning for the construction of a new source or expansion of an existing source, a source can also accept limitations on PTE (using a synthetic minor NSR permit) that allow the source to avoid PSD. Limitations on PTE can similarly help a source to avoid new MACT standards that would otherwise apply to the source.

3. Section B. ATTACHMENTS

This section lists the information that must be attached to the application form for each requested limitation. The requested limitation(s) must be described for each affected emissions unit (or pollutant-generating activity) and pollutant and must be accompanied by the supporting information listed on the form and described below. Note that applicability of many federal Clean Air Act requirements (such as Title V, PSD and MACT) is often based on source-wide emission levels of specific pollutants. In that case, all emissions units at a source and all pollutants regulated by that given rule or regulation must be addressed by this section of the application form.

Item 1 – The requested limitation and its effect on actual emissions or potential to emit must be presented in enough detail to document how the limitation will limit the source's actual or potential emissions as a legal and practical matter and, if applicable, will allow the source to avoid an otherwise applicable requirement. The information presented must clearly explain how the limitation affects each emission unit and each air pollutant from that emission unit. Use the information provided in response to Item 4 below to explain how the limitation affects emissions before and after the limitation is in effect.

Item 2 – For each requested limitation, the application must include proposed testing, monitoring, recordkeeping and reporting that will be used to demonstrate and assure compliance with the limitation. Testing approaches should incorporate and reference appropriate EPA reference methods where applicable. Monitoring should describe the emission, control or process parameters that will be relied on and should address frequency, methods, and quality assurance.

Item 3 – The application must include a description and estimated efficiency of air pollution control equipment under present or anticipated operating conditions. For control equipment that is not proposed to be modified to meet the requested limit, simply note that fact; however, for equipment that is proposed to be modified (e.g. improved efficiency) or newly installed to meet the proposed limit, address both current and future descriptions and efficiencies. Include manufacturer specifications and guarantees for each control device.

Items 4 – Any emission estimates submitted to the Reviewing Authority must be verifiable using currently accepted engineering criteria. The following procedures are generally acceptable for estimating emissions from air pollution sources:

(i) Source-specific emission tests;
(ii) Mass balance calculations;
(iii) Published, verifiable emission factors that are applicable to the source. (i.e., manufacturer specifications).
(iv) Other engineering calculations; or
(v) Other procedures to estimate emissions specifically approved by the Reviewing Authority.

Post-Change Allowable Emissions: A source's allowable emissions for a pollutant is expressed in tpy and generally is calculated by multiplying the allowed hourly emissions rate in pounds per hour (lbs/hr) times allowed hours (which is the number of hours in a year) and dividing by 2,000 (which is the number of pounds in a ton).

Item 5 - New construction projects that have the potential to emit GHG emissions of at least 100,000 tpy CO_2e and 100 or 250 tpy on a mass basis, modifications at existing PSD facilities that increase GHG emissions by at least 75,000 tpy CO_2e and minor sources that increase GHG emissions by at least 100,000 tpy CO_2e and 100 or 250 tpy on a mass basis are subject to PSD permitting requirements, even

if they do not significantly increase emissions of any other pollutant. As such, any requested limits to avoid PSD must take into account greenhouse gases.

Therefore, please include in your permit application estimates of the potential emissions of the following pollutants. More information about GHG permitting and how to calculate CO_2 equivalents (CO_2e), the mass emissions of each individual GHG adjusted for its Global Warming Potential (GWP) can be found at: http://epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf

1. Carbon dioxide (CO_2)
2. Methane (CH_4) and its CO_2e
3. Nitrous oxide (N_2O) and its CO_2e
4. Hydrofluorocarbons (HFCs) and its CO_2e
5. Perfluorocarbons (PFCs) and its CO_2e
6. Sulfur hexafluoride (SF_6) and its CO_2e

Appendix A

Consent Decree

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
WESTERN DIVISION

UNITED STATES OF AMERICA, STATE OF LOUISIANA, STATE OF OHIO, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY, Plaintiffs, NORTHERN ARAPAHO TRIBE, Plaintiff-Intervenor, v. CHEMTRADE LOGISTICS (US), INC., CHEMTRADE REFINERY SERVICES INC., MARSULEX, INC., Defendants.	)	Civil Action No.

CONSENT DECREE

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CONSENT DECREE

WHEREAS, Plaintiff the United States of America ("United States"), on behalf of the United States Environmental Protection Agency ("U.S. EPA"), Co-Plaintiff the State of Louisiana ("Louisiana"), on behalf of the Louisiana Department of Environmental Quality ("LDEQ"), Co-Plaintiff the State of Ohio, ("Ohio"), on behalf of the Ohio Environmental Protection Agency ("Ohio EPA"), Co-Plaintiff Oklahoma Department of Environmental Quality ("Oklahoma DEQ"), have filed a complaint concurrently with this Consent Decree, alleging that Defendants Chemtrade Logistics (US), Inc. ("CLI(US)"), Chemtrade Refinery Services Inc. ("Chemtrade Refinery Services") (collectively "Chemtrade"), and Marsulex, Inc. ("Marsulex") violated Sections 111 and 165 of the Clean Air Act ("CAA"), 42 U.S.C. §§ 7401 *et seq.*, and the federally-enforceable State Implementation Plans ("SIPs") for Louisiana, Ohio, and Oklahoma approved by U.S. EPA pursuant to Section 110 of the CAA, 42 U.S.C. § 7410, which incorporate and/or implement the above-listed federal requirements, and that Chemtrade and Marsulex violated the Title V permit requirements of the CAA, 42 U.S.C. §§ 7661 *et seq.*, with respect to emissions of sulfur dioxide and sulfuric acid mist;

WHEREAS, the Complaint alleges that a sulfuric acid manufacturing facility located in or near Cairo, Ohio ("Cairo Facility") was owned and operated by Chemical Company, LP (f/k/a Coulton Chemical Co. LP) ("Coulton") from 1993 to 1996; by Marsulex from 1996 to 2001; and by CLI(US) from 2001 to the present;

WHEREAS, the Complaint alleges that a sulfuric acid manufacturing facility located in Oregon, Ohio ("Oregon Facility") was owned and operated by Coulton from 1993 to 1996; and by Marsulex from 1996 to the present;

WHEREAS, the Complaint alleges that sulfuric acid manufacturing facilities located in or near Beaumont, Texas ("Beaumont Facility"), Shreveport, Louisiana ("Shreveport Facility"), Tulsa, Oklahoma ("Tulsa Facility"), and Riverton, Wyoming ("Riverton Facility") (collectively, the "BSTR Facilities") have been owned and operated by Chemtrade Refinery Services from approximately August 2005 to the present;

WHEREAS, the Complaint alleges that: (i) Marsulex and/or its predecessors in interest with respect to the Oregon Facility, (ii) Chemtrade and/or its predecessors in interest with respect to the BSTR Facilities; and (iii) Marsulex and Chemtrade and/or their predecessors in interest with respect to the Cairo Facility, constructed or modified the above-referenced sulfuric acid manufacturing facilities without obtaining required permits, without installing required control technology, without meeting emission limits, without a valid Title V permit, and without complying with requirements for monitoring, recordkeeping and reporting, as required in the CAA;

WHEREAS, Plaintiff-Intervenor, the Northern Arapaho Tribe, is a federally-recognized tribe located on the Wind River Reservation in the State of Wyoming, and is moving to intervene in this matter and is filing a Complaint in Intervention only asserting claims against Chemtrade Refinery Services involving the Riverton Facility;

WHEREAS, as more specifically described in Section V, Marsulex, with respect to the Cairo and Oregon Facilities, and Chemtrade, with respect to the BSTR Facilities, have agreed to install and/or enhance emission control technology to reduce emissions of sulfur dioxide to levels no greater than emission levels equivalent to those that would result from the application of the

Best Available Control Technology ("BACT"), as defined at 40 C.F.R. § 52.21(b)(12), and to implement best work practices at these Facilities;

WHEREAS, in achieving the air emissions reductions required by this Consent Decree at the Riverton Facility, Chemtrade intends to install equipment to allow Chemtrade to market the scrubbers' effluent, sodium bisulfite, and Chemtrade recognizes that it cannot allow the quality of its wastewater effluent to cause a violation of the terms and conditions of its National Pollutant Discharge Elimination System permit;

WHEREAS, Defendants do not admit any liability to the United States or any of the Co-Plaintiffs arising out of the acts or omissions alleged in the Complaint and Chemtrade Refinery Service does not admit any liability to Plaintiff-Intervenor arising out of the acts or omissions alleged in the Complaint in Intervention and this Consent Decree resolves all allegations stated in the Complaint and Complaint in Intervention. Nothing in the Complaint, the Complaint in Intervention, nor this Consent Decree, nor in the execution and implementation of this Consent Decree, shall be treated as an admission or evidence of any violation of the CAA, its implementing regulations or any state or local equivalent act or implementing regulations cited herein in any litigation or forum whatsoever, except that the terms of this Consent Decree may be used in any action or dispute resolution proceeding to enforce the terms of this Consent Decree;

WHEREAS, the Parties recognize, and this Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith, will avoid litigation among the Parties, and that this Consent Decree is fair, reasonable, and in the public interest;

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section I, and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331, 1345, 1355, 1362, and 1367, and Sections 113(b) and 304(a) of the CAA, 42 U.S.C. §§ 7413(b) and 7604(a), and over the Parties. Venue lies in this District pursuant to Sections 113(b) and 304(c) of the CAA, 42 U.S.C. §§ 7413(b) and 7604(c), and 28 U.S.C. §§ 1391(b) and (c) and 1395(a), because some of the violations alleged in the Complaint are alleged to have occurred in, and two of the three Defendants conduct business in, this judicial district. Defendants consent to this Court's jurisdiction over this Consent Decree and any action to enforce this Consent Decree, and to venue in this judicial district. Solely for the purpose of the Complaint in Intervention filed in this matter and resolved by this Consent Decree, for the purposes of entry and enforcement of this Consent Decree, and for no other purpose, Chemtrade Refinery Service waives any defense or objection based on standing, waives any objection to the motion to intervene filed by the Northern Arapaho Tribe, and consents to the intervention by the Northern Arapaho Tribe as a Plaintiff-Intervenor in this matter. The United States likewise consents to the intervention. No other party to this matter has any interest in nor opposition to the intervention.

2. For purposes of this Consent Decree, Defendants agree that the Complaint states claims upon which relief may be granted pursuant to Sections 111, 165, 304, and 502 of the CAA, 42 U.S.C. §§ 7411, 7475, 7604, and 7661a, and/or pursuant to state law.

3. Notice of the commencement of this action has been given to the States of Louisiana, Ohio, Oklahoma, Texas, and Wyoming as required by Section 113 of the CAA, 42 U.S.C. § 7413.

II. APPLICABILITY

4. The obligations of this Consent Decree apply to and are binding upon the United States, the Co-Plaintiffs, the Plaintiff-Intervenor, and upon Defendants and their officers, employees, agents, subsidiaries, successors, assigns, and other entities or persons otherwise bound by law, except that, notwithstanding any other provision of this Consent Decree, Marsulex shall have no liability, responsibility, duties, or obligations under this Consent Decree to the Plaintiff-Intervenor and this Consent Decree shall not confer any rights to the Plaintiff-Intervenor as to Marsulex.

5. No transfer of ownership or operation of any of the Covered Sulfuric Acid Plants, whether in compliance with the procedures of Paragraphs 5 or 6 or otherwise, shall relieve the Defendants of their respective obligations to ensure that the terms of this Consent Decree are implemented unless and until:

a. The transferee agrees in writing to undertake the obligations required by this Consent Decree with respect to the Facility(ies) being transferred, and to intervene as a Defendant in this action for the purpose of being bound by the applicable terms of this Consent Decree; and

b. The United States and the Applicable Co-Plaintiff after receiving information sufficient to demonstrate that the transferee has the technical and financial means to

comply with the applicable obligations of this Consent Decree, consent in writing to substitute the transferee for the Defendant with respect to such obligations; and

c. The Court approves such substitution.

6. By no later than 10 days prior to the closing date of any transfer of ownership or operation of any of the Covered Sulfuric Acid Plants, the Defendant undertaking the transfer shall provide a copy of this Consent Decree to the proposed transferee. By no later than the closing date of any such transfer, the Defendant undertaking the transfer shall provide written notice of the prospective transfer, together with a copy of a written agreement or acknowledgment by which the transferee agrees to undertake the obligations of this Consent Decree, to the United States and to the Applicable Co-Plaintiff, in the manner set forth in Section XV of this Decree (Notices). Any attempt to transfer ownership or operation of a Covered Sulfuric Acid Plant, or any portion thereof, without complying with the foregoing notice requirements constitutes a violation of this Decree. Defendant may prominently label each page of any written agreement or acknowledgment submitted under this Paragraph as "Confidential Business Information." If so labeled, the United States and the Applicable Co-Plaintiff shall treat the Written Agreement as Confidential Business Information under, respectively, 40 C.F.R. Part 2 and the corollary state laws and regulations applicable to maintaining information in a confidential manner.

7. In any action to enforce this Consent Decree, Defendants shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

III. DEFINITIONS

8. Terms used in this Consent Decree that are defined in the CAA or in federal and state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise provided in this Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

a. "Acid mist" shall mean the pollutant sulfuric acid mist as measured by Method 8 of 40 C.F.R Part 60, Appendix A consistent with 40 C.F.R. § 60.81(b).

b. "Alternative CEMS Plan" shall mean a plan, as more particularly described in Paragraph 32, for monitoring compliance with the SO_2 emissions limits required in Section V.A of this Consent Decree without the use of a Converter Inlet SO_2 Analyzer.

c. "Applicable Co-Plaintiff or Plaintiff-Intervenor" shall mean: (i) with respect to the Shreveport Facility, the State of Louisiana; (ii) with respect to the Cairo and Oregon Facilities, the State of Ohio; (iii) with respect to the Tulsa Facility, the Oklahoma Department of Environmental Quality; and (iv) with respect to the Riverton Facility, the Northern Arapaho Tribe.

d. "Beaumont Facility" shall mean the facility located at 1400 Olin Road, Beaumont, TX 77705, and currently owned and operated by Chemtrade Refinery Services.

e. "BSTR Facilities" shall mean the Beaumont Facility, the Shreveport Facility, the Tulsa Facility, and the Riverton Facility.

f. "Cairo Facility" shall mean the facility located at 7680 Ottawa Road, P.O. Box 310, Cairo, OH 45820, and currently owned and operated by CLI(US).

g. "CEMS" or "Continuous Emission Monitoring System" shall mean the total equipment, required under the CEMS Plans attached as Appendices A-G to this Consent Decree, used to sample and condition (if applicable), to analyze, and to provide a permanent record of emissions or process parameters.

h. "CEMS Plan" shall mean one of the CEMS Plans for each of the Covered Sulfuric Acid Plants that are attached in the following Appendices:

Appendix A --	Beaumont Sulfuric Acid Plant
Appendix B --	Shreveport Sulfuric Acid Plant
Appendix C --	Tulsa Sulfuric Acid Plant
Appendix D --	Riverton 1 Sulfuric Acid Plant
Appendix E --	Riverton 2 Sulfuric Acid Plant
Appendix F --	Cairo Sulfuric Acid Plant
Appendix G --	Oregon A and B Sulfuric Acid Plants

i. "Chemtrade" shall mean, collectively, CLI(US) and Chemtrade Refinery Services.

j. "Chemtrade Refinery Services" shall mean Chemtrade Refinery Services Inc.

k. "CLI(US)" shall mean Chemtrade Logistics (US), Inc.

l. "Complaint" shall mean the Complaint filed by the United States, the State of Louisiana, the State of Ohio, and the Oklahoma Department of Environmental Quality in this action.

m. "Complaint in Intervention" shall mean the Complaint in Intervention filed by the Northern Arapaho Tribe against Chemtrade Refinery Services.

n. "Consent Decree" or "Decree" shall mean this Consent Decree and all appendices attached hereto, but in the event of any conflict between the text of this Consent Decree and any Appendix, the text of this Consent Decree shall control.

o. "Converter Inlet SO_2 Analyzer" shall mean an analyzer that measures the concentration of SO_2 that is fed into the first bed of the converter at a Sulfuric Acid Plant.

p. "Co-Plaintiffs" shall mean the State of Louisiana, the State of Ohio, and the Oklahoma Department of Environmental Quality.

q. "Coulton" shall mean Chemical Company, LP (f/k/a Coulton Chemical Co., LP).

r. "Covered Sulfuric Acid Plants" shall mean the eight Sulfuric Acid Plants that are subject to this Consent Decree: one at the Beaumont Facility; one at the Shreveport Facility; one at the Tulsa Facility; two (Riverton 1 and Riverton 2) at the Riverton Facility; one at the Cairo Facility; and two (Plants A and B) at the Oregon Facility.

s. "Day" shall mean a calendar day unless expressly stated to be a working day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

t. "Defendants" shall mean Chemtrade Refinery Services, CLI(US), and Marsulex.

u. "Effective Date" shall have the meaning given in Section XVI.

v. "Facility" shall mean a plant site at which one or more Covered Sulfuric Acid Plants are located.

w. "LDEQ" shall mean the Louisiana Department of Environmental Quality and any of its successor departments or agencies.

x. "Long-Term Limit" shall mean a 365-day rolling average sulfur dioxide emission limit expressed as pounds of sulfur dioxide emitted per ton of 100% Sulfuric Acid Produced ("lb/ton"); compliance with the Long-Term Limit shall be calculated in accordance with the CEMS Plans attached to this Consent Decree as Appendices F and G. The Long-Term Limit applies at all times, including during periods of Startup, Shutdown, or Malfunction.

y. "Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in whole or in part by poor maintenance or careless operation.

z. "Marsulex" shall mean Marsulex, Inc.

aa. "Mass Cap" shall mean the maximum amount of SO_2 emissions for a Sulfuric Acid Plant expressed in tons of sulfur dioxide emitted during each 12-month period consisting of the most recently concluded month and the eleven months immediately preceding it. Compliance with the Mass Cap shall be calculated in accordance with the CEMS Plans attached to this Consent Decree as Appendices A-E. In determining compliance with the Mass Cap, all SO_2 emissions from a Covered Sulfuric Acid Plant, including emissions during times of Startup, Shutdown, and Malfunction, shall be counted.

bb. "Month" shall mean calendar month.

cc. "NSR" shall mean a program for New Source Review under the CAA. Specifically, "non-attainment NSR" and "major NSR" as used herein refer to the non-attainment

area New Source Review program within the meaning of Part D of Subchapter I of the CAA, 42 U.S.C. §§ 7501-7515; "minor NSR" as used herein refers to any state, regional or local statutes, ordinances or regulations calling for review and approval of non-major new and modified sources of air pollution.

dd. "NSPS" shall mean the standards of performance for new stationary sources codified at 40 C.F.R. Part 60. General NSPS requirements are codified at 40 C.F.R. Part 60, Subpart A. NSPS requirements specifically for sulfuric acid plants are codified at 40 C.F.R. Part 60, Subpart H.

ee. "Ohio EPA" shall mean the Ohio Environmental Protection Agency and any of its successor departments or agencies.

ff. "Oklahoma DEQ" shall mean the Oklahoma Department of Environmental Quality and any of its successor departments or agencies.

gg. "100% Sulfuric Acid Produced" shall mean the stoichiometric quantity of sulfuric acid that would be produced at a Covered Sulfuric Acid Plant if all sulfur trioxide (SO_3) exiting the converter were used to produce sulfuric acid monohydrate. For purposes of this definition, scrubber byproduct (if any) shall be considered to be included in "100% Sulfuric Acid Produced."

hh. "Operating Periods" shall mean periods during which Sulfur or Sulfur-Bearing Compounds are being fed to the furnace of a Covered Sulfuric Acid Plant.

ii. "Oregon Facility" shall mean the facility located at 1400 Otter Creek Road, Oregon Ohio 43616, which includes two Covered Sulfuric Acid Plants (known as Plant A and Plant B), and which is currently owned and operated by Marsulex.

jj. "Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral.

kk. "Parties" shall mean the United States, the State of Louisiana, the State of Ohio, the Oklahoma Department of Environmental Quality, the Northern Arapaho Tribe, Chemtrade Refinery Services, CLI(US), and Marsulex.

ll. "Plaintiff-Intervenor" shall mean the Northern Arapaho Tribe which is a federally-recognized tribe located on the Wind River Reservation in the State of Wyoming.

mm. "PSD" shall mean the attainment area New Source Review program (prevention of significant deterioration) within the meaning of Part C of Subchapter I of the CAA, 42 U.S.C. §§ 7470-7492.

nn. "Riverton Facility" shall mean the facility located at 140 Goes In Lodge Road, Riverton, WY 82501, which includes two Covered Sulfuric Acid Plants (known as Riverton 1 and Riverton 2), and which is currently owned and operated by Chemtrade Refinery Services.

oo. "Section" shall mean a portion of this Consent Decree identified by a roman numeral.

pp. "Short-Term Limit" shall mean a 3-hour rolling average sulfur dioxide emission limit expressed in terms of pounds of sulfur dioxide emitted per ton of 100% Sulfuric Acid Produced ("lb/ton"); compliance with the Short-Term Limit shall be calculated in accordance with the CEMS Plans attached to this Consent Decree as Appendices A-G. The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction.

qq. "Shreveport Facility" shall mean the facility located at 10889 Highway 1 South, Shreveport, LA 71115, and currently owned and operated by Chemtrade Refinery Services.

rr. "Shutdown" shall mean the cessation of operation of a Covered Sulfuric Acid Plant for any reason. Shutdown begins at the time the feed of Sulfur or Sulfur-Bearing Compounds to the furnace ceases and ends at the earlier of three hours later or when the flow rate on the stack volumetric flow rate analyzer falls below 10% of span.

ss. "SO_2" shall mean the pollutant sulfur dioxide.

tt. "Startup" shall mean, with respect to any Covered Sulfuric Acid Plant, the period of time beginning when the feed of Sulfur or Sulfur-Bearing Compounds to the furnace commences and lasting for no more than 24 hours.

uu. "Sulfur or Sulfur-Bearing Compounds" shall mean elemental sulfur, alkylation or other spent sulfuric acids, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge, but they exclude hydrocarbon and conventional fossil fuels such as natural gas or fuel oil.

vv. "Sulfuric Acid Plant" shall mean a process unit engaged in the production of sulfuric acid and related products using the contact process. Marsulex owns and operates two Sulfuric Acid Plants that are subject to this Consent Decree: the A and B Plants at the Oregon Facility. Chemtrade owns and operates the remaining six Sulfuric Acid Plants that are subject to this Consent Decree: one each at the Cairo, Beaumont, Shreveport, and Tulsa Facilities and two (Riverton 1 and 2) at the Riverton Facility.

ww. "Title V Permit" shall mean a permit required by or issued pursuant to the requirements of 42 U.S.C. §§ 7661 - 7661f.

xx. "Ton" or "tons" shall mean short ton or short tons. One Ton equals 2000 pounds.

yy. "Tulsa Facility" shall mean the facility located at 5201 West 21st St., Tulsa, OK 74107, and currently owned and operated by Chemtrade Refinery Services.

zz. "United States" shall mean the United States of America, acting on behalf of U.S. EPA.

aaa. "U.S. EPA" shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.

IV. CIVIL PENALTY

9. Prior to the Lodging of this Consent Decree, Defendants deposited $700,000 into an interest-bearing escrow account as a civil penalty. Within 30 days after the Effective Date of this Consent Decree, Defendants shall transfer to the United States and the Co-Plaintiffs the entire balance in the escrow account, in the following manner:

a. $460,000, plus all accrued interest on the original $700,000, to the United States by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice in accordance with written instructions to be provided to Defendants, following lodging of the Consent Decree, by the Financial Litigation Unit of the U.S. Attorney's Office for the Northern District of Ohio, 801 W. Superior Ave., Suite 400, Cleveland, OH 44113. At the time of payment, Defendants shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in United States, et al. v. Chemtrade Logistics, et al., and shall reference the civil action number, USAO File Number 2008V02383, DOJ case number

90-5-2-1-06944/1, to the United States in the manner set forth in Section XV of this Decree (Notices); by email to acctsreceivable.CINWD@epa.gov; and by mail to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive
Cincinnati, Ohio 45268

b. $60,000 to the State of Louisiana by bank check made payable to the Louisiana Department of Environmental Quality and sent to Darryl Serio, Fiscal Director, Office of Management and Finance, LDEQ, P.O. Box 4303, Baton Rouge, Louisiana 70821-4303.

c. $120,000 to the State of Ohio by three separate checks in the following manner:

i. $72,000 shall be delivered by bank check payable to the order of "Treasurer, State of Ohio" and delivered to Martha Sexton, Paralegal, or her successor, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3400; the memorandum portion of the check, or some other prominent location on the transmittal letter or documentation, shall include reference to "A.G. EAGO No. 363812;"

ii. $24,000 shall be delivered by bank check payable to the order of "Treasurer, State of Ohio" and delivered to Martha Sexton, Paralegal, or her successor, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3400, to fund the Clean Diesel School Bus Program established by the Ohio Director of Environmental Protection pursuant to O.R.C. 3704.144 and O.A.C. Chapters 3745-50 through 52, for the purpose of installing, in accordance with Ohio Environmental Protection Agency guidelines, diesel particulate filters for school buses operated by school districts in the State of Ohio, and which is made available to Ohio school districts in accordance with a grant established by the Ohio Director of Environmental Protection; the memorandum portion of the check, or some other prominent location on the transmittal letter or documentation, shall include a reference to "A.G. EAGO No. 363812" and specify that such monies are to be

deposited into the fund established by Ohio Environmental Protection Agency for the Clean Diesel School Bus Program (Fund 5CD0); and

iii. $24,000 shall be delivered by bank check payable to the order of "Treasurer, State of Ohio" and delivered to Martha Sexton, Paralegal, or her successor, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3400, to fund the Ohio Department of Natural Resources, Division of Forestry, Urban Forestry Grant Program in order to provide for tree-planting projects in the City of Oregon, Ohio; the memorandum portion of the check, or some other prominent location on the transmittal letter or documentation, shall include a reference to "A.G. EAGO No. 363812" and specify that such monies are to be deposited into the fund established by Ohio Department of Natural Resources for the Urban Forestry Grant Program (Fund 5090).

d. $60,000 to the Oklahoma Department of Environmental Quality by certified check or money order made payable to the Oklahoma Department of Environmental Quality Revolving Fund and delivered to: Accounts Receivable, Financial and Human Resources Management, Department of Environmental Quality, P.O. Box 2036, Oklahoma City, Oklahoma 73101-2036.

10. If any portion of the civil penalty due to the United States or a Co-Plaintiff is not paid when due, Defendants shall pay interest on the amount past due, accruing from the Effective Date through the date of payment, at the rate specified in 28 U.S.C. § 1961. Interest payment under this Paragraph shall be in addition to any stipulated penalty due.

11. In the event that this Consent Decree is not entered by the Court, the entire sum of the money deposited in the escrow account, plus all accrued interest thereon, shall be returned to Defendants.

12. Defendant shall not deduct any penalties paid under this Decree pursuant to this Section or Section IX (Stipulated Penalties) in calculating its federal or state or local income tax.

V. COMPLIANCE REQUIREMENTS

A. SO_2 Emission Limits, Mass Caps, and Schedule of Compliance

13. Beaumont Sulfuric Acid Plant. By no later than July 1, 2011, Chemtrade shall comply with the following SO_2 emission requirements at the Beaumont Sulfuric Acid Plant:

a. Short-Term Limit: 2.2 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 380.0 tons/year. Chemtrade shall commence monitoring by July 1, 2011, but shall have until July 1, 2012, to meet this limit, and until July 15, 2012, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

14. Shreveport Sulfuric Acid Plant. By no later than January 1, 2012, Chemtrade shall comply with the following SO_2 emission requirements at the Shreveport Sulfuric Acid Plant:

a. Short-Term Limit: 2.0 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 215.0 tons/year. Chemtrade shall commence monitoring by January 1, 2012, but shall have until January 1, 2013, to meet this limit, and until January 15, 2013, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

15. Tulsa Sulfuric Acid Plant. By no later than January 1, 2010, Chemtrade shall comply with the following SO_2 emission requirements at the Tulsa Sulfuric Acid Plant:

a. Short-Term Limit: 1.7 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 92.4 tons/year. Chemtrade shall commence monitoring by January 1, 2010, but shall have until January 1, 2011, to meet this limit, and until January 15, 2011, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

16. Riverton 1 Sulfuric Acid Plant. By no later than January 1, 2013, Chemtrade shall comply with the following SO_2 emission requirements at the Riverton 1 Sulfuric Acid Plant:

a. Short-Term Limit: 1.9 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 35.0 tons/year. Chemtrade shall commence monitoring by January 1, 2013, but shall have until January 1, 2014, to meet this limit, and until January 15, 2014, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

17. Riverton 2 Sulfuric Acid Plant. By no later than January 1, 2013, Chemtrade shall comply with the following SO_2 emission requirements at the Riverton 2 Sulfuric Acid Plant:

a. Short-Term Limit: 2.1 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 38.0 tons/year. Chemtrade shall commence monitoring by January 1, 2013, but shall have until January 1, 2014, to meet this limit,

and until January 15, 2014, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

18. Oregon A Sulfuric Acid Plant. By no later than July 1, 2011, Marsulex shall comply with the following SO_2 emission requirements at the Oregon A Sulfuric Acid Plant:

a. Long-Term Limit: 2.40 lb/ton. Marsulex shall commence monitoring by July 1, 2011, but shall have until June 30, 2012, to demonstrate compliance with this Long-Term Limit.

b. Short-Term Limit: 3.5 lb/ton.

19. Oregon B Sulfuric Acid Plant. By no later than July 1, 2011, Marsulex shall comply with the following SO_2 emission requirements at the Oregon B Sulfuric Acid Plant:

a. Long-Term Limit: 2.50 lb/ton. Marsulex shall commence monitoring by July 1, 2011, but shall have until June 30, 2012, to demonstrate compliance with this Long-Term Limit.

b. Short-Term Limit: 3.5 lb/ton.

20. Cairo Sulfuric Acid Plant. By no later than July 1, 2011, Marsulex shall cause the Cairo Facility to comply with the following SO_2 emission requirements:

a. Long-Term Limit: 1.90 lb/ton. Chemtrade shall be responsible for demonstrating and maintaining compliance with this limit. Monitoring shall commence by July 1, 2011, but demonstration of compliance with this Long-Term Limit shall not commence until June 30, 2012.

b. Short-Term Limit: 3.0 lb/ton.

21. Proposed Increases to a Mass Cap. Any proposal to increase a Mass Cap in this Decree must be agreed to by all of the applicable Parties and submitted to the Court for approval as a modification to this Decree. Until such time as the Court approves such modification, all Mass Caps in this Decree shall remain in full force and effect. Chemtrade shall provide notice to

the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), prior to submitting or at the time that it submits any permit application that seeks to increase the production capacity or emission limits (including the Mass Cap) for any of Chemtrade's Sulfuric Acid Plants if the proposed increase(s) would be permissible only if the applicable Mass Cap and/or other applicable emission limit(s) in this Decree were relaxed.

B. Scrubber Design

22. In order to achieve compliance with the SO_2 emissions limits in Paragraph 20 for the Cairo Facility, Marsulex shall install a new scrubber. Marsulex shall design the new scrubber to be capable of achieving at least 95% removal efficiency, except during periods of Startup, Shutdown, and Malfunction.

C. Acid Mist Emission Limits

23. Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall comply with the NSPS, Subpart H sulfuric acid mist emission limitation of 0.15 lb/ton of 100% Sulfuric Acid Produced, as set forth at 40 C.F.R. § 60.83, by no later than the following dates:

a. Beaumont: July 1, 2011

b. Shreveport: Date of Lodging

c. Tulsa: Date of Lodging

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: Date of Lodging

h. Oregon B: Date of Lodging

Compliance with the acid mist limit shall be demonstrated using the performance test required by Paragraph 34 of this Consent Decree. For all Facilities, the acid mist performance tests required under Paragraph 34 may be undertaken at the same time as the performance tests for the SO_2 limits required under Paragraph 35 and scheduled under Paragraph 33, notwithstanding that the Shreveport, Tulsa, and Oregon Facilities are required to comply with the NSPS acid mist limits as of the Date of Lodging.

24. Ongoing Responsibility for Compliance with the Acid Mist Limits at the Cairo Facility. For the Cairo Facility, Marsulex shall be responsible for timely complying with the limit set forth in Paragraph 23 and shall remain responsible until the date set forth in a Joint Notice from Marsulex and Chemtrade, pursuant to Paragraph 41, that identifies the date on which Chemtrade accepts responsibility for compliance with the acid mist limit. The Joint Notice must include the results of a performance test that demonstrates compliance in order for the transfer to be effective.

D. NSPS Applicability

25. Each Covered Sulfuric Acid Plant shall be considered an affected facility for purposes of the New Source Performance Standards ("NSPS"), 40 C.F.R. Part 60, Subpart H, by no later than the following dates:

a. Beaumont: July 1, 2011

b. Shreveport: Date of Lodging

c. Tulsa: Date of Lodging

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: Date of Lodging

h. Oregon B: Date of Lodging

After such date, each Sulfuric Acid Plant shall comply with all applicable requirements for affected facilities under the NSPS 40 C.F.R. Part 60, Subparts A and H, or with the requirements of this Consent Decree (if more stringent). A continuous opacity monitoring system ("COMS") may be used for monitoring compliance with the opacity limit found at 40 C.F.R. § 60.83(a)(2) at any of the Facilities. Satisfactory compliance with notice and compliance demonstration obligations set forth in this Consent Decree shall be deemed to satisfy all applicable initial notification and compliance demonstration requirements of NSPS Subparts A and H.

26. Ongoing Responsibility for Compliance with the NSPS at the Cairo Facility. For the Cairo Facility, Marsulex shall be responsible for timely complying with the requirements of the NSPS and shall remain responsible until the date set forth in a Joint Notice from Marsulex and Chemtrade, submitted pursuant to Paragraph 41, that identifies the date on which Chemtrade accepts responsibility for compliance with the NSPS.

27. Best Practices. At all times after the Effective Date of this Consent Decree, including periods of Startup, Shutdown, and Malfunction, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall to the extent practicable maintain and operate each of their Covered Sulfuric Acid Plants, including associated

air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

E. Emissions Monitoring

28. Installation, Certification, and Calibration. By no later than the following dates, Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall install, certify, and calibrate an SO_2 continuous emissions monitoring system ("CEMS") capable of directly measuring the SO_2 emission rate expressed as lb/ton of 100% Sulfuric Acid Produced:

a. Beaumont: July 1, 2011

b. Shreveport: January 1, 2012

c. Tulsa: January 1, 2010

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: July 1, 2011

h. Oregon B: July1, 2011

29. Responsibility for Emissions Monitoring. After the dates set forth in Paragraph 28, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the BSTR Facilities, shall operate and maintain the CEMS. For the CEMS at the Cairo Facility, Marsulex shall operate and maintain it from June 30, 2011, until the date set forth in a Joint Notice from Marsulex and Chemtrade, submitted pursuant to Paragraph 41, that identifies the

date on which Chemtrade accepts responsibility for the operation and maintenance of the Cairo CEMS.

30. Continuous Operation of CEMS and Minimization of CEMS Downtime. After the dates set forth in Paragraph 28, and except during CEMS breakdowns, repairs, calibration checks, and zero span adjustments, the CEMS shall be in continuous operation during all Operating Periods and Shutdowns to demonstrate compliance with the SO_2 emission limits established in Subsection V.A of this Consent Decree. The Defendant responsible for operating and maintaining the CEMS shall take all steps necessary to avoid CEMS breakdowns and minimize CEMS downtime. This shall include, but is not limited to, operating and maintaining the CEMS in accordance with best practices and maintaining an on-site inventory of spare parts or other supplies necessary to make rapid repairs to the equipment.

31. SO_2 CEMS Plans. CEMS Plans that describe how Marsulex and Chemtrade shall monitor compliance with the SO_2 emission limits established in Subsection V.A of this Consent Decree, including the methodology that they shall use to demonstrate compliance in the event of CEMS downtime lasting longer than 24 hours, are attached in Appendices A - G. On and after the dates set forth in Subparagraphs 28.a - e, Chemtrade shall implement the CEMS Plans at Appendices A - E for the BSTR Facilities. On and after July 1, 2011, Marsulex shall implement the CEMS Plan at Appendix G for the Oregon Facility. Marsulex also shall implement the CEMS Plan at Appendix F for the Cairo Facility from July 1, 2011, until the date set forth in a Joint Notice from Marsulex and Chemtrade, submitted pursuant to Paragraph 41, that identifies the date on which Chemtrade accepts responsibility for the implementation of the Cairo CEMS

Plan. The monitoring methods specified in the CEMS Plans have been approved as appropriate alternative monitoring methods for purposes of NSPS, pursuant to 40 C.F.R. § 60.13(i).

32. Modified or Alternative CEMS Plans for Beaumont, Shreveport, Riverton 2, Oregon A, and/or Oregon B Sulfuric Acid Plants. Chemtrade, with respect to the Beaumont, Shreveport, and/or Riverton 2 Sulfuric Acid Plants, and Marsulex, with respect to the Oregon A and/or B Sulfuric Acid Plants, may secure relief from the requirement, in the applicable CEMS Plan, to install a Converter Inlet SO_2 Analyzer by complying with the provisions of this Paragraph. A decision to seek relief from the requirement to install a Converter Inlet SO_2 Analyzer is within the discretion of the Applicable Defendant.

a. Basis for Proposing a CEMS Plan that Does not Include the Use of a Converter Inlet SO_2 Analyzer. Either Defendant may propose a CEMS Plan that does not include the use of a Converter Inlet SO_2 Analyzer ("Alternative CEMS Plan") only if all of the following conditions are met:

i. Defendant has undertaken best efforts to use a Converter Inlet SO_2 Analyzer in compliance with the requirements of the applicable CEMS Plan;

ii. Either the use of a Converter Inlet SO_2 Analyzer is technically infeasible or a Converter Inlet SO_2 Analyzer cannot be configured in such a way as to allow Defendant to measure SO_2 converter inlet concentration with sufficient accuracy; and

iii. Modifications to the applicable CEMS Plan and/or Performance Specifications for the Converter Inlet SO_2 Analyzer would not allow Defendant to alleviate the conditions that resulted in technical infeasibility or inaccuracy in measurement.

b. Modified CEMS Plan. If modifications to the applicable CEMS Plan and/or Performance Specifications for the Converter Inlet SO_2 Analyzer will allow Defendant to use a Converter Inlet SO_2 Analyzer to measure converter inlet SO_2 concentration, Defendant shall submit a proposal to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), to modify the applicable CEMS Plan rather than propose an alternative that does not include the use of a Converter Inlet SO_2 Analyzer. U.S. EPA, after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor, will either approve or disapprove, in whole or in part, the proposed modification(s). Agreed-upon modifications to the applicable CEMS Plan under this Subparagraph are non-material modifications to this Consent Decree and will be effective when approved by U.S. EPA. Within thirty (30) days after receipt of a U.S. EPA notice disapproving Defendant's proposed modified CEMS Plan or directing Defendant to implement a Modified CEMS Plan with which Defendant disagrees, Defendant will invoke Section XI of this Decree (Dispute Resolution).

c. Technical Infeasibility and Alternative CEMS Plan Report. If all of the conditions in Subparagraph 32.a are satisfied, Defendant may submit a Technical Infeasibility and Alternative CEMS Plan Report, to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), that includes detailed descriptions of the following:

i. The efforts that Defendant undertook to use a Converter Inlet SO_2 Analyzer in compliance with the applicable CEMS Plan, including a detailed description of all of the efforts Defendant and its equipment vendors, contractors, and/or consultants undertook to install, certify, maintain, and/or operate the Converter Inlet SO_2 Analyzer, together with any supporting documentation;

ii. All potential remedies considered by Defendant and/or its equipment vendors, contractors, and/or consultants to install, certify, maintain, and/or operate a Converter Inlet SO_2 Analyzer;

iii. The relevant events and considerations that led Defendant to conclude that either the use of a Converter Inlet SO_2 Analyzer was technically infeasible or a Converter Inlet SO_2 Analyzer could not be configured in such a way to allow Defendant to measure SO_2 converter inlet concentration with sufficient accuracy, including all related correspondence with equipment vendors, contractors, and/or consultants, and any other supporting documentation;

iv. The modifications to the applicable CEMS Plan and/or Performance Specifications that Defendant considered to evaluate whether the conditions that resulted in technical infeasibility or measurement inaccuracy could be alleviated;

v. The alternative plan that Defendant proposes for measuring converter inlet SO_2 concentration or otherwise measuring the emission rate expressed as lb/ton ("Alternative CEMS Plan");

vi. Justifications for the proposed Alternative CEMS Plan;

vii. Procedures that Defendant proposes for verifying the accuracy and performance of the proposed Alternative CEMS Plan; and

viii. Any other information that Defendant deems relevant.

d. U.S. EPA Review and Approval of Alternative CEMS Plans. Defendant shall provide all information requested by U.S. EPA or the Applicable Co-Plaintiff or Plaintiff-Intervenor after Defendant's submission of the Technical Infeasibility and Alternative CEMS Plan Report. U.S. EPA, after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor, will either approve or disapprove, in whole or in part, Defendant's proposed Alternative CEMS Plan. If U.S. EPA plans to disapprove all of part of a proposed Alternative CEMS Plan, U.S. EPA first will consult with Defendant to determine if a mutually-agreeable CEMS Plan (whether it be the original CEMS Plan attached to this Decree, a Modified CEMS

Plan, or an Alternative CEMS Plan) can be agreed to. After consultation with Defendant, U.S. EPA will require Defendant to implement either the original CEMS Plan, a U.S. EPA-approved Modified CEMS Plan, or a U.S. EPA-approved Alternative CEMS Plan. In no event will U.S. EPA approve an Alternative CEMS Plan it deems to be inferior to the monitoring procedures specified in 40 C.F.R. Part 60, Subpart H. The basis for any decision by U.S. EPA to disapprove, in whole or in part, any Alternative CEMS Plan will be the failure to satisfy one or more of the conditions in Subparagraph 32.a. Within thirty (30) days after receipt of a U.S. EPA notice disapproving an Alternative CEMS Plan or directing Defendant to implement any CEMS Plan with which Defendant disagrees, Defendant must invoke Section XI of this Decree (Dispute Resolution) or will be deemed to have accepted U.S. EPA's decision.

e. Defendant shall implement any Modified or Alternative CEMS Plans that it proposes under Subparagraphs 32.b or 32.c unless and until: (i) a different Plan is mutually agreed to by Defendant and U.S. EPA (after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor) and Defendant consents to implement this Plan; or (ii) Defendant is required, by Court Order issued through dispute resolution proceedings (Section XI), to implement a Plan.

f. Timing for Proposing a Modified or Alternative CEMS Plan. If Defendant seeks to propose a Modified or Alternative CEMS Plan, Defendant shall submit its request to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), by no later than four (4) months prior to the compliance dates for the Short-Term SO_2 Limits in Subsection V.A. In the request, Defendant shall comply with the

requirements of Subparagraph 32.b (for a Modified CEMS Plan) or 32.c (for an Alternative CEMS Plan).

F. Performance Testing

33. Dates. The performance tests required in this Subsection V.F shall be performed at the following Covered Sulfuric Acid Plants by no later than the following dates:

a. Beaumont: July 1, 2011

b. Shreveport: January 1, 2012

c. Tulsa: January 1, 2010

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: July 1, 2011

h. Oregon B: July 1, 2011

34. Acid Mist. Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall conduct a performance test measuring the emission rate of acid mist in accordance with the applicable requirements of 40 C.F.R. Part 60, Appendix A, Reference Method 8, or an alternative method approved by U.S. EPA. These performance tests shall be used to demonstrate compliance with the acid mist emission limit established in Paragraph 23 and may serve as the NSPS performance test required under 40 C.F.R. § 60.8. Marsulex and Chemtrade shall take all steps necessary to assure accurate measurements of 100% sulfuric acid production during each test run.

35. SO_2 Emission Limits. Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall conduct a performance test measuring the emission rate of SO_2 in accordance with the applicable requirements of 40 C.F.R. Part 60, Appendix A, Reference Method 8, and Part 60, Appendix B, Performance Specification 2. This test shall consist of at least nine method test runs and may serve as the CEMS relative accuracy test required under Performance Specification 2. If applicable, this test may also serve as the NSPS performance test required under 40 C.F.R. § 60.8. Marsulex and Chemtrade shall take all steps necessary to assure accurate measurements of 100% sulfuric acid production during each test run.

36. Advance Notification. By no later than 30 days before any performance test required by this Section V.F. is conducted, Marsulex and Chemtrade, as applicable, shall provide notice, in the manner set forth in Section XV (Notices), of its intent to conduct such test to U.S. EPA, the state in which the Covered Sulfuric Acid Plant is located, and, if applicable, the Plaintiff-Intervenor. This notification must include the scheduled date of the test, an emissions test protocol, a description of the planned operating rate and operating conditions, and the procedures that will be used to measure 100% Sulfuric Acid Production. If U.S. EPA or a Co-Plaintiff requires any adjustment of the testing protocol or operating conditions, Defendant shall make such adjustments and conduct the performance test in conformity with U.S. EPA's and/or the Co-Plaintiff's requirements or submit the issue(s) for resolution under the dispute resolution provisions (Section XI) of this Consent Decree.

37. Report of Results. By no later than 60 days after conducting a performance test required under this Subsection V.F., Marsulex, with respect to the Oregon and Cairo Facilities,

and Chemtrade, with respect to the BSTR Facilities, shall submit to U.S. EPA and to the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), a report documenting the results of the performance tests.

G. Operation and Maintenance Plans

38. By no later than the following dates, Marsulex, with respect to the Oregon Facility, Chemtrade, with respect to the BSTR Facilities, and Marsulex and Chemtrade together, with respect to the Cairo Facility, shall prepare and submit to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), an Operation and Maintenance Plan ("O & M Plan") for each Covered Sulfuric Acid Plant:

a. Beaumont: July 1, 2011

b. Shreveport: January 1, 2012

c. Tulsa: January 1, 2010

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: July 1, 2011

h. Oregon B: July 1, 2011

U.S. EPA and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor may provide comments and/or recommendations with respect to each Plan.

39. Each O & M Plan shall describe the operating and maintenance procedures necessary to: (i) minimize the frequency of Covered Sulfuric Acid Plant Shutdowns (thereby reducing the number of Startups of each Covered Sulfuric Acid Plant); and (ii) at all times,

including during periods of Startup, Shutdown, and Malfunction, maintain and operate each Covered Sulfuric Acid Plant, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

40. By no later than the dates set forth in Paragraph 38, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall implement the O & M Plan. No less frequently than once every three years, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities shall review, and update as necessary, the O & M Plan for their respective Covered Sulfuric Acid Plants.

H. Joint Notice Regarding the Transfer of Responsibilities for Compliance with Certain Requirements related to the Cairo Facility

41. Joint Notice.

a. Requirements Subject to the Transfer of Responsibility. Marsulex and Chemtrade expect to transfer responsibility for compliance with the following requirements at the Cairo Facility from Marsulex to Chemtrade at some time during the course of this Consent Decree: (i) the SO_2 Short-Term Limit in Subparagraph 20.b; (ii) the acid mist limit in Paragraph 23.f; (iii) the NSPS obligations of Paragraph 25; (iv) the operation and maintenance of the CEMS pursuant to Paragraphs 29 - 30; (v) the implementation of the CEMS Plan pursuant to Paragraph 31 and Appendix F; and (vi) the reporting requirements of Paragraph 55. Marsulex and Chemtrade have entered into a separate agreement (to which neither the United States nor the State of Ohio is a party) that governs, *inter alia*, that transfer of responsibility.

b. Liability for the Requirements of Subparagraph 41.a and Contents of a Joint Notice. Notwithstanding Subparagraph 41.a, for purposes of this Consent Decree,

Marsulex shall remain liable for each of the requirements identified in Subparagraph 41.a unless and until Marsulex and Chemtrade submit a notice, jointly executed by them ("Joint Notice"), to the United States and Ohio, in the manner set forth in Section XV (Notices) and by certified mail, that specifically references this Paragraph and identifies the date on which compliance with the relevant requirement will be transferred. In order for the transfer of responsibility for compliance with the SO_2 Short-Term Limit and the acid mist limit to be effective, the Joint Notice must include the results of a performance test that demonstrates compliance with each of these limits.

c. Multiple Joint Notices Allowed. Separate Joint Notices for separate compliance requirements may be submitted or a Joint Notice or Notices that include the transfer of more than one compliance requirement may be submitted.

42. For those requirements for which responsibility is transferred from Marsulex to Chemtrade pursuant to a Joint Notice under Paragraph 41, Marsulex shall have no further responsibility, liability, or obligation under this Consent Decree on and after the date specified in the Joint Notice for the transfer of responsibility for the requirement(s) of this Consent Decree that is(are) the subject of the Joint Notice; provided however, that nothing in this provision is intended to:

a. Prevent the United States and/or Ohio from seeking stipulated penalties from Marsulex, or otherwise enforcing this Consent Decree against Marsulex, after the transfer of responsibility date specified in a Joint Notice for violations or non-compliance that occurred prior to the transfer of responsibility date in the Joint Notice; or

b. Supersede any separate agreement, made outside of this Consent Decree, related to indemnification as between Chemtrade and Marsulex for stipulated penalties.

43. In no event shall the United States or Ohio be a party to any dispute or dispute resolution process between Marsulex and Chemtrade regarding the transfer of compliance responsibilities at the Cairo Facility, including the date on which a CEMS is capable of being operated and maintained. Such disputes are not governed by this Consent Decree or the dispute resolution provisions herein (Section XI).

VI. PERMITS

44. Permits Prior to Construction or Installation. Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall obtain all required federal, state, and local permits necessary for performing any compliance obligation under this Consent Decree, including without limitation permits for construction of pollution control technology and the installation of equipment at the Covered Sulfuric Acid Plants. Chemtrade and Marsulex may seek relief under the provisions of Section X (Force Majeure) of this Consent Decree for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation if Chemtrade or Marsulex, as applicable, has submitted timely and complete applications and has taken all other actions necessary to obtain such permit(s) or approval(s).

45. Permit Applications for Permits Incorporating the Limits in Subsection V.A. By no later than the dates set forth in Paragraph 46, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall submit to the relevant permitting authority a complete application to incorporate the following requirements into federally enforceable minor or major new source review permits or other federally-enforceable permits (other than Title V permits):

a. For each Covered Sulfuric Acid Plant:

i. The limits for SO_2 emissions and Mass Caps established in Section V.A. of this Consent Decree; and

ii. The monitoring requirements established in the CEMS Plans.

b. For the Beaumont, Riverton 1 and 2, and Cairo Sulfuric Acid Plants (which unlike the Tulsa, Shreveport, and Oregon A and B Sulfuric Acid Plants, do not already have these requirements incorporated into their permits):

i. The acid mist emission limit established in Section V.C. of this Consent Decree;

ii. The applicability of 40 C.F.R. Part 60, Subparts A and H, and all requirements therein.

46. Dates for Permit Applications. Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall submit the permit applications required in Paragraph 45 by the following dates:

a. Beaumont: January 1, 2013

b. Shreveport: July 1, 2013

c. Tulsa: July 1, 2011

d. Riverton 1: July 1, 2014

e. Riverton 2: July 1, 2014

f. Oregon A: January 1, 2013

g. Oregon B: January 1, 2013

h. Cairo: 365 days after the date of the Joint Notice from Chemtrade and Marsulex in which Chemtrade accepts responsibility for compliance with the Short-Term Limit set forth in Paragraph 20.

47. Following submission of the complete permit applications, Chemtrade and Marsulex shall cooperate with the applicable federal, state or local agency by promptly submitting to the applicable agency all available information that the applicable agency seeks following its receipt of the permit materials.

48. Title V or Other Operating Permits: Emission Limits and Standards. This Consent Decree shall not terminate until the requirements set forth in this Paragraph are incorporated into: (i) a Title V operating permit for all Facilities except the Tulsa Facility (which, as of the Effective Date of this Consent Decree, is a minor source and does not have a Title V permit); and (ii) the operating permit for the Tulsa Facility. Therefore, during the duration of this Consent Decree, Chemtrade and Marsulex shall file all applications necessary to incorporate the following Consent Decree requirements into the operating permits for each Facility in accordance with state rules, including applicable administrative amendment provisions of such rules:

a. For each Covered Sulfuric Acid Plant:

i. The limits for SO_2 emissions and Mass Caps established in Section V.A. of this Consent Decree;

ii. A requirement that the SO_2 and acid mist emission limits shall not be relaxed; and

iii. The monitoring requirements established in the CEMS Plans.

b. For the Beaumont, Riverton 1 and 2, and Cairo Sulfuric Acid Plants (which unlike the Tulsa, Riverton, and Oregon A and B Sulfuric Acid Plants, do not already have these requirements incorporated into their operating permits):

i. The acid mist emission limit established in Section V.C. of this Consent Decree;

ii. The applicability of 40 C.F.R. Part 60, Subparts A and H, and all requirements therein.

49. Requirements incorporated into Title V operating permits (for the non-Tulsa Facilities) or other operating permits (for the Tulsa Facility) pursuant to Paragraph 48 shall survive termination of this Consent Decree.

50. For any permit applications required by this Section VI that are filed after the Effective Date of this Consent Decree, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall submit to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), a copy of each application, as well as a copy of any permit proposed as a result of such application, to allow for timely participation in any public comment opportunity. If, as of the Effective Date, Chemtrade and/or Marsulex, as applicable, already has received any permit necessary to implement the requirements of this Consent Decree, then no later than 30 days after the Effective Date, Chemtrade and/or Marsulex, as applicable, shall submit copies of such permits to U.S. EPA, and, for the Riverton Facility, to the Plaintiff-Intervenor, in the manner set forth in Section XV (Notices). U.S. EPA and/or the Plaintiff-Intervenor may excuse in writing all or part of the latter submissions if copies of such permits have already been submitted prior to the Effective Date.

51. Emission Credit Generation. Chemtrade and Marsulex shall not use any SO_2 or acid mist emission reductions resulting from any projects conducted pursuant to this Consent Decree for the purpose of obtaining netting credits or offsets in any Prevention of Significant

Deterioration (PSD), major NSR, and/or minor NSR permit or permit proceeding; provided however, that nothing in this Consent Decree is intended to prohibit a Defendant from:

a. Using emission reductions from the installation of controls required by this Consent Decree in determining whether a project that includes both the installation of controls under this Consent Decree and other construction or modifications (including construction or modifications that affect the facility's production capacity) that occur at the same time and are permitted as a single project triggers PSD and/or NSR requirements;

b. Using netting reductions or emission offset credits from units that are covered by this Decree to the extent that the proposed netting reductions or emission offset credits represent the difference between the emission limits set forth in this Consent Decree and the more stringent emission limits that the applicable Defendant may elect to accept for these units in a permitting process**;**

c. Using netting reductions or emissions offset credits from units that are not subject to an emission limitation under this Consent Decree;

d. Using netting reductions or emissions offset credits for any pollutants other than sulfur dioxide or sulfuric acid mist.

VII. MODIFICATIONS TO IMPLEMENTATION SCHEDULES RELATED TO THE UNAVAILABILITY OF A QUALIFIED CONTRACTOR/CONSULTANT

52. Modifications to Implementation Schedules related to the Unavailability of Qualified Contractors and/or Consultants for the Defendants.

a. Defendants' General Obligation. Chemtrade and Marsulex, as applicable, shall be solely responsible for compliance with any deadline or the performance of any work described in Section V of this Consent Decree, including work that is conducted using the services of a qualified contractor and/or consultant.

b. Conditions Precedent to Utilizing this Section. Before either Defendant may seek to extend any deadlines set forth in Section V through the use of this Section VII, the applicable Defendant must have: (i) developed and submitted to U.S. EPA and any Applicable

Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), at the outset of the project, a Gantt chart or similar document identifying the critical path analysis for the project including identifying when contractors and/or consultants first must be consulted and when it/they must be retained; Defendant may submit updates to this chart or document as the project proceeds; (ii) undertaken the steps in the project that could reasonably be undertaken without the retention of a qualified contractor or consultant; (iii) undertaken a good faith effort to identify all contractors or consultants that would be qualified and available to undertake the work in the area of the country where the Covered Sulfuric Acid Plant is located; and (iv) contacted all qualified contractors and consultants about their earliest availability for doing the work.

c. Notification. If it appears that the unavailability of a qualified contractor or consultant may delay a Defendant from meeting the compliance requirements in Section V pursuant to the schedule set forth therein, the Defendant shall notify U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor in writing, in the manner set forth in Section XV (Notices), of any such delays as soon as the Defendant reasonably concludes that the delay could affect its ability to comply with the implementation schedule.

d. Contents of the Notice. In the notice due under Paragraph 52.c, the Defendant must include: (i) the original Gantt chart and all updates, if any; (ii) the steps that Defendant undertook in furtherance of the project; (iii) an identification of each qualified contractor/consultant; (iv) a written representation from each qualified contractor/consultant regarding the earliest schedule under which that contractor/consultant could complete the work or an affidavit from the Defendant containing such information; (v) the date(s) that the Defendant contends it will be unable to meet; (vi) proposed revised date(s) for approval by U.S. EPA, after

consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor; and (vii) the specific efforts Defendant will take to continue to complete the project.

e. Cost Not a Factor. Cost shall not be a consideration in determining the unavailability of a qualified contractor and/or consultant unless the cost is significantly disproportionate to reasonable and customary commercial rates.

f. Dispute Resolution. Section XI ("Dispute Resolution") shall govern the resolution of any dispute respecting any claim by either Defendant that the unavailability of a qualified contractor/consultant will cause a delay, including any disputes about the duration of the delay attributable to the unavailability of a qualified contractor/consultant. U.S. EPA, in consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, will not unreasonably withhold its consent to a request for a schedule modification if the requirements of this Paragraph 52 are met.

g. Procedures for Modifying Dates. The provisions of Section XVIII ("Modification") shall govern the manner in which modifications under this Section shall be made.

h. Stipulated Penalties Inapplicable. Stipulated penalties shall not accrue nor be due and owing during any period between an originally scheduled implementation date and an approved modification to such date; provided however, that U.S. EPA and any Applicable Co-Plaintiff will retain the right to seek stipulated penalties if U.S. EPA does not approve a modification to a date or dates.

i. Force Majeure Inapplicable. The unavailability of a qualified contractor or consultant will not constitute a *force majeure* event triggering the requirements of Section X; instead this Section VII will apply.

53. [Reserved.]

VIII. REPORTING REQUIREMENTS

54. Information Documenting how Compliance will be Achieved. By no later than the following dates, Marsulex and Chemtrade, as applicable, shall submit to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), information (including, if applicable, preliminary design specifications) documenting how Marsulex or Chemtrade, as applicable, intends to comply with the emission limitations set forth in Subsection V.A:

Facility	Applicable Defendant	Date Compliance Information is Required
Beaumont	Chemtrade	July 1, 2010
Shreveport	Chemtrade	January 1, 2011
Tulsa	Chemtrade	January 1, 2009
Riverton	Chemtrade	January 1, 2012
Oregon	Marsulex	July 1, 2010
Cairo	Marsulex	July 1, 2010

55. Semi-Annual Reports: Contents. For the time frames and Covered Sulfuric Acid Plants set forth in Paragraph 56, the applicable Defendant named therein shall submit to U.S. EPA and the Co-Plaintiffs and Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), a semi-annual progress report no later than January 31 and July 31 of each year, with

the first semi-annual report due on July 31, 2009. Each semi-annual report shall contain the following information with respect to, respectively, the half-year between July 1 and December 31, or the half-year between January 1 and June 30:

a. Work performed and progress made toward implementing the requirements of Section V;

b. Any significant modifications to previously-submitted design specifications of any pollution control system, or to monitoring equipment, required to comply with the requirements of Section V;

c. Any significant problems encountered or anticipated in complying with the requirements of Section V;

d. A summary of the emissions monitoring and testing data collected to demonstrate compliance with a requirement of this Consent Decree;

e. On and after the compliance dates for Short-Term Limits, a description of all periods of Startup, Shutdown, and Malfunction, including quantity of sulfur dioxide emitted during such periods and the causes of Malfunctions;

f. On and after the compliance dates for Short-Term Limits, all information required to be reported in the applicable CEMS Plan;

g. Status of permit applications and a summary of all permitting activity pertaining to compliance with this Consent Decree;

h. Any reports to State agencies pertaining to compliance with this Consent Decree;

i. For the Cairo Facility, the dates on which, pursuant to the requirements of Section V.H, the responsibility for compliance with each of the requirements that are subject to being transferred is in fact transferred from Marsulex to Chemtrade; and

j. After submission of the O&M Plans specified in Paragraph 38 of this Consent Decree, a description of any changes or updates made to such Plans.

56. Semi-Annual Reports: Responsible Party and Time Frame.

a. BSTR Facilities. Chemtrade shall be responsible for the semi-annual reports required in Paragraph 55 for the BSTR Facilities from the Effective Date of this Consent Decree until termination of the Consent Decree for the Facility being reported upon.

b. Oregon Facility. Marsulex shall be responsible for the semi-annual reports required in Paragraph 55 for the Oregon Facility from the Effective Date of this Consent Decree until termination of the Consent Decree for the Oregon Facility.

c. Cairo Facility.

i. Marsulex shall be responsible for the semi-annual reports (whether they cover a full six months or, for the first and last report, only part of six months) required in Paragraph 55 for the Cairo Facility from the Effective Date of this Consent Decree until the date of the transfer of the last compliance requirement between Marsulex and Chemtrade as specified in a final Joint Notice.

ii. Chemtrade shall be responsible for the semi-annual report (whether it covers a full six months or only part of six months) that is first due after the date of the transfer of the last compliance requirement between Marsulex and Chemtrade as specified in a final Joint Notice. This report shall cover the period of time between the date that Chemtrade accepts responsibility for the last compliance requirement for which responsibility will be transferred and December 31 or June 30, as applicable. Thereafter, Chemtrade shall be responsible for the semi-annual reports at the Cairo Facility until termination of this Consent Decree for the Cairo Facility.

57. Notification of Potential Non-Compliance. If Chemtrade or Marsulex violates, or has reason to believe that it may violate, any requirement of this Consent Decree or of any applicable permit, Chemtrade or Marsulex, as applicable, shall notify the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor of such violation or potential violation and its

duration or anticipated likely duration, in writing, within 45 calendar days of the day Chemtrade or Marsulex, as applicable, first becomes aware of the violation or potential violation, with an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Chemtrade or Marsulex, as applicable, shall so state in the report. Chemtrade or Marsulex, as applicable, shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 days of the day Chemtrade or Marsulex, as applicable, becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Chemtrade or Marsulex, as applicable, of its obligation to provide the notice required by Section X of this Consent Decree (Force Majeure).

58. Imminent Threat. Whenever any violation of this Consent Decree or of any applicable permit or any other event affecting the performance of Marsulex or Chemtrade under this Decree results in a reportable release of a hazardous substance, Chemtrade or Marsulex, as applicable, shall notify U.S. EPA, the state in which the Covered Sulfuric Acid Plant is located, and the Plaintiff-Intervenor, orally or by electronic or facsimile transmission as soon as possible, but no later than 24 hours after Chemtrade or Marsulex, as applicable, first knew of, or should have known of, the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

59. All reports shall be submitted to the persons and in the manner designated in Section XV of this Consent Decree (Notices).

60. Each report submitted by Chemtrade or Marsulex, as applicable, under this Section shall be signed by a plant manager, a corporate official responsible for environmental management and compliance, or a corporate official responsible for plant engineering management of Chemtrade or Marsulex, as applicable, and shall include the following certification:

> I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowingly and willfully submitting a materially false statement.

61. The reporting requirements of this Consent Decree do not relieve Chemtrade or Marsulex, as applicable, of any reporting obligations required by the CAA or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement. The reporting requirements of this Section are in addition to any other reports, plans, or submissions required by other Sections of this Consent Decree.

62. Any information provided pursuant to this Consent Decree may be used by the United States or the Co-Plaintiffs or the Plaintiff-Intervenor in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law. All information and documents submitted by Defendants to the United States or the Co-Plaintiffs or the Plaintiff-Intervenor pursuant to this Consent Decree shall be subject to public inspection unless identified and supported as confidential business information in accordance with 40 C.F.R. Part 2

and other applicable state law. No confidential business information shall be required to be submitted to the Plaintiff-Intervenor. Under no circumstances shall emissions data be identified or considered confidential business information.

IX. STIPULATED PENALTIES

63. Failure to Pay Civil Penalty. If Defendants fail to pay any portion of the civil penalty required to be paid under Section IV of this Decree (Civil Penalty) when due, Defendants shall be jointly and severally liable for a stipulated penalty of $1,000 per day for each day that the payment is late. Late payment of the civil penalty and any accrued stipulated penalties shall be made in accordance with Paragraph 9. Each stipulated penalty due under this Paragraph shall be paid exclusively to the Party or Parties to whom Defendants failed to make timely payment of the full civil penalty due.

64. Failure to Meet all Other Consent Decree Obligations. Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the BSTR Facilities, shall be liable for stipulated penalties to the United States and to the Applicable Co-Plaintiff for violations of this Consent Decree as specified in Paragraphs 65 - 73 unless excused under Section X (Force Majeure). With respect to the Cairo Facility, the following Table identifies the time periods during which each Defendant is liable for stipulated penalties for Consent Decree violations. If no time period is specified, then the listed Defendant shall be exclusively responsible for stipulated penalties under that provision.

CD Requirement	Defendant Liable	Time Period
¶ 20.a: Long-Term SO_2 Limit	Chemtrade	
¶ 20.b: Short-Term SO_2 Limit	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
¶ 23.f Acid Mist Limit ¶ 25: NSPS, including opacity	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
	Chemtrade	On and after the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
¶ 27: Best Practices	Chemtrade	
¶¶ 28: Installation, Certification, and Calibration of a CEMS	Marsulex	
¶¶ 29 - 31: Maintenance and Operation of a CEMS and Implementation of the CEMS Plans in Appendix F	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
	Chemtrade	On and after the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
¶ 33 - 37: Performance Testing	Marsulex	
¶¶ 38 - 39: O & M Plan	Marsulex and Chemtrade	Jointly and Severally
¶ 40: O & M Implementation and Updates as necessary	Chemtrade	
¶¶ 44 - 50: Permit Requirements	Chemtrade	

¶¶ 54: Reporting: Information documenting how compliance will be achieved	Marsulex	
¶ 55: Reporting: Semi-Annual Reports	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
	Chemtrade	On and after the date of the transfer of responsibility as specified in the ¶ 41 Joint Notice

65. Short-Term SO_2 Limits and SO_2 Limits During Startup, as set forth in Paragraphs 13 - 20. For each violation of a Short-Term SO_2 Limit or an SO_2 Limit during Startup, in any non-overlapping 3-hour period:

Percentage Over the Limit	Penalty per Violation
1 - 50%	$250
51 - 100%	$500
Over 100%	$750

An example of the computation of penalties under this Paragraph is set forth in Appendix I. Where a violation of the Short-Term SO_2 Limit also violates the NSPS SO_2 Limit, the provisions of this stipulated penalty paragraph shall apply.

66. Long-Term SO_2 Limits as set forth in Paragraphs 18 - 20. For each violation, per day, of the Long-Term SO_2 Limit:

Period of Noncompliance	Penalty per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

An example of the computation of penalties under this Paragraph is set forth in Appendix I.

67. Mass Cap. For each violation of a Mass Cap identified in Paragraphs 13 - 17, a stipulated penalty of $150,000 per violation shall accrue. A Mass Cap violation may occur only one time per month and only when the sum of the SO_2 emitted in the immediately preceding 12 months exceeds the Mass Cap.

68. Opacity Limits in the NSPS. For each violation of the opacity requirements of 40 C.F.R. § 60.83(a)(2), as demonstrated by a Method 9 reference test, $40 per six (6) minute average reading in excess of the limit, up to a maximum of $2000 per day.

69. Emissions Monitoring. For each violation of any of the requirements of Paragraphs 28 - 31 and the applicable CEMS Plan:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$1500
15th - 30th day	$2000
31st day and each day thereafter	$2500

70. Performance Testing. For each violation of any of the requirements of Paragraphs 33 - 37:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

71. Permitting Requirements. For each violation of any of the requirements of Paragraphs 44 - 50:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

72. Reporting Requirements. For each violation of any of the requirements of Paragraphs 37, 54, 55 and 57:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$150
15th - 30th day	$250
31st day and each day thereafter	$500

73. All Others. For each failure to comply with any requirement of this Consent Decree not specifically referenced in Paragraphs 65 - 72 or of any plan or schedule approved under this Consent Decree within the specified time established by or approved under this Decree:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$150
15th - 30th day	$250
31st day and each day thereafter	$500

74. Allocation of Stipulated Penalties Among the United States and the Co-Plaintiffs. Prior to making a written demand for stipulated penalties, the United States and the Applicable Co-Plaintiff will consult with each other to determine if they jointly are making the demand or not. Where both sovereigns seek stipulated penalties for the same violation of this Consent Decree, they each shall receive 50% of the total amount paid. Where only one sovereign demands stipulated penalties for a violation, that sovereign shall make the demand on its own behalf, and, if it has complied with the consultation requirements in this Paragraph, shall be entitled to receipt of the full amount of stipulated penalties paid for the violation. Chemtrade or Marsulex, as applicable, shall not be liable for additional stipulated penalties to any other sovereign if a demand is made by only one sovereign after consultation with the other affected

sovereigns as required above. In such cases, all other sovereigns shall be deemed to have waived the right to seek stipulated penalties.

75. Waiver of Payment. The United States and/or the Applicable Co-Plaintiff may, in its/their unreviewable discretion, waive payment of any portion or all of the stipulated penalties that may be due to it/them under this Consent Decree. The determination by one sovereign not to seek stipulated penalties, or subsequently to waive or reduce the amount it seeks, shall not preclude the other sovereign from seeking stipulated penalties up to the full amount specified for the violation.

76. Demand for Stipulated Penalties. A written demand for the payment of stipulated penalties will identify the particular violation(s) to which the stipulated penalty relates; the stipulated penalty amount that the United States and/or the Applicable Co-Plaintiff is demanding for each violation (as can be best estimated); the calculation method underlying the demand; and the grounds upon which the demand is based.

77. Stipulated Penalties' Accrual. Stipulated penalties will begin to accrue on the day after performance is due or the day a violation occurs, whichever is applicable, and will continue to accrue until performance is satisfactorily completed or the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

78. Stipulated Penalties Payment Due Date. Stipulated penalties shall be paid no later than sixty (60) days after receipt of a written demand by the United States and/or the Applicable Co-Plaintiff unless the demand is disputed through compliance with the requirements of Paragraph 80 and the dispute resolution provisions of this Decree.

79. Manner of Payment of Stipulated Penalties. Stipulated penalties owing to the United States of under $10,000 will be paid by check and made payable to "U.S. Department of Justice," referencing DOJ Number 90-5-2-1-06944/1 and USAO File Number 2008V02383, and delivered to the U.S. Attorney's Office in the Northern District of Ohio, 801 W. Superior Ave., Suite 400, Cleveland, OH 44113. Stipulated penalties owing to the United States of $10,000 or more and stipulated penalties owing to Co-Plaintiffs will be paid in the manner set forth in Section IV (Civil Penalty) of this Consent Decree. All transmittal correspondence shall state that the payment is for stipulated penalties, shall identify the violations to which the payment relates, and shall include the same identifying information required by Paragraph 9.

80. Disputes over Stipulated Penalties. By no later than 60 days after receiving a demand for stipulated penalties, the applicable Defendant may dispute liability for any or all stipulated penalties demanded by invoking the dispute resolution procedures of Section XI and by placing the disputed amount, if it is greater than $25,000, into an interest-bearing, commercial escrow account. The applicable Defendant shall provide the sovereigns making the demand with a copy of the escrow agreement and the bank statement showing the deposit of the disputed amount into the escrow account. If the dispute thereafter is resolved in the applicable Defendant's favor, the escrowed amount plus accrued interest will be returned to that Defendant; otherwise, U.S. EPA and/or the Applicable Co-Plaintiff will be entitled to the amount that was determined to be due, plus the interest that has accrued in the escrow account on such amount.

81. No amount of the stipulated penalties paid by the Defendants shall be used to reduce their federal or state tax obligations.

82. If any Defendant fails to pay stipulated penalties when due and does not prevail in dispute resolution and is not required to escrow the disputed sum pursuant to Paragraph 80, that Defendant shall be liable for interest at the rate specified in 28 U.S.C. § 1961, accruing as of the date payment became due.

83. Subject to the provisions of Section XIII of this Consent Decree (Effect of Settlement/Reservation of Rights), the stipulated penalties provided for in this Decree shall be in addition to any other rights, remedies, or sanctions available to the United States or the Applicable Co-Plaintiff or Plaintiff-Intervenor for a violation of this Consent Decree or applicable law. If the violations result in excess emissions, then the United States and/or Applicable Co-Plaintiff may elect to seek compensatory emissions reductions equal to or greater than the excess amounts emitted in addition to injunctive relief or stipulated penalties. Where a violation of this Consent Decree also is a violation of Subparts A or H of the NSPS or of the PSD or non-attainment NSR requirements, Chemtrade or Marsulex, as applicable, shall be allowed a credit for any stipulated penalties paid (whether to the United States and/or a Co-Plaintiff) against any statutory penalties imposed for such violation.

X. FORCE MAJEURE

84. As used in this Section X, "Defendant" refers to the particular Defendant – Chemtrade or Marsulex – that raises the Force Majeure claim.

85. A "Force Majeure Event" is any event beyond the control of Defendant, its contractors, or any entity controlled by Defendant that delays the performance of any obligation under this Consent Decree despite Defendant's best efforts to fulfill the obligation. "Best efforts" includes anticipating any potential force majeure event and addressing the effects of any such

event (a) as it is occurring; and (b) after it has occurred, to prevent or minimize any resulting delay to the greatest extent possible.

86. "Force Majeure" does not include Defendant's financial inability to perform any obligation under this Consent Decree. Unanticipated or increased costs or expenses associated with the performance of Defendant's obligations under this Consent Decree, or Defendant's failure to make complete and timely application for any required approval or permit, shall not constitute circumstances beyond Defendant's control nor serve as the basis for an extension of time under this Section X.

87. If any event occurs which causes or may cause a delay or impediment to performance in complying with any provision of this Consent Decree, Defendant shall notify U.S. EPA and any Applicable Co-Plaintiff or Plaintiff-Intervenor: (a) orally or by electronic or facsimile transmission as soon as possible, but not later than 72 hours after the time Defendant first knew of the event or should have known of the event by the exercise of due diligence; and (b) in writing not later than seven days after the time Defendant first knew of the event or should have known of the event by the exercise of due diligence. In this notice, Defendant shall specifically reference this Paragraph 87 of the Consent Decree and shall describe the anticipated length of time the delay may persist, the cause or causes of the delay, the measures taken and/or to be taken by Defendant to prevent or minimize the delay, the schedule by which those measures shall be implemented, and the reasons Defendant attributes the delay to a Force Majeure Event (if Defendant does so). Defendant shall take all necessary measures to avoid or minimize such delays. The written notice required by this Paragraph shall be effective upon the mailing of the

same by overnight mail or by certified mail, return receipt requested, to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor in the manner set forth in Section XV (Notices).

88. Failure by Defendant to comply with the notice requirements specified in Paragraph 87 shall preclude Defendant from asserting any claims of Force Majeure with respect to the particular event involved.

89. Within forty-five (45) days of receipt of the written Force Majeure notice provided under Paragraph 87, the United States, after consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, will notify Defendant in writing regarding the United States' position regarding Defendant's claim of a delay or impediment to performance.

90. If the United States, after consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, agrees that the delay or impediment to performance has been or will be caused by a Force Majeure Event, the appropriate Parties shall stipulate in writing to an extension of the required deadline(s) for all requirement(s) affected by the Force Majeure Event for a period equivalent to the delay actually caused by the Force Majeure Event. Such stipulation shall be filed as a material modification to the Consent Decree pursuant to the procedures of Section XVIII (Modification). Defendant shall not be liable for stipulated penalties for the period of any such extension.

91. If the United States, after consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, does not accept Defendant's claim of Force Majeure, stipulated penalties will accrue as provided in Section IX. No later than forty-five (45) days after receipt of the notice provided under Paragraph 89 above, Defendant may invoke formal dispute resolution with respect to the claim of Force Majeure, pursuant to Paragraph 100, by filing a petition for

determination with the Court. After Defendant has submitted its petition, the United States and any Applicable Co-Plaintiff or Plaintiff-Intervenor shall have forty-five (45) days to file their responses to the petition. If the Court determines that the delay or impediment to performance has been or will be caused by a Force Majeure Event, Defendant shall be excused as to that event(s) and delay (including stipulated penalties) for a period of time equivalent to the delay caused by the Force Majeure Event.

92. Defendant shall bear the burden of proving that any delay in satisfying any requirement(s) of this Consent Decree was caused by or will be caused by a Force Majeure Event. Defendant shall also bear the burden of proving the duration and extent of any delay(s) attributable to such Force Majeure Event. Any extension of one compliance date based on a particular Force Majeure Event may, but shall not necessarily, result in an extension of a subsequent compliance date or dates.

93. Notwithstanding any other provision of this Consent Decree, this Court shall not draw any inferences nor establish any presumptions adverse to either party as a result of a Defendant's serving of a Force Majeure notice or the Parties' inability to reach agreement with respect to the claim of Force Majeure.

94. In appropriate circumstances, as part of the resolution of any matter submitted to this Court under this Section X, the Parties involved in the dispute may agree to, or the Court may order, extension or modification of the schedule for completion of work under the Consent Decree to account for the delay in the work that occurred as a result of any Force Majeure Event claimed by Defendant that is agreed to by the United States or approved by this Court.

Defendant shall be liable for stipulated penalties for its failure thereafter to complete the work in accordance with the extended or modified schedule.

XI. DISPUTE RESOLUTION

95. As used in this Section XI, "Defendant" refers to the particular Defendant – Chemtrade or Marsulex – that invokes the dispute resolution provisions.

96. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Defendant's failure to seek resolution of a dispute under this Section shall preclude Defendant from raising any such issue as a defense to an action by the United States to enforce any obligation of Defendant arising under this Decree. The procedures set forth in this Section do not apply to actions by the United States or a Co-Plaintiff or the Plaintiff-Intervenor to enforce obligations of the Defendant that have not been disputed in accordance with this Section.

97. Except as otherwise expressly provided in this Consent Decree, the dispute resolution procedures set forth in this Section XI shall be available to resolve any and all disputes arising under this Consent Decree, provided that the Party invoking the procedures has made a good faith attempt to resolve the matter with the other Party or Parties involved.

98. The dispute resolution procedure required herein shall be invoked upon the giving of written notice by one of the Parties to this Consent Decree to another advising the other appropriate Party(ies) of a dispute pursuant to Section XI. The notice shall describe the nature of the dispute and shall state the noticing Party's position with regard to such dispute. The Party or Parties receiving such notice will acknowledge receipt of the notice and the Parties shall

expeditiously schedule a meeting to discuss the dispute as soon as possible after receipt of such notice. In the case of a notice provided by Chemtrade or Marsulex with respect to the Cairo Facility, copies of the notice shall be provided to the other Defendant contemporaneously with the original notice to the United States.

99. Disputes submitted to dispute resolution shall, in the first instance, be the subject of informal negotiations between the Parties. Such period of informal negotiations shall not extend beyond sixty (60) days from the date of the first meeting between representatives of the Parties, unless the Parties involved in the dispute agree that this period should be shortened or extended.

100. In the event that the Parties are unable to reach agreement during such informal negotiations period, the United States and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor shall provide Defendant with a written summary of its/their position regarding the dispute. The position advanced by the United States and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor will be considered binding unless, within forty-five (45) days of Defendant's receipt of the written summary, Defendant invokes formal dispute resolution by filing with the Court a petition which describes the nature of the dispute and Defendant's position on the dispute. The United States and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor shall respond to the petition within forty-five (45) days of filing.

101. In the event that the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor are unable to reach agreement among themselves with regard to the Defendant's claim, the position of the United States shall be the Plaintiffs' final position. A

dissenting Co-Plaintiff or Plaintiff-Intervenor may file such other pleadings expressing its position as allowed by the Court.

102. In a formal dispute resolution proceeding under this Section, Defendant shall bear the burden of demonstrating that its position complies with this Consent Decree and the CAA. The Court shall decide the dispute based upon applicable principles of law. The United States reserves the right to argue that its position is reviewable only on the administrative record and must be upheld unless arbitrary and capricious or otherwise not in accordance with law.

103. Where the nature of the dispute is such that a more timely resolution of the issue is required, the time periods set forth in this Section XI may be shortened upon motion of one of the Parties to the dispute or by agreement of the Parties to the dispute.

104. The Parties do not intend that the invocation of this Section XI by a Party cause the Court to draw any inferences nor establish any presumptions adverse to either Party as a result of invocation of this Section.

105. In appropriate circumstances, as part of the resolution of any matter submitted to this Court under this Section XI, the Parties involved in the dispute may agree to, or the Court may order, an extension or modification of the schedule for completion of work under the Consent Decree to account for the delay in the work that occurred as a result of dispute resolution. Defendant shall be liable for stipulated penalties for its failure thereafter to complete the work in accordance with the extended or modified schedule. Invocation of dispute resolution with respect to any of Defendant's obligations under this Consent Decree shall not, of itself, excuse or extend the time for performance of any other obligation of Defendant under this Consent Decree.

XII. INFORMATION COLLECTION AND RETENTION

106. The United States, the Co-Plaintiffs, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any of the Covered Sulfuric Acid Plants covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States or a Co-Plaintiff or Plaintiff-Intervenor in accordance with the terms of this Consent Decree;

c. obtain samples and, upon request, splits of any samples taken by Defendants or their representatives, contractors, or consultants in connection with their performance under this Consent Decree;

d. obtain documentary evidence, including photographs and similar data, relevant to compliance with the terms of this Consent Decree; and

e. assess Defendants' compliance with this Consent Decree.

107. Until at least three years after the termination of this Consent Decree, each Defendant shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information in electronic form in its or its contractors' or agents' possession or control, or that come into it or its contractors' or agents' possession or control, and that directly relates to Defendant's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, the United States, a Co-Plaintiff, or Plaintiff-Intervenor may request copies of any documents, records, or other information required to be maintained under this Paragraph.

108. At the conclusion of the information retention period specified in the preceding Paragraph, each Defendant shall notify the United States, the Co-Plaintiffs, and the Plaintiff-Intervenor at least 90 days prior to destroying any document(s), record(s), or other information subject to the requirements of the preceding Paragraph and, upon request by the United States, a Co-Plaintiff, or Plaintiff-Intervenor, the applicable Defendant shall deliver any such document(s), record(s), or other information to the requesting Plaintiff; provided, however, that no privileged information or confidential business information shall be required to be submitted to the Plaintiff-Intervenor. The applicable Defendant may assert that certain documents, records, or other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the applicable Defendant asserts such a privilege, it shall provide the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of each author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Defendant. However, no documents, records, data, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

109. The applicable Defendant may also assert that information required to be provided under this Section is protected as Confidential Business Information (CBI) under 40 C.F.R. Part 2, or any similar state or tribal laws and regulations. As to any information that the applicable Defendant seeks to protect as CBI, the applicable Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

110. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or the States pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of any Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

111. This Consent Decree resolves the civil liability of Defendants to the United States the Co-Plaintiffs, and the Plaintiff-Intervenor for the violations alleged in the Complaint and Complaint in Intervention filed in this action (and any Notices of Violation cited therein) from the date those claims accrued through the Effective Date of this Consent Decree.

112. The United States, the Co-Plaintiffs, and the Plaintiff-Intervenor reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 111. This Consent Decree shall not be construed to limit the rights of the United States, the Co-Plaintiffs, or the Plaintiff-Intervenor to obtain penalties or injunctive relief under the CAA or implementing regulations, or under other federal, state, or tribal laws, regulations, or permit conditions, except as expressly specified in Paragraph 111. The United States, the Co-Plaintiffs, and the Plaintiff-Intervenor further reserve all legal and equitable remedies to address any situation that may present an imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, the Covered Sulfuric Acid Plants, whether related to the violations addressed in this Consent Decree or otherwise.

113. This Consent Decree is not a permit, or a modification of any permit, under any federal, state, or local laws or regulations. Defendants are responsible for achieving and

maintaining compliance with all applicable federal, state, and local laws, regulations, and permits and their compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits. The United States, the Co-Plaintiffs, and the Plaintiff-Intervenor do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that compliance by Marsulex and/or Chemtrade with any aspect of this Consent Decree will result in compliance with provisions of the CAA, or with any other provisions of federal, state, or local laws, regulations, or permits.

114. This Consent Decree does not limit or affect the rights of Defendants or of the United States, the Co-Plaintiffs, or Plaintiff-Intervenor against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendants, except as otherwise provided by law.

115. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party that is not a Party to this Consent Decree.

XIV. COSTS

116. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States, the Co-Plaintiffs, and the Plaintiff-Intervenor shall be entitled to collect the costs (including attorneys' fees), against the applicable Defendant incurred in any action necessary to enforce this Consent Decree or to collect any portion of the civil penalty or any stipulated penalties due but not paid by a Defendant.

XV. NOTICES

117. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and

addressed to: (i) the United States Department of Justice; (ii) U.S. EPA Headquarters; (iii) U.S. EPA Region 5; (iv) if different from U.S. EPA Region 5, the U.S. EPA Region where the relevant Plant is located; and (v) the Applicable Co-Plaintiff and Plaintiff-Intervenor. Submission of hard copies is required and shall be sufficient to comply with the notice requirements of this Consent Decree. The email addresses listed below are solely to permit the submission of courtesy copies.

Notice or submission to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, DC 20044-7611
Re: DOJ No. 90-5-2-1-06944/1

Notice or submission to U.S. EPA that concerns any or all of the Sulfuric Acid Plants:

Air Enforcement Division Director
U.S. Environmental Protection Agency
Office of Civil Enforcement
Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave, NW
Mail Code: 2242A
Washington, DC 20460

and

Charles Garlow
U.S. Environmental Protection Agency
Office of Civil Enforcement
Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Mail Code 2242A
Washington, DC 20460

Including an electronic copy to:

garlow.charlie@epa.gov

Nathan Frank
U.S. Environmental Protection Agency
Region 5
AE-17J
77 West Jackson. Blvd.
Chicago, IL 60604

and

Robert H. Smith
U.S. Environmental Protection Agency
Region 5
C-14J
77 West Jackson. Blvd.
Chicago, IL 60604

Including electronic copies to:

frank.nathan@epa.gov
smith.roberth@epa.gov

Notice or submission to U.S. EPA that concerns the Beaumont, Shreveport, and Tulsa Facilities:

Mark Ford
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Suite 1200
Mailcode 6EN-EA
Dallas, TX 75202

and

Amanda Ferguson
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Suite 1200
Mailcode 6EN-AA
Dallas, TX 75202

Notice or submission to U.S. EPA that concerns the Riverton Facility:

Air Program Director
c/o Scott Whitmore (8ENF-AT)
Office of Enforcement, Compliance & Environmental Justice
EPA Region 8
1595 Wynkoop St.
Denver, CO 80202-1129

Notice or submission to Louisiana concerning the Shreveport Facility:

Lourdes Iturralde
Administrator, Enforcement Division
Office of Environmental Compliance
Louisiana Department of Environmental Quality
P. O. Box 4312
Baton Rouge, Louisiana 70821-4312

Notice or submission to Ohio concerning either the Cairo or Oregon Facilities:

John Paulian
Supervisor, Compliance Monitoring Unit
Division of Air Pollution Control
Ohio EPA
P.O. Box 1049
Columbus, OH 43216-1049

Notice or submission to Ohio concerning the Oregon Facility:

Karen Granata, Administrator
City of Toledo Department of Environmental Services
348 S. Erie St.
Toledo, OH 43604

Notice or submission to Ohio concerning the Cairo Facility:

Don Waltermeyer, Unit Supervisor
Northwest District Office
Division of Air Pollution Control
Ohio EPA
347 N. Dunbridge Road
Bowling Green, OH 43402

Notice or submission to Oklahoma DEQ concerning the Tulsa Facility:

Eddie Terrill, Director
Oklahoma Department of Environmental Quality
Air Quality Division
P.O. Box 1677
Oklahoma City, Oklahoma 73101-1677

and

Robert D. Singletary
Office of General Counsel
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, Oklahoma 73101-1677

Notice or submission to the Northern Arapaho Tribe concerning the Riverton Facility:

Director
Wind River Environmental Quality Commission
P.O. Box 217
Fort Washakie, Wyoming 82514
Phone: (307) 332-6625

Notice or response to Defendant Chemtrade:

Susan M. Pare
Associate General Counsel
Chemtrade Logistics Inc.
111 Gordon Baker Road, Suite 301
Toronto, Ontario M2H 3R1
Canada

and

Chief Financial Officer
Chemtrade Logistics Inc.
111 Gordon Baker Road, Suite 301
Toronto, Ontario M2H 3R1
Canada

and

Joe Jayroe
Director, Chemtrade Manufacturing Refinery Services & Acid Products
P.O. Box 30
Beaumont, TX 77704-0030
For express mail: 1400 Olin Road, Beaumont, TX 77705

and

David Burroughs
Chemtrade Corporate Environmental Compliance Manager
10889 Hwy 1 South
P.O. Box 52147
Shreveport, LA 71135-2147

Including electronic copies to:

spare@chemtradelogistics.com
rbhardwa@chemtradelogistics.com
jjayroe@chemtradelogistics.com
dburroughs@chemtradelogistics.com

With a copy to each Applicable Covered Facility as follows:

As to the Beaumont Facility:

Nestor Gomez
Plant Manager
Chemtrade
P.O. Box 30
Beaumont, TX 77704-0030
For express mail: 1400 Olin Road, Beaumont, TX 77705

Including an electronic copy to:

ngomez@chemtradelogistics.com

As to the Shreveport Facility:

Chris Pogson
Plant Manager
Chemtrade
10889 Hwy 1 South
P.O. Box 52147
Shreveport, LA 71135-2147

Including an electronic copy to:

cpogson@chemtradelogistics.com

As to the Tulsa Facility:

Fred Boeheim
Plant Manager
Chemtrade
P.O. Box 1068
Glenpool, OK 74022
Express Mail: 5201 West 21st St.
Tulsa, OK 74107

Including an electronic copy to:

fboeheim@chemtradelogistics.com

As to the Riverton Facility:

David Luzmoor
Plant Manager
Chemtrade
140 Goes In Lodge Road
Riverton, WY 82501

Including an electronic copy to:

dluzmoor@chemtradelogistics.com

As to the Cairo Facility:

Tim Haniford
Plant Manager
Chemtrade
7680 Ottawa Road
P.O. Box 310
Cairo, OH 45820

Including an electronic copy to:

thaniford@chemtradelogistics.com

Notice or response to Defendant Marsulex:

Keith D. McLeod
Senior Vice President – Operations
Marsulex Inc.
111 Gordon Baker Road, Suite 300
Toronto, Ontario M2H 3R1
Canada

William Martin
Chief Financial Officer
111 Gordon Baker Road, Suite 300
Toronto, Ontario M2H 3R1
Canada

and

Charles A. Perry
Jones Day
1420 Peachtree St.
Atlanta, GA 30309

Including electronic copies to:

Kmcleod@marsulex.com
Wmartin@marsulex.com
statro@marsulex.com
caperry@jonesday.com

Any Party may, by written notice to the other Parties, change its designated notice recipient(s) or notice address(es) provided above. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XVI. EFFECTIVE DATE

118. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court.

XVII. RETENTION OF JURISDICTION

119. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree, entering orders modifying this Decree, or effectuating or enforcing compliance with the terms of this Decree.

XVIII. MODIFICATION

120. The terms of this Consent Decree may be modified only by a subsequent written agreement signed by the United States, the applicable Defendant(s), and the Applicable Co-Plaintiff or Plaintiff-Intervenor, if any. Where the modification constitutes a material change to any term of this Consent Decree, it shall be effective only upon approval by the Court. The CEMS Plans attached in Appendices A-G may be modified upon written agreement of the Parties without Court approval, unless any such modification effects a material change to the terms of this Consent Decree or materially affects the applicable Defendant's ability to meet the requirements or objectives of this Decree.

XIX. TERMINATION

121. Marsulex and Chemtrade may independently seek termination of this Consent Decree pursuant to Paragraphs 122 - 125 of this Decree.

122. Except with respect to the State of Ohio, after the applicable Defendant has maintained continuous satisfactory compliance with the requirements of the CAA and this Consent Decree for a period of one year after achieving compliance with all of the requirements

of this Consent Decree (including demonstrating one year of compliance with the Short-Term Limits, Long-Term Limits, and Mass Caps in Subsection V.A), has obtained all permits required by this Consent Decree, and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, the applicable Defendant may serve upon the United States, the Co-Plaintiffs, and Plaintiff-Intervenor a Request for Termination, together with all necessary supporting documentation, stating that the applicable Defendant has satisfied those requirements. With respect to the State of Ohio, all of the conditions set forth in this Paragraph for termination apply except that the applicable Defendant must maintain continuous "substantial" compliance (in lieu of "satisfactory" compliance) in order to serve upon Ohio a Request for Termination.

123. Partial Termination as to One Facility. If a Defendant has satisfied its obligations and requirements under this Consent Decree with respect to an individual Facility, and the Defendant can demonstrate satisfactory compliance with the requirements of the CAA and this Consent Decree for a period of one year after achieving compliance (including demonstrating one year of compliance with the Facility's applicable Short-Term Limits, Long-Term Limits, and/or Mass Caps in Subsection V.A), and can show that it has obtained all required permits for that Facility, and that there are no outstanding civil or stipulated penalties for any Facility, then the Defendant may serve upon the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor a Request for Partial Termination as to the applicable Facility, together with all necessary supporting documentation, stating that the applicable Defendant has satisfied those requirements at the applicable Facility.

124. Following receipt by the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor of Defendant's Request for Termination or Partial Termination, the

applicable Parties shall confer informally concerning the Request for Termination or Partial Termination and any disagreement that the applicable Parties may have as to whether the applicable Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor agrees that the Decree may be terminated as to the requesting Defendant for a particular Facility or all Defendant's Facilities, the applicable Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree with respect to the Defendant and Facility(ies) involved.

125. If the United States after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor does not agree that the Decree may be terminated or partially terminated, or if, with respect to the Cairo and/or Oregon Facility, the State of Ohio does not agree that the applicable Defendant is in "substantial" compliance pursuant to Paragraph 122, then the applicable Defendant may move the Court for termination or partial termination. However, the applicable Defendant shall not file such a motion until 90 days after service of its Request for Termination or Partial Termination. On any such motion, the applicable Defendant shall bear the burden of proving that the conditions necessary for termination or partial termination of the Consent Decree have been satisfied.

XX. PUBLIC PARTICIPATION

126. This Consent Decree shall be lodged with the Court for a period of not less than 30 days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate,

improper, or inadequate. Defendants consent to entry of this Consent Decree without further notice.

127. The Parties agree and acknowledge that final approval by Co-Plaintiff the State of Louisiana, Department of Environmental Quality, and entry of this Consent Decree are subject to the requirements of La. R.S. 30:2050.7, which provides for public notice of this Consent Decree in newspapers of general circulation and the official journals of the parish in which the Shreveport Facility is located, an opportunity for public comment, consideration of any comments, and concurrence by the State Attorney General. The State of Louisiana reserves the right to withdraw or withhold consent if the comments regarding this Consent Decree disclose facts or considerations which indicate that this Consent Decree is inappropriate, improper or inadequate.

XXI. SIGNATORIES/SERVICE

128. Each undersigned representative of Defendants, each undersigned representative of the Co-Plaintiffs and the Plaintiff-Intervenor, and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice (or his or her designee) certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

129. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis.

130. Defendants agree not to oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendants in writing that it no longer supports entry of the Decree.

131. Defendants agree to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXII. INTEGRATION

132. This Consent Decree and its Appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Consent Decree and its Appendices and supersede all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. No other document, except for any plans or other deliverables that are submitted and approved pursuant to this Decree, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, and no such extrinsic document or statement of any kind shall be used in construing the terms of this Decree.

XXIII. FINAL JUDGMENT

133. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court in this action as to the United States, the

Co-Plaintiffs, the Plaintiff-Intervenor, and the Defendants. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

DATED this _____ day of _____, 2009.

_____
UNITED STATES DISTRICT JUDGE
NORTHERN DISTRICT OF OHIO

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR THE UNITED STATES OF AMERICA

MICHAEL GUZMAN
Principal Deputy Assistant Attorney General
Environment and Natural Resources Division
United States Department of Justice

ANNETTE M. LANG
Environmental Enforcement Section
Environment and Natural Resources Division
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-4213
(202) 616-6584 (fax)
annette.lang@usdoj.gov

WILLIAM J. EDWARDS
Acting United States Attorney
Northern District of Ohio

By: s/ Steven J. Paffilas
STEVEN J. PAFFILAS
Assistant U.S. Attorney
Reg. No. 0037376
United States Courthouse
801 West Superior Ave.
Suite 400
Cleveland, OH 44113
(216) 622-3698
(216) 522-2404 (fax)
steven.paffilas@usdoj.gov

We hereby consent to the entry of the Consent Decree in the matter of United State et al. v. Chemtrade Logistics (US), Inc. et al., subject to public notice and comment.

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

GRANTA Y. NAKAYAMA
Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave, N.W.
Washington, D.C. 20460

ADAM M. KUSHNER
Division Director, Air Enforcement Division
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave, N.W.
Washington, D.C. 20460

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PRELIMINARY APPROVAL BY CO-PLAINTIFF THE STATE OF LOUISIANA, THROUGH THE DEPARTMENT OF ENVIRONMENTAL QUALITY:

PEGGY M. HATCH
Assistant Secretary
Office of Environmental Compliance
Louisiana Department of Environmental Quality

CLAUDIA RUSH (LA. # 29408)
Attorney
Office of the Secretary
Legal Affairs Division
Louisiana Department of Environmental Quality
Post Office Box 4302
Baton Rouge, Louisiana 70821-4302

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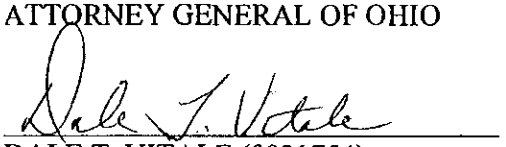
FOR CO-PLAINTIFF THE STATE OF OHIO

NANCY H. ROGERS
ATTORNEY GENERAL OF OHIO



DALE T. VITALE (0021754)
Assistant Attorney General
Environmental Enforcement Section
Public Protection Division
30 East Broad Street, 25th Floor
Columbus, OH 43215-3414
(614) 466-2766
(614) 644-1926 (fax)
dvitale@ag.state.oh.us

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR CO-PLAINTIFF, OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

STEVEN A. THOMPSON
Executive Director
Oklahoma Department of Environmental Quality
P.O. Box 1677, 707 N. Robinson
Oklahoma City, Oklahoma 73101-1677

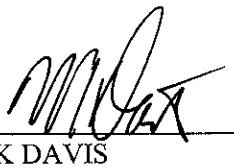
We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR PLAINTIFF-INTERVENOR
THE NORTHERN ARAPAHO TRIBE

ANTHONY A. ADDISON, SR.
Chairman
Northern Arapaho Tribe
P.O. Box 386
Ft. Washakie, WY 82514

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al.

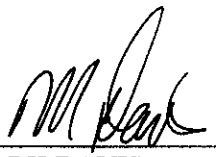
FOR DEFENDANT
CHEMTRADE LOGISTICS (US), INC.



MARK DAVIS
President and Chief Executive Officer
155 Gordon Baker Road, Suite 300
Toronto ON M2H 3N5
Canada

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al.

FOR DEFENDANT
CHEMTRADE REFINERY SERVICES INC.



MARK DAVIS
President and Chief Executive Officer
155 Gordon Baker Road, Suite 300
Toronto ON M2H 3N5
Canada

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al.

FOR DEFENDANT
MARSULEX, INC.

KEITH D. MCLEOD
Senior Vice President – Operations
Marsulex, Inc.
111 Gordon Baker Road, Suite 300
Toronto, Ontario M2H 3R1
Canada

APPENDIX A

APPENDIX A

BEAUMONT FACILITY

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Beaumont Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzer, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of

downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\,i} \cdot \left[\frac{A_i - B_i}{1 - 1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57 \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

M_{SO_2Day} = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 2.2 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission

rate(s) in excess of 2.2 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Beaumont Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 380.0 tons (760,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Chemtrade will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, Chemtrade will conduct quarterly cylinder gas audits (i.e., four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX B

APPENDIX B

SHREVEPORT FACILITY

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Shreveport Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$1306.33 \frac{lbsSO_2}{TonAcid}$ $= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet.

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. The terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i}{1 - 1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions ($M_{SO_2 Day}$) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2 Day} = \sum_{i=1}^{n} Q_{Stack\ i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$M_{SO_2 Day}$ = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 2.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 2.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during period of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Shreveport Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 215.0 tons (430,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Chemtrade will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, are not necessary. In lieu of this, Chemtrade will conduct quarterly cylinder gas audits (i.e., four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1. .

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX C

APPENDIX C

TULSA FACILITY

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfur Burning Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Tulsa Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure stack SO_2 concentration, one to measure stack O_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B) \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B)} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
Y	= Stack O_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$
$385.57\ \frac{SCF}{lb-mol}$	= Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of oxygen to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\,i} \cdot 0.843 \cdot [0.209 - Y_i - B_i]}$$

Where:

Y_i = Stack O_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57 \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

M_{SO_2Day} = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 1.7 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 1.7 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Tulsa Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 92.4 tons (184,800 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzer, O_2 analyzer, and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer will meet 40 C.F.R. Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and
- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX D

APPENDIX D

RIVERTON FACILITY: RIVERTON 1 SULFURIC ACID PLANT

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfur Burning Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Riverton 1 Sulfuric Acid Plant at the Riverton Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure stack SO_2 concentration, one to measure stack O_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B) \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B)} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
Y	= Stack O_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$
$385.57\ \frac{SCF}{lb-mol}$	= Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of oxygen to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-rolling hour average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\,i} \cdot 0.843 \cdot [0.209 - Y_i - B_i]}$$

Where:

Y_i = Stack O_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day_ will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, standard cubic feet per minute (DSCFM) at measurement "*i*"

M_{SO_2Day} = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.,* a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 1.9 lbs of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 1.9 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Riverton 1 Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 35.0 tons (70,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzer, O_2 analyzer, and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer will meet 40 C.F.R. Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX E

APPENDIX E

RIVERTON FACILITY: RIVERTON 2 SULFURIC ACID PLANT

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfuric Acid Regeneration Plant with Air Injection and Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Riverton 2 Sulfuric Acid Plant at the Riverton Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A - B \cdot (1+R)}{1+R-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A - B \cdot (1+R)}{1+R-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
R	= Ratio of the flow rate of gas fed into first bed of the converter to the flow rate of dilution air injected into lower beds
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$$1306.33\ \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

$385.57\ \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate. Because the Riverton 2 Sulfuric Acid Plant injects air into the lower passes of its converter, the equations have been adjusted to account for this added air.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

- Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i \cdot (1+R)}{1+R-1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "i"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "i"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "i"

R = Average of the three most recent measurements of the ratio of the flow of dilution air to the flow of process gas to the converter

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2 Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ ^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$M_{SO_2 Day}$ = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\,j}$$

Where:

$M_{SO_2 Day\,j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 2.1 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 2.1 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup oes not exceed the limits for the Riverton 2 Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 38.0 tons (76,000 lb) of SO_2 or less during each 12-month period.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Chemtrade will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, are not necessary. In lieu of this, Chemtrade will conduct quarterly cylinder gas audits (i.e., four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX F

APPENDIX F

CAIRO FACILITY

CEMS Plan for SO_2 Emissions
Currently Owned by Chemtrade Logistics, Inc.
Single Absorption Sulfur Burning Plant with Scrubber and Front-End Liquid SO_2 Production Plant

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Cairo Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure stack SO_2 concentration, one to measure stack O_2 concentration, and one to measure stack volumetric flow rate. When the front-end liquid SO_2 plant (*i.e.*, the "B" Plant) at the Cairo Facility is in operation, the short-term production rate of liquid SO_2 also will be monitored using a coriolis flow meter. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = \frac{2}{3} \cdot \left[\frac{98.0734\ {}^{lbs}/_{lb-mol} \cdot Q_{Stack}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}} \right] \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y - B) - Y - B \right] - \frac{P_{LbsSO_2Plant}}{2000\ {}^{lbs}/_{ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \frac{2}{3} \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y - B) - Y - B \right] - \left[P_{LbsSO_2Plant} \cdot \frac{385.57}{64.058} \right]} \cdot 1306.33 \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
P_{LbsSO_2Plant}	= Mass production rate of front-end liquid SO_2 plant (B Plant), lb per unit of time
Y	= Stack O_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$$1306.33\ \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

$385.57\ \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of oxygen to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), monitoring will be conducted during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of the analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- B Plant production will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," the Facility may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} \left\{ \left[Q_{Stack\,i} \cdot \frac{2}{3} \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y_i - B_i) - Y_i - B_i \right] \right] - \left(P_{LbsSO_2Plant\,i} \cdot \frac{385.57}{64.058} \right) \right\}}$$

Where:

Y_i = Stack O_2 concentration (dry basis), fraction at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$P_{LbsSO_2Plant\,i}$ = Production rate of front-end liquid SO_2 plant (B Plant), lb per minute at measurement "*i*"

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

365-Day Rolling Average.

For the purposes of calculating a 365-day rolling average, the system will maintain an array of all of the measurements of each of the three monitored parameters for 365 days. Every day, the system will add the readings from that day to the array and exclude the readings from the oldest day.

The 365-day rolling average lb/ton SO_2 emission rate ($E_{365-Day\ Avg}$) will be calculated using Equation 5:

$$E_{365-Day\ Avg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{n} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{n} \left\{ \left[Q_{Stack\ i} \cdot \frac{2}{3} \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y_i - B_i) - Y_i - B_i \right] \right] - \left(P_{LbsSO_2 Plant\ i} \cdot \frac{385.57}{64.058} \right) \right\}}$$

Where:

Y_i = Stack O_2 concentration (dry basis), fraction at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$P_{LbsSO_2 Plant\ i}$ = Production rate of front-end liquid SO_2 plant (B Plant), lb per minute at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid}$ = $\frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

n = the number of measurements taken at 5-minute intervals over the 365-day period

$E_{365-Day\ Avg}$ = 365-day rolling average lb SO_2 per ton 100% Sulfuric Acid Produced

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$E_{365-Day\ Avg}$: Rounded to the nearest hundredth.

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limit

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, the Facility will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 3.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If the Facility contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 3.0 lb/ton after the period of the Malfunction(s) end(s), the Facility shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limit

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, the Facility will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If the Facility contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), the Facility shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Long-Term SO_2 Limits

The Long-Term Limit includes periods of Startup, Shutdown, and Malfunction. The Facility will be in compliance with the Long-Term SO_2 Limit if $E_{365-Day\ Avg}$ does not exceed 1.90 lb of SO_2 per ton of 100% Sulfuric Acid Produced.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, the Facility shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, the Facility specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

The Facility will retain all data generated by its SO_2 analyzer, O_2 analyzer, coriolis meter and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three stack analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer will meet 40 C.F.R. Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, the Facility also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, the Facility will utilize the span values specified in Table 1; and
- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, the Facility will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX G

APPENDIX G

OREGON FACILITY

CEMS Plan for SO_2 Emissions
Marsulex, Inc.
Oregon A and B Double Absorption Sulfuric Acid Regeneration Plants

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Oregon A and B Sulfuric Acid Plants at the Oregon Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2 Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2 Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
$M_{SO_2 Stack}$	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

Marsulex will undertake the following monitoring procedures separately at both the Oregon A Plant and the Oregon B Plant:

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Marsulex will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of the any analyzers, the pre-calibration will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

Emissions Calculations

Marsulex will make the following calculations separately at both the Oregon A Plant and the Oregon B Plant.

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i}{1 - 1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

365-Day Rolling Average.

For the purposes of calculating a 365-day rolling average, the system will maintain an array of all of the measurements of each of the three monitored parameters for 365 days. Every day, the system will add the readings from that day to the array and exclude the readings from the oldest day.

The 365-day rolling average lb/ton SO_2 emission rate ($E_{365-Day\ Avg}$) will be calculated using Equation 5.

Equation 5:

$$E_{365-Day\ Avg} = 1306.33\frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{j=1}^{n} Q_{Stack\ j} \cdot B_j}{\sum_{i=1}^{n} Q_{Stack\ j} \cdot \left[\frac{A_j - B_j}{1-1.5 \cdot A_j}\right]}$$

Where:

A_j = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "j"

B_j = Stack SO_2 concentration, fraction (dry basis) at measurement "j"

$Q_{Stack\ j}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "j"

$1306.33\frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

n = the number of measurements taken at 5-minute intervals over the 365-day period

$E_{365-Day\ Avg}$ = 365-day rolling average lb SO_2 per ton 100% Sulfuric Acid Produced

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$E_{365-Day\ Avg}$: Rounded to the nearest hundredth.

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Marsulex will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 3.5 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Marsulex contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 3.5 lb/ton after the period of the Malfunction(s) end(s), Marsulex shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Marsulex will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Marsulex contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Marsulex shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Long-Term SO_2 Limits

The Long-Term Limits include periods of Startup, Shutdown, and Malfunction. Marsulex will be in compliance with the Long-Term SO_2 Limit if $E_{365-Day\ Avg}$ does not exceed the rates specified in Table 1 below:

Table 1

Plant	Limit (lb of SO_2 per ton of 100% sulfuric acid produced)
Oregon A	2.40
Oregon B	2.50

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Marsulex shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Marsulex specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Marsulex will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of either the A Plant or the B Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 2

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Marsulex will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, Marsulex will conduct quarterly cylinder gas audits (*i.e.*, four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Marsulex also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Marsulex will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Marsulex will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX H

APPENDIX H

SHORT TERM EMISSION LIMITS DURING STARTUP

3-hour Time period (Hours after Startup commences)	Short-Term Sulfur Dioxide Emission Limit, lbs/ton, applicable to:				
	Beaumont	Shreveport	Riverton #1	Riverton #2	Tulsa
1st through the 3rd hour	15.00	15.00	15.00	15.00	15.00
2nd through the 4th hour	15.00	15.00	15.00	15.00	15.00
3rd through the 5th hour	15.00	15.00	15.00	15.00	15.00
4th through the 6th hour	15.00	15.00	15.00	15.00	15.00
5th through the 7th hour	15.00	15.00	15.00	15.00	15.00
6th through the 8th hour	15.00	15.00	15.00	15.00	15.00
7th through the 9th hour	15.00	15.00	15.00	15.00	15.00
8th through the 10th hour	15.00	15.00	15.00	15.00	15.00
9th through the 11th hour	15.00	15.00	15.00	15.00	15.00
10th through the 12th hour	15.00	15.00	15.00	15.00	15.00
11th through the 13th hour	15.00	15.00	15.00	15.00	15.00
12th through the 14th hour	15.00	15.00	15.00	15.00	15.00
13th through the 15th hour	12.00	12.00	12.00	12.00	12.00
14th through the 16th hour	9.00	9.00	9.00	9.00	9.00
15th through the 17th hour	6.00	6.00	6.00	6.00	6.00
16th through the 18th hour	6.00	6.00	6.00	6.00	6.00
17th through the 19th hour	6.00	6.00	6.00	6.00	6.00
18th through the 20th hour	6.00	6.00	6.00	6.00	6.00
19th through the 21st hour	6.00	6.00	6.00	6.00	6.00
20th through the 22nd hour	6.00	6.00	6.00	6.00	6.00
21st through the 23rd hour	6.00	6.00	6.00	6.00	6.00
22nd through the 24th hour	6.00	6.00	6.00	6.00	6.00
23rd through the 25th hour	4.73	4.67	4.63	4.70	4.57
24th through the 26th hour	3.47	3.33	3.27	3.40	3.13

Notes: Short-Term Limits for the 11 through 13 hour and 12 through 14 hour are weighted averages of 15.0 and 6.0 lbs/ton. Emission limits for the 23rd through 25th hour and 24th through 26th hour are weighted averages of 6.0 lbs/ton and the Short-Term Limit for each Sulfuric Acid Plant as specified in the Consent Decree. Beginning with the 3-hour period consisting of the 25th through 27th hour after Startup commences, the Short-Term Limits specified in the Consent Decree apply

APPENDIX I

APPENDIX I

Calculation of Stipulated Penalties for Violations of the Short-Term Limits, Limits During Start-up, and Long-Term Limits

I. Calculating Stipulated Penalties for Violations of the Short-Term Limits and Limits during Startup

A. Background on CEMS' Recording of SO2, 3-Hour Rolling Average Rates

The Short-Term SO2 Limits and the SO2 Limits during Startup required by the Consent Decree are based on 3-hour rolling averages. During normal operations, the analyzers required by the CEMS Plans in Appendices A-G will record readings every 5 minutes. To calculate the 3-hour rolling average SO2 rates, the system will maintain an array of 36 readings [(60 ÷ 5) x 3], and, at every five-minute interval, it will add the most recent reading to the calculation and discard the oldest reading. Thus, under normal operations, there will 36, 3-hour rolling average rates in a three hour period, and 288 3-hour rolling average rates in a 24 hour period. [1]

The example data on pages 3 – 4 illustrates how data generally will be recorded under the CEMS Plans.

B. Calculating Stipulated Penalties For Violations of the 3-Hour Rolling Average Limits

Stipulated penalties will accrue for any violation of the 3-hour rolling average limit in any non-overlapping three hour period based on how much the recorded rate is above the limit:

Percentage Over the Limit	Penalty per Violation
1 - 50%	$250
51 - 100%	$500
Over 100%	$750

Assume that the Short-Term SO2 Limit is 2.2. Using the data from pages 3- 4, stipulated penalties would accrue as follows:

(1) The first stipulated penalty that would accrue would occur at 14:00, when the 3-hour rolling average rate first exceeded the 2.2 limit. Because the recorded rate of 2.6 is between 1 - 50% above the limit, $250 would be the penalty.

(2) No stipulated penalties would accrue for the 3-hour rolling average rate exceedances that are recorded between 14:05 and 16:55 because one or more of the readings used to calculate the rolling averages in each of these five-minute intervals overlap with one or more of the readings used to calculate the rate at 14:00.

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[1] During system maintenance and/or analyzer malfunctions, there may be fewer than 36 readings in a three-hour period, but the CEMS Plans describe how to calculate the rolling, 3-hour averages under these circumstances. The use of a different method to fill in the data gaps when an analyzer is being maintained or has malfunctioned will not change the method of calculating stipulated penalties.

(3) The second stipulated penalty that would accrue would occur at 17:00 because this is the first time since 14:00 that no readings overlap with the readings that were used to calculate the rate the first time a stipulated penalty accrued at 14:00. Because the recorded rate of 3.4 is between 51 and 100% over the limit, $500 would be the appropriate penalty.

(4) No stipulated penalties would accrue for the 3-hour rolling average rates exceedances that are recorded between 17:05 and 17:15 because one or more of the readings used to calculate the rolling averages in each of these five-minute intervals overlap with one or more of the readings used to calculate the rate at 17:00.

(5) The final stipulated penalty would be $ 750 (*i.e.*, $250 + $500).

EXAMPLE DATA PURSUANT TO THE CEMS PLANS

Time	SO2 In	SO2 Stack	Stack Flow (SCFM)	SO2 Stack (SCFM)	SO3 Out Converter (SCFM)	3-Hr Rolling Average (lb/ton)	Mass (lb)
10:05	11.00%	0.0230%	40000	9.2	5258.4	--	8
10:10	11.20%	0.0230%	40000	9.2	5373.6	--	15
10:15	11.10%	0.0230%	40000	9.2	5315.9	--	23
10:20	11.20%	0.0230%	40000	9.2	5373.6	--	31
10:25	11.00%	0.0230%	40000	9.2	5258.4	--	38
10:30	11.00%	0.0230%	40000	9.2	5258.4	--	46
10:35	11.00%	0.0230%	40000	9.2	5258.4	--	53
10:40	11.00%	0.0230%	40000	9.2	5258.4	--	61
10:45	11.00%	0.0230%	40000	9.2	5258.4	--	69
10:50	11.00%	0.0230%	40000	9.2	5258.4	--	76
10:55	11.00%	0.0210%	40000	8.4	5259.4	--	83
11:00	11.00%	0.0190%	40000	7.6	5260.4	--	90
11:05	11.20%	0.0250%	35000	8.8	4701.0	--	97
11:10	11.20%	0.0250%	35000	8.8	4701.0	--	104
11:15	11.20%	0.0250%	35000	8.8	4701.0	--	112
11:20	11.20%	0.0250%	35000	8.8	4701.0	--	119
11:25	11.20%	0.0250%	35000	8.8	4701.0	--	126
11:30	11.20%	0.0250%	35000	8.8	4701.0	--	133
11:35	11.20%	0.0250%	35000	8.8	4701.0	--	141
11:40	11.20%	0.0250%	35000	8.8	4701.0	--	148
11:45	11.20%	0.0250%	35000	8.8	4701.0	--	155
11:50	11.10%	0.0250%	35000	8.8	4650.6	--	162
11:55	11.10%	0.0250%	38000	9.5	5049.2	--	170
12:00	11.10%	0.0250%	38000	9.5	5049.2	--	178
12:05	11.10%	0.0250%	38000	9.5	5049.2	--	186
12:10	11.10%	0.0250%	38000	9.5	5049.2	--	194
12:15	11.10%	0.0250%	38000	9.5	5049.2	--	202
12:20	11.10%	0.0190%	38000	7.2	5051.9	--	208
12:25	11.10%	0.0190%	38000	7.2	5051.9	--	214
12:30	11.10%	0.0190%	38000	7.2	5051.9	--	220
12:35	11.10%	0.0190%	38000	7.2	5051.9	--	226
12:40	11.10%	0.0190%	38000	7.2	5051.9	--	232
12:45	11.10%	0.0190%	38000	7.2	5051.9	--	238
12:50	11.10%	0.0190%	38000	7.2	5051.9	--	244
12:55	11.20%	0.0190%	38000	7.2	5106.7	--	250
13:00	11.20%	0.0190%	38000	7.2	5106.7	2.2	256
13:05	11.20%	0.0190%	38000	7.2	5106.7	2.2	262
13:10	11.20%	0.0190%	38000	7.2	5106.7	2.2	268
13:15	11.20%	0.0190%	41000	7.8	5509.9	2.2	274
13:20	11.20%	0.0190%	41000	7.8	5509.9	2.2	281
13:25	11.20%	0.0190%	41000	7.8	5509.9	2.2	287
13:30	11.20%	0.0190%	41000	7.8	5509.9	2.1	294
13:35	11.20%	0.0190%	41000	7.8	5509.9	2.1	300
13:40	11.20%	0.0190%	41000	7.8	5509.9	2.1	307
13:45	11.00%	0.0190%	40000	7.6	5260.4	2.1	313

13:50	11.20%	0.0190%	40000
13:55	11.10%	0.0190%	40000
14:00	11.00%	0.1800%	40000
14:05	11.00%	0.3000%	30000
14:10	11.00%	0.1000%	30000
14:15	11.00%	0.1000%	28000
14:20	11.00%	0.1000%	28000
14:25	11.00%	0.1000%	28000
14:30	11.00%	0.1000%	28000
14:35	11.00%	0.0190%	28000
14:40	11.00%	0.0190%	40000
14:45	11.20%	0.0190%	40000
14:50	11.20%	0.0190%	40000
14:55	11.20%	0.0190%	40000
15:00	11.20%	0.0190%	40000
15:05	11.20%	0.0190%	40000
15:10	11.20%	0.0190%	40000
15:15	11.20%	0.0190%	40000
15:20	11.20%	0.0190%	40000
15:25	11.20%	0.0190%	40000
15:30	11.10%	0.0190%	40000
15:35	11.10%	0.0250%	40000
15:40	11.10%	0.0250%	40000
15:45	11.10%	0.0250%	40000
15:50	11.10%	0.0190%	40000
15:55	11.10%	0.0190%	40000
16:00	11.10%	0.0190%	40000
16:05	11.10%	0.0190%	40000
16:10	11.10%	0.0190%	40000
16:15	11.10%	0.0190%	40000
16:20	11.10%	0.0190%	40000
16:25	11.10%	0.0190%	40000
16:30	11.10%	0.0190%	40000
16:35	11.20%	0.0190%	40000
16:40	11.20%	0.0190%	41000
16:45	11.20%	0.0190%	41000
16:50	11.20%	0.0190%	41000
16:55	11.20%	0.0190%	41000
17:00	11.20%	0.0200%	41000
17:05	11.20%	0.0200%	41000
17:10	11.20%	0.0200%	41000
17:15	11.20%	0.0200%	41000
17:20	11.20%	0.0200%	41000
17:25	11.20%	0.0200%	41000
17:30	11.20%	0.0200%	41000
17:35	11.00%	0.0200%	41000
17:40	11.00%	0.0200%	41000
17:45	11.00%	0.0200%	41000
17:50	11.00%	0.0200%	41000

7.6	5375.5
7.6	5317.8
72.0	5183.2
90.0	3844.3
30.0	3916.2
28.0	3655.1
28.0	3655.1
28.0	3655.1
28.0	3655.1
5.3	3682.3
7.6	5260.4
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5317.8
10.0	5314.9
10.0	5314.9
10.0	5314.9
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5375.5
7.8	5509.9
7.8	5509.9
7.8	5509.9
7.8	5509.9
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5391.4
8.2	5391.4
8.2	5391.4
8.2	5391.4

2.1	319
2.1	326
2.6	385
3.1	460
3.3	485
3.5	508
3.6	532
3.8	555
4.0	578
4.0	583
3.9	589
3.9	595
3.9	601
3.9	608
3.9	614
3.8	620
3.8	627
3.8	633
3.8	639
3.8	646
3.8	652
3.8	660
3.8	669
3.8	677
3.8	683
3.8	690
3.8	696
3.8	702
3.8	708
3.8	715
3.8	721
3.8	727
3.8	734
3.8	740
3.8	747
3.8	753
3.8	759
3.8	766
3.4	773
2.7	780
2.6	786
2.4	793
2.2	800
2.1	807
1.9	814
1.9	820
1.9	827
1.9	834
1.9	841

II. Calculating Stipulated Penalties for Violations of the Long-Term Limits

The Long-Term SO2 Limits required by the Consent Decree are based on 365-day rolling averages. For each day, there will be only one 365-day rolling average.

The Consent Decree provides that for each violation, per day, of the Long-Term Limit, the following stipulated penalties will apply:

Period of Noncompliance	Penalty per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

If the 365-day rolling average limit is exceeded on consecutive days, then the penalties are scaled up after the 14th day and after the 30th day. Thus, for example, a violation of the Long-Term Limit for 40 consecutive days will result in $58,000 in stipulated penalties (*i.e.*, (14 x 1000) + (16 x 1500) + (10 x 2000). When the violations are not consecutive or are not consecutive for more than 14 days, then the penalties do not scale up. Thus, for example, 10 days of consecutive or non-consecutive days of violations in January; 10 days of consecutive or non-consecutive violations in March; 10 days of consecutive or non-consecutive violations in May; and 10 days of consecutive or non-consecutive violations in July will result in $40,000 in stipulated penalties (*i.e.*, 40 x 1000).

Appendix B

Emissions Inventory: Potential to Emit

Facility-Wide Potential to Emit
Chemtrade Refinery Services Inc.
Riverton, Wyoming

Annual Facility-Wide Potential to Emit (tons/yr)

Emission Unit (Designation)	PM	NO_x	SO_2	CO	VOC	Lead	H_2SO_4	Total HAPs	CO_2e
Plant #1 Combustion Chamber (EU1)	0.15	5.27	35.00	0.08	5.0E-03	4.5E-07		1.7E-03	109
Plant #1 Absorbing Tower (EU2)[a]	2.74						2.74		
Plant #2 Combustion Chamber (EU5)	7.44	28.90	39.56	9.28	0.58	2.6E-04		0.19	16,556
Plant #2 Absorbing Tower (EU6)[a]	2.74						2.74		
Plant #2 Heater (EU7)	0.16	3.01	0.01	1.80	0.12	1.1E-05		0.04	2,592
Main Cooling Tower (EU3)	4.93								
UPA Cooling Tower (EU4)	2.18								
Spent Acid Storage Tank (EU9a)					0.08				
Auxiliary Storage Tank (EU9b)					0.08				
Auxiliary Boiler (EU10)	0.34	6.31	0.03	3.79	0.25	2.3E-05		8.5E-02	5,443
TOTAL	**20.68**	**43.49**	**74.60**	**14.95**	**1.12**	**2.9E-04**	**5.48**	**0.32**	**24,700**

Maximum Hourly Facility-Wide Potential to Emit (lb/hr)

Emission Unit (Designation)	PM	NO_x	SO_2	CO	VOC	Lead	H_2SO_4	Total HAPs	CO_2e
Plant #1 Combustion Chamber (EU1)	1.70	2.58	9.32	0.84	0.06	5.0E-06		9.4E-06	1,207
Plant #1 Absorbing Tower (EU2)[a]	0.63						0.63		
Plant #2 Combustion Chamber (EU5)	1.70	6.60	9.11	2.12	0.13	5.9E-05		2.2E-05	3,780
Plant #2 Absorbing Tower (EU6)[a]	0.63						0.63		
Plant #2 Heater (EU7)	0.04	0.69	2.9E-03	0.41	0.03	2.5E-06		4.6E-06	592
Main Cooling Tower (EU3)	1.13								
UPA Cooling Tower (EU4)	0.50								
Spent Acid Storage Tank (EU9a)					0.22				
Auxiliary Storage Tank (EU9b)					0.22				
Auxiliary Boiler (EU10)	0.08	1.44	6.2E-03	0.86	0.06	5.1E-06		9.7E-06	1,243
TOTAL	**6.39**	**11.30**	**18.43**	**4.24**	**0.72**	**7.2E-05**	**1.25**	**4.6E-05**	**6,822**

Notes:

[a] Sulfuric acid mist may also be considered an aerosol particulate and, therefore, the mist is also listed as PM_{10}.

Emission Factors from Stack Tests

Emission Factor Development Strategy:

The goal was to develop a set of emission factors based on available stack test results that the Plant believes will not be exceeded during normal operations. A maximum annual and a maximum hourly lb/hr emission factor was developed from the data as noted by bold font in the Plant 1 and Plant 2 Tables.

For actual annual emission factors (in lb/hr) the average of all test results are used for estimating actual emissions for this permit application. As more tests are performed, the actual emission factors may vary year by year according to the most current stack test results. The maximum hourly and maximum annual emission factors are not expected to change over time.

PLANT 1						**SO_2**		**H_2SO_4**		**SO_3**		**NO_x**		**PM**	
Year	**Month (Test Title)**	**Stack Diameter (feet)**	**Actual Flowrate (acfm)**	**Dry Flowrate (dscfm)**	**Stack Velocity (ft/sec)**	**ppm**	**lb/hr**	**ppm**	**lb/hr**	**ppm**	**lb/hr**	**ppm**	**lb/hr**	**ppm**	**lb/hr**
1993	November (Stack Emissions Survey)	2.52	11,273	8,133	37.63	1,822	147.77	-	-	-	-	-	-	Not reported	0.77
1994	December (Stack Emissions Survey; RATA)	2.52	9,366	6,819	31.28	1,822	123.75	-	-	-	-	8.7	0.43	-	-
1995	December (RATA)	2.52	-	-	-	1,891	*149.16*	-	-	-	-	-	-	-	-
1996	January (Stack Emissions Survey)	2.52	9,147	6,746	30.54	-	-	-	-	-	-	0.68	0.03	Not Reported	0.37
1996	November (RATA)	2.52	7,158	5,246	23.92	1,492	78.26	-	-	-	-	-	-	-	-
1997	June (RATA)	2.52	-	-	-	1,834	*144.66*	-	-	-	-	-	-	-	-
1999	March (RATA; Sulfuric Acid Mist Test)	2.52	10,230	7,120	31.50	2,107	149.77	1.88	0.21	-	-	-	-	-	-
2000	March (RATA; Sulfuric Acid Mist Test)	2.52	10,127	7,363	31.20	1,815.81	133.68	2.42	0.27	-	-	-	-	-	-
2001	March (RATA; Sulfuric Acid Mist Test)	2.52	9,503	7,023	29.27	1,678.13	117.65	3.72	0.41	-	-	-	-	-	-
2002	March (RATA; Sulfuric Acid Mist Test)	2.52	4,031	3,959				4.491	0.21	-	-	-	-	-	-
2003	March (RATA; Sulfuric Acid Mist Test)	2.52	10,396	10,389	35.02	1,860	160.30	-	-	-	-	-	-	-	-
2004	Dec. (RATA; Sulfuric Acid Mist Test)	2.52	9,629	9,493	32.30		109.06	7.32	0.70	-	-	-	-	-	-
2005	December (RATA)						76.85								
	Average flow:		*10,096*	*8,032*	**Average**	1,813.55	126.45	3.97	0.36	see H_2SO_4		4.69	0.23	-	0.57
					STD	164.53	28.66	2.14	0.21	see H_2SO_4		5.67	0.28	-	0.28
					MAX	2,107	160.30	7.32	0.70	see H_2SO_4		8.7	0.43	-	0.77
					Ave+2STD	2,142.61	183.76	8.25	0.77	see H_2SO_4		16.03	0.78	-	1.13
	Max Annual result for Plant 1					ave scaled up to 2000 ppm	139.45	ave scaled up to 2000 ppm	0.39	-	-	ave scaled up to 2000 ppm	0.25	ave scaled up to 2000 ppm	0.62
	Max Hourly Result for Plant 1					ave + 2STD	183.76	(ave + 2STD) + 100% buffer	1.54	-	-	(ave + 2STD) + 50% buffer	1.18	(ave + 2STD) + 50% buffer	1.70
	Act Annual Result for Plant 1					Actual Result	92.96	ave result	0.36	-	-	ave result	0.23	ave result	0.57

Dash (-) means not tested or not reported

Italics indicates calculated value using average SO_2 flow rates

PLANT 2						SO_2		H_2SO_4		SO_3		NO_x		PM	
Year	**Month (Test Title)**	**Stack Diameter (feet)**	**Actual Flowrate (acfm)**	**Dry Flowrate (dscfm)**	**Stack Velocity (ft/sec)**	**ppm**	**lb/hr**	**ppm**	**lb/hr**	**ppm**	**lb/hr**	**ppm**	**lb/hr**	**ppm**	**lb/hr**
1993	November (RATA)	2.52	-	-	-	1,805	*146.059*	-	-	-	-	-	-	-	-
1994	December (Stack Emissions Survey; RATA)	2.52	11,274	8,147	37.63	1,725	140.42	-	-	-	-	18.77	1.10	-	-
1995	December (RATA)	2.52	-	-	-	1,824	*147.596*	-	-	-	-	-	-	-	-
1996	January (Stack Emissions Survey)	2.52	10,905	7,973	36.40	-	-	-	-	-	-	0.74	0.04	-	0.51
1997	June (RATA)	2.52	-	-	-	1,672	*135.296*	-	-	-	-	-	-	-	-
1998	March (NOx Test)	2.52	9,860	6,977	33.48	-	-	-	-	-	-	62.48	3.12	-	-
1999	March (RATA & Sulfuric Acid Mist Test)	2.52	9,990	6,890	38.93	1,965	135.11	1.72	0.18	-	-	-	-	-	-
2000	March (RATA; Sulfuric Acid Mist Test)	2.52	10,060	7,273	39.22	1,636.23	118.73	2.79	0.31	-	-	-	-	-	-
2001	March (RATA; Sulfuric Acid Mist Test)	2.52	5,727	4,390	22.32	1,394.50	61.09	1.11	0.07	-	-	-	-	-	-
2002	March (RATA; Sulfuric Acid Mist Test)	2.52	7,934	7,791				4.809	0.23	-	-	-	-	-	-
2003	March (RATA; Sulfuric Acid Mist Test)	2.52	9,992	10,389	35.60	1,756	124.2	-	-	-	-	-	-	-	-
2004	March (RATA; Sulfuric Acid Mist Test)	2.44	10,824	10,688	38.50		135.58	-	-	-	-	-	-	-	-
2005	December						81.67								
	Average flow:		*10,958*	*8,240*	**Average**	1,722.22	122.58	2.61	0.20	see H_2SO_4		27.33	1.42	-	0.51
					STD	166.74	28.78	1.62	0.10	see H_2SO_4		31.75	1.57	-	-
					MAX	1,965	147.60	4.81	0.31	see H_2SO_4		62.48	3.12	-	0.51
					Ave+2STD	2,055.70	180.14	5.85	0.40	see H_2SO_4		90.83	4.55	-	0.51
					Max Annual result for Plant 2	ave scaled up to 2000 ppm	142.35	ave scaled up to 2000 ppm	0.23	-	-	ave scaled up to 2000 ppm	1.65	ave scaled up to 2000 ppm	0.60
					Max Hourly Result for Plant 2	ave + 2STD	180.14	(ave + 2STD) + 100% buffer	0.80	-	-	(ave + 2STD) + 45% buffer	6.60	(ave + 2STD) + 50% buffer	0.77
					Act Annual Result for Plant 2	Actual Result	108.63	ave result	0.20	-	-	ave result	1.42	ave result	0.51

Dash (-) means not tested or not reported

Italics indicates calculated value using average SO_2 flow rates

Notes:

For SO_2, H_2SO_4, and PM, the emission factors chosen are the max for either plant as the emissions are expected to be the similar and can be considered a single sampling pool.

For NO_x, the emission factors chosen are specific to Plant 1 or Plant 2 as there is a process difference that impacts NO_x formation.

For SO_3 lb/hr results, the value is multiplied by 90.08/80.07 to adjust for the difference in molecular weight between H_2SO_4 and SO, and the adjusted value is entered in the H_2SO_4 column as an H_2SO_4 data point.

Emission factors were developed based on available stack test reports; these span from 1988-1999; some data points were discarded for valid reasons (engineering test data points were discarded because they were not representative of normal operations, two data points that were Q-test outliers were discarded to include only reliable data in analysis)

For 2004 actual SO_2 lb/hr is used. Data is from DAS reports 2 hr avg.

For 2005 actual SO_2 lb/hr is used. Data is from DAS reports 2 hr avg.

Fuel Burning Source Potential to Emit Calculations - Criteria Pollutants

Parameter		Plant #1 Combustion Chamber (EU1)	Plant #2 Combustion Chamber (EU5)		Plant #2 Heater (EU7)	Auxiliary Boiler (EU10)	Total
Fuel		Natural gas	Natural gas	Hydrocarbon	Natural gas	Natural gas	
Fuel Capacity		10,000 ft^3/hr	22,353 ft^3/hr	48.3 gal/hr	4,902 ft^3/hr	10,294 ft^3/hr	
Potential Operating Hours		180 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	
Emission Factor Reference (unless otherwise noted)		AP-42, Section 1.4	AP-42, Section 1.4	AP-42, Section 1.3	AP-42, Section 1.4	AP-42, Section 1.4	
Emission Factors[a]	PM_{10}	1.70 lb/hr[b]	1.70 lb/hr[c]	d	7.6 lb/10^6 ft^3	7.6 lb/10^6 ft^3	
	NO_x	140 lb/10^6 ft^3	e	e	140 lb/10^6 ft^3	140 lb/10^6 ft^3	
	SO_2	0.6 lb/10^6 ft^3	0.6 lb/10^6 ft^3	7.1 lb/10^3 gal	0.6 lb/10^6 ft^3	0.6 lb/10^6 ft^3	
	CO	84 lb/10^6 ft^3	84 lb/10^6 ft^3	5 lb/10^3 gal	84 lb/10^6 ft^3	84 lb/10^6 ft^3	
	VOC	5.5 lb/10^6 ft^3	5.5 lb/10^6 ft^3	0.2 lb/10^3 gal	5.5 lb/10^6 ft^3	5.5 lb/10^6 ft^3	
	Lead	0.0005 lb/10^6 ft^3	0.0005 lb/10^6 ft^3	0.001 lb/10^3 gal	0.0005 lb/10^6 ft^3	0.0005 lb/10^6 ft^3	
Potential Emissions	PM_{10}	0.15 tons/yr	7.44 tons/yr	d	0.16 tons/yr	0.34 tons/yr	8.10 tons/yr
	NO_x	0.13 tons/yr	e	e	3.01 tons/yr	6.31 tons/yr	9.44 tons/yr
	SO_2	5.4E-04 tons/yr	5.9E-02 tons/yr	1.50 tons/yr	1.3E-02 tons/yr	2.7E-02 tons/yr	1.60 tons/yr
	CO	7.6E-02 tons/yr	8.22 tons/yr	1.06 tons/yr	1.80 tons/yr	3.79 tons/yr	14.95 tons/yr
	VOC	5.0E-03 tons/yr	0.54 tons/yr	4.2E-02 tons/yr	0.12 tons/yr	0.25 tons/yr	0.95 tons/yr
	Lead	4.5E-07 tons/yr	4.9E-05 tons/yr	2.1E-04 tons/yr	1.1E-05 tons/yr	2.3E-05 tons/yr	2.9E-04 tons/yr
Maximum Hourly Emissions	PM_{10}	1.70 lb/hr	1.70 lb/hr	d	0.037 lb/hr	0.078 lb/hr	
	NO_x	1.40 lb/hr	e	e	0.69 lb/hr	1.44 lb/hr	
	SO_2	6.0E-03 lb/hr	1.3E-02 lb/hr	0.34 lb/hr	2.9E-03 lb/hr	6.2E-03 lb/hr	
	CO	0.84 lb/hr	1.88 lb/hr	0.24 lb/hr	0.41 lb/hr	0.86 lb/hr	
	VOC	5.5E-02 lb/hr	0.12 lb/hr	9.7E-03 lb/hr	2.7E-02 lb/hr	5.7E-02 lb/hr	
	Lead	5.0E-06 lb/hr	1.1E-05 lb/hr	4.8E-05 lb/hr	2.5E-06 lb/hr	5.1E-06 lb/hr	

Notes:

[a] Emission factors for the hydrocarbon portion of the spent sulfuric acid, which is comparable to an unleaded mid-range gasoline, are those for distillate oil for boilers less than 100 MMBtu/hr.

[b] Combustion chamber PM_{10} emissions are based on lb/hr source test results.

[c] Combustion chamber PM_{10} emissions are based on lb/hr source test results. Includes emissions associated with natural gas and hydrocarbon combustion.

[d] See PM_{10} emission calculations for natural gas combustion.

[e] NO_x emissions from fuel burning in combustion chambers are accounted for in the process emission calculations, which are based on lb/hr source test

Fuel Burning Source Potential to Emit Calculations - Greenhouse Gas Emissions

Parameter		Plant #1 Combustion Chamber (EU1)	Plant #2 Combustion Chamber (EU5)		Plant #2 Heater (EU7)	Auxiliary Boiler (EU10)	Total
Fuel		Natural gas	Natural gas	Hydrocarbon	Natural gas	Natural gas	
Fuel Capacity		10,000 ft^3/hr	22,353 ft^3/hr	48.3 gal/hr	4,902 ft^3/hr	10,294 ft^3/hr	
Potential Operating Hours		180 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	
Emission Factor Reference		AP-42, Section 1.4	AP-42, Section 1.4	AP-42, Section 1.3	AP-42, Section 1.4	AP-42, Section 1.4	
Emission Factors[a]	CO_2	120,000 lb/10^6 ft^3	120,000 lb/10^6 ft^3	22,300 lb/10^3 gal	120,000 lb/10^6 ft^3	120,000 lb/10^6 ft^3	
	N_2O	2.2 lb/10^6 ft^3	2.2 lb/10^6 ft^3	0.26 lb/10^3 gal	2.2 lb/10^6 ft^3	2.2 lb/10^6 ft^3	
	CH_4	2.3 lb/10^6 ft^3	2.3 lb/10^6 ft^3	0.216 lb/10^3 gal	2.3 lb/10^6 ft^3	2.3 lb/10^6 ft^3	
	CO_2e	120,730 lb/10^6 ft^3	120,730 lb/10^6 ft^3	22,385 lb/10^3 gal	120,730 lb/10^6 ft^3	120,730 lb/10^6 ft^3	
Potential Emissions	CO_2	108 tons/yr	11,749 tons/yr	4,718 tons/yr	2,576 tons/yr	5,411 tons/yr	24,561 tons/yr
	N_2O	1.98E-03 tons/yr	2.15E-01 tons/yr	5.50E-02 tons/yr	4.72E-02 tons/yr	9.92E-02 tons/yr	0.42 tons/yr
	CH_4	2.07E-03 tons/yr	2.25E-01 tons/yr	4.57E-02 tons/yr	4.94E-02 tons/yr	1.04E-01 tons/yr	0.43 tons/yr
	CO_2e	109 tons/yr	11,820 tons/yr	4,736 tons/yr	2,592 tons/yr	5,443 tons/yr	24,700 tons/yr
Maximum Hourly Emissions	CO_2	1,200 lb/hr	2,682 lb/hr	1,077 lb/hr	588 lb/hr	1,235 lb/hr	6,783 lb/hr
	N_2O	2.20E-02 lb/hr	4.92E-02 lb/hr	1.26E-02 lb/hr	1.08E-02 lb/hr	2.26E-02 lb/hr	0.12 lb/hr
	CH_4	2.30E-02 lb/hr	5.14E-02 lb/hr	1.04E-02 lb/hr	1.13E-02 lb/hr	2.37E-02 lb/hr	0.12 lb/hr
	CO_2e	1,207 lb/hr	2,699 lb/hr	1,081 lb/hr	592 lb/hr	1,243 lb/hr	6,822 lb/hr

Notes:

[a] Emission factors for the hydrocarbon portion of the spent sulfuric acid, which is comparable to an unleaded mid-range gasoline, are those for distillate oil for boilers less than 100 MMBtu/hr.

[b] Potential and maximum hourly CO_2e emissions are calculated using the global warming potentials of CO_2 (1), CH_4 (21) and N_2O (310) as provided in 40 CFR Part 98 Table A-1.

Fuel Burning Source Potential to Emit Calculations - HAPs

Parameter		Plant #1 Combustion Chamber (EU1)	Plant #2 Combustion Chamber (EU5)		Plant #2 Heater (EU7)	Auxiliary Boiler (EU10)	Total
Fuel		Natural gas	Natural gas	Hydrocarbon	Natural gas	Natural gas	
Fuel Capacity		10,000 ft^3/hr	22,353 ft^3/hr	48.3 gal/hr	4,902 ft^3/hr	10,294 ft^3/hr	
Potential Operating Hours		180 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	
Emission Factor Reference		AP-42, Section 1.4	AP-42, Section 1.4	AP-42, Section 1.3	AP-42, Section 1.4	AP-42, Section 1.4	
Emission Factors[a]	1,1,1-Trichloroethane			2.36E-04 $lb/10^3$ gal			
	2-Methylnaphthalene	2.4E-05 $lb/10^6$ ft^3	2.4E-05 $lb/10^6$ ft^3		2.4E-05 $lb/10^6$ ft^3	2.4E-05 $lb/10^6$ ft^3	
	3,-Methylchloranthrene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3		1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	7,12-Dimethylbenz(a)anthracene	1.6E-05 $lb/10^6$ ft^3	1.6E-05 $lb/10^6$ ft^3		1.6E-05 $lb/10^6$ ft^3	1.6E-05 $lb/10^6$ ft^3	
	Acenaphthene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	2.11E-05 $lb/10^3$ gal	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Acenaphthylene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	2.53E-07 $lb/10^3$ gal	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Anthracene	2.4E-06 $lb/10^6$ ft^3	2.4E-06 $lb/10^6$ ft^3	1.22E-06 $lb/10^3$ gal	2.4E-06 $lb/10^6$ ft^3	2.4E-06 $lb/10^6$ ft^3	
	Benz(a)anthracene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	4.01E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Benzene	2.1E-03 $lb/10^6$ ft^3	2.1E-03 $lb/10^6$ ft^3	2.14E-04 $lb/10^3$ gal	2.1E-03 $lb/10^6$ ft^3	2.1E-03 $lb/10^6$ ft^3	
	Benzo(a)pyrene	1.2E-06 $lb/10^6$ ft^3	1.2E-06 $lb/10^6$ ft^3		1.2E-06 $lb/10^6$ ft^3	1.2E-06 $lb/10^6$ ft^3	
	Benzo(b)fluoranthene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	1.48E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Benzo(g,h,i)perylene	1.2E-06 $lb/10^6$ ft^3	1.2E-06 $lb/10^6$ ft^3	2.26E-06 $lb/10^3$ gal	1.2E-06 $lb/10^6$ ft^3	1.2E-06 $lb/10^6$ ft^3	
	Benzo(k)fluoranthene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3		1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Chyrsene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	2.38E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Dibenzo(a,h)anthracene	1.2E-06 $lb/10^6$ ft^3	1.2E-06 $lb/10^6$ ft^3	1.67E-06 $lb/10^3$ gal	1.2E-06 $lb/10^6$ ft^3	1.2E-06 $lb/10^6$ ft^3	
	Dichlorobenzene	1.2E-03 $lb/10^6$ ft^3	1.2E-03 $lb/10^6$ ft^3		1.2E-03 $lb/10^6$ ft^3	1.2E-03 $lb/10^6$ ft^3	
	Ethylbenzene			6.36E-05 $lb/10^3$ gal			
	Fluoranthene	3.0E-06 $lb/10^6$ ft^3	3.0E-06 $lb/10^6$ ft^3	4.84E-06 $lb/10^3$ gal	3.0E-06 $lb/10^6$ ft^3	3.0E-06 $lb/10^6$ ft^3	
	Fluorene	2.8E-06 $lb/10^6$ ft^3	2.8E-06 $lb/10^6$ ft^3	4.47E-06 $lb/10^3$ gal	2.8E-06 $lb/10^6$ ft^3	2.8E-06 $lb/10^6$ ft^3	
	Formaldehyde	7.5E-02 $lb/10^6$ ft^3	7.5E-02 $lb/10^6$ ft^3	3.30E-02 $lb/10^3$ gal	7.5E-02 $lb/10^6$ ft^3	7.5E-02 $lb/10^6$ ft^3	
	Hexane	1.8 $lb/10^6$ ft^3	1.8 $lb/10^6$ ft^3		1.8 $lb/10^6$ ft^3	1.8 $lb/10^6$ ft^3	
	Indeno(1,2,3-c,d)pyrene	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	2.14E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6$ ft^3	1.8E-06 $lb/10^6$ ft^3	
	Naphthalene	6.1E-04 $lb/10^6$ ft^3	6.1E-04 $lb/10^6$ ft^3	1.13E-03 $lb/10^3$ gal	6.1E-04 $lb/10^6$ ft^3	6.1E-04 $lb/10^6$ ft^3	
	Phenanthrene	1.7E-05 $lb/10^6$ ft^3	1.7E-05 $lb/10^6$ ft^3	1.05E-05 $lb/10^3$ gal	1.7E-05 $lb/10^6$ ft^3	1.7E-05 $lb/10^6$ ft^3	
	Pyrene	5.0E-06 $lb/10^6$ ft^3	5.0E-06 $lb/10^6$ ft^3	4.25E-06 $lb/10^3$ gal	5.0E-06 $lb/10^6$ ft^3	5.0E-06 $lb/10^6$ ft^3	
	Toluene	3.4E-03 $lb/10^6$ ft^3	3.4E-03 $lb/10^6$ ft^3	6.20E-03 $lb/10^3$ gal	3.4E-03 $lb/10^6$ ft^3	3.4E-03 $lb/10^6$ ft^3	
	o-Xylene			1.09E-04 $lb/10^3$ gal			
	Arsenic	2.0E-04 $lb/10^6$ ft^3	2.0E-04 $lb/10^6$ ft^3	4 $lb/10^{12}$ Btu	2.0E-04 $lb/10^6$ ft^3	2.0E-04 $lb/10^6$ ft^3	
	Beryllium	1.2E-05 $lb/10^6$ ft^3	1.2E-05 $lb/10^6$ ft^3	3 $lb/10^{12}$ Btu	1.2E-05 $lb/10^6$ ft^3	1.2E-05 $lb/10^6$ ft^3	
	Cadmium	1.1E-03 $lb/10^6$ ft^3	1.1E-03 $lb/10^6$ ft^3	3 $lb/10^{12}$ Btu	1.1E-03 $lb/10^6$ ft^3	1.1E-03 $lb/10^6$ ft^3	
	Chromium	1.4E-03 $lb/10^6$ ft^3	1.4E-03 $lb/10^6$ ft^3	3 $lb/10^{12}$ Btu	1.4E-03 $lb/10^6$ ft^3	1.4E-03 $lb/10^6$ ft^3	
	Cobalt	8.4E-05 $lb/10^6$ ft^3	8.4E-05 $lb/10^6$ ft^3		8.4E-05 $lb/10^6$ ft^3	8.4E-05 $lb/10^6$ ft^3	
	Lead			9 $lb/10^{12}$ Btu			
	Manganese	3.8E-04 $lb/10^6$ ft^3	3.8E-04 $lb/10^6$ ft^3	6 $lb/10^{12}$ Btu	3.8E-04 $lb/10^6$ ft^3	3.8E-04 $lb/10^6$ ft^3	
	Mercury	2.6E-04 $lb/10^6$ ft^3	2.6E-04 $lb/10^6$ ft^3	3 $lb/10^{12}$ Btu	2.6E-04 $lb/10^6$ ft^3	2.6E-04 $lb/10^6$ ft^3	
	Nickel	2.1E-03 $lb/10^6$ ft^3	2.1E-03 $lb/10^6$ ft^3	3 $lb/10^{12}$ Btu	2.1E-03 $lb/10^6$ ft^3	2.1E-03 $lb/10^6$ ft^3	
	Selenium	2.4E-05 $lb/10^6$ ft^3	2.4E-05 $lb/10^6$ ft^3	15 $lb/10^{12}$ Btu	2.4E-05 $lb/10^6$ ft^3	2.4E-05 $lb/10^6$ ft^3	

Fuel Burning Source Potential to Emit Calculations - HAPs

Parameter		Plant #1 Combustion Chamber (EU1)	Plant #2 Combustion Chamber (EU5)		Plant #2 Heater (EU7)	Auxiliary Boiler (EU10)	Total
Potential Emissions[a]	1,1,1-Trichloroethane			0.10 lb/yr			0.10 lb/yr
	2,Methylnaphthalene	4.3E-05 lb/yr	4.7E-03 lb/yr		1.0E-03 lb/yr	2.2E-03 lb/yr	7.9E-03 lb/yr
	3,-Methylchloranthrene	3.2E-06 lb/yr	3.5E-04 lb/yr		7.7E-05 lb/yr	1.6E-04 lb/yr	6.0E-04 lb/yr
	7,12-Dimethylbenz(a)anthracene	2.9E-05 lb/yr	3.1E-03 lb/yr		6.9E-04 lb/yr	1.4E-03 lb/yr	5.3E-03 lb/yr
	Acenaphthene	3.2E-06 lb/yr	3.5E-04 lb/yr	8.9E-03 lb/yr	7.7E-05 lb/yr	1.6E-04 lb/yr	9.5E-03 lb/yr
	Acenaphthylene	3.2E-06 lb/yr	3.5E-04 lb/yr	1.1E-04 lb/yr	7.7E-05 lb/yr	1.6E-04 lb/yr	7.0E-04 lb/yr
	Anthracene	4.3E-06 lb/yr	4.7E-04 lb/yr	5.2E-04 lb/yr	1.0E-04 lb/yr	2.2E-04 lb/yr	1.3E-03 lb/yr
	Benz(a)anthracene	3.2E-06 lb/yr	3.5E-04 lb/yr	1.7E-03 lb/yr	7.7E-05 lb/yr	1.6E-04 lb/yr	2.3E-03 lb/yr
	Benzene	3.8E-03 lb/yr	0.41 lb/yr	9.1E-02 lb/yr	9.0E-02 lb/yr	0.19 lb/yr	0.79 lb/yr
	Benzo(a)pyrene	2.2E-06 lb/yr	2.3E-04 lb/yr		5.2E-05 lb/yr	1.1E-04 lb/yr	4.0E-04 lb/yr
	Benzo(b)fluoranthene	3.2E-06 lb/yr	3.5E-04 lb/yr	6.3E-04 lb/yr	7.7E-05 lb/yr	1.6E-04 lb/yr	1.2E-03 lb/yr
	Benzo(g,h,i)perylene	2.2E-06 lb/yr	2.3E-04 lb/yr	9.6E-04 lb/yr	5.2E-05 lb/yr	1.1E-04 lb/yr	1.4E-03 lb/yr
	Benzo(k)fluoranthene	3.2E-06 lb/yr	3.5E-04 lb/yr		7.7E-05 lb/yr	1.6E-04 lb/yr	6.0E-04 lb/yr
	Chyrsene	3.2E-06 lb/yr	3.5E-04 lb/yr	1.0E-03 lb/yr	7.7E-05 lb/yr	1.6E-04 lb/yr	1.6E-03 lb/yr
	Dibenzo(a,h)anthracene	2.2E-06 lb/yr	2.3E-04 lb/yr	7.1E-04 lb/yr	5.2E-05 lb/yr	1.1E-04 lb/yr	1.1E-03 lb/yr
	Dichlorobenzene	2.2E-03 lb/yr	0.23 lb/yr		5.2E-02 lb/yr	0.11 lb/yr	0.40 lb/yr
	Ethylbenzene			2.7E-02 lb/yr			2.7E-02 lb/yr
	Fluoranthene	5.4E-06 lb/yr	5.9E-04 lb/yr	2.0E-03 lb/yr	1.3E-04 lb/yr	2.7E-04 lb/yr	3.0E-03 lb/yr
	Fluorene	5.0E-06 lb/yr	5.5E-04 lb/yr	1.9E-03 lb/yr	1.2E-04 lb/yr	2.5E-04 lb/yr	2.8E-03 lb/yr
	Formaldehyde	0.14 lb/yr	14.7 lb/yr	14.0 lb/yr	3.2 lb/yr	6.8 lb/yr	38.8 lb/yr
	Hexane	3.2 lb/yr	352.5 lb/yr		77.3 lb/yr	162.3 lb/yr	595.3 lb/yr
	Indeno(1,2,3-c,d)pyrene	3.2E-06 lb/yr	3.5E-04 lb/yr	9.1E-04 lb/yr	7.7E-05 lb/yr	1.6E-04 lb/yr	1.5E-03 lb/yr
	Naphthalene	1.1E-03 lb/yr	1.2E-01 lb/yr	0.48 lb/yr	2.6E-02 lb/yr	5.5E-02 lb/yr	0.68 lb/yr
	Phenanthrene	3.1E-05 lb/yr	3.3E-03 lb/yr	4.4E-03 lb/yr	7.3E-04 lb/yr	1.5E-03 lb/yr	1.0E-02 lb/yr
	Pyrene	9.0E-06 lb/yr	9.8E-04 lb/yr	1.8E-03 lb/yr	2.1E-04 lb/yr	4.5E-04 lb/yr	3.5E-03 lb/yr
	Toluene	6.1E-03 lb/yr	0.67 lb/yr	2.6 lb/yr	0.15 lb/yr	0.31 lb/yr	3.7 lb/yr
	o-Xylene			4.6E-02 lb/yr			4.6E-02 lb/yr
	Arsenic	3.6E-04 lb/yr	3.9E-02 lb/yr	0.24 lb/yr	8.6E-03 lb/yr	1.8E-02 lb/yr	0.30 lb/yr
	Beryllium	2.2E-05 lb/yr	2.3E-03 lb/yr	0.18 lb/yr	5.2E-04 lb/yr	1.1E-03 lb/yr	0.18 lb/yr
	Cadmium	2.0E-03 lb/yr	0.22 lb/yr	0.18 lb/yr	4.7E-02 lb/yr	9.9E-02 lb/yr	0.54 lb/yr
	Chromium	2.5E-03 lb/yr	0.27 lb/yr	0.18 lb/yr	6.0E-02 lb/yr	0.13 lb/yr	0.64 lb/yr
	Cobalt	1.5E-04 lb/yr	1.6E-02 lb/yr		3.6E-03 lb/yr	7.6E-03 lb/yr	2.8E-02 lb/yr
	Lead			0.53 lb/yr			0.53 lb/yr
	Manganese	6.8E-04 lb/yr	7.4E-02 lb/yr	0.36 lb/yr	1.6E-02 lb/yr	3.4E-02 lb/yr	0.48 lb/yr
	Mercury	4.7E-04 lb/yr	5.1E-02 lb/yr	0.18 lb/yr	1.1E-02 lb/yr	2.3E-02 lb/yr	0.26 lb/yr
	Nickel	3.8E-03 lb/yr	0.41 lb/yr	0.18 lb/yr	9.0E-02 lb/yr	0.19 lb/yr	0.87 lb/yr
	Selenium	4.3E-05 lb/yr	4.7E-03 lb/yr	0.89 lb/yr	1.0E-03 lb/yr	2.2E-03 lb/yr	0.90 lb/yr

Notes:

[a] Assumes a heating value of 140 MMBtu/10^3 gal for distillate fuel oil, based on AP-42, Section 1.3.

Fuel Burning Source Potential to Emit Calculations - HAPs

Parameter		Plant #1 Combustion Chamber (EU1)	Plant #2 Combustion Chamber (EU5)		Plant #2 Heater (EU7)	Auxiliary Boiler (EU10)	Total
Fuel		Natural gas	Natural gas	Hydrocarbon	Natural gas	Natural gas	
Fuel Capacity		10,000 ft^3/hr	22,353 ft^3/hr	48.3 gal/hr	4,902 ft^3/hr	10,294 ft^3/hr	
Potential Operating Hours		180 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	8,760 hrs/yr	
Emission Factor Reference (unless otherwise noted)		AP-42, Section 1.4	AP-42, Section 1.4	AP-42, Section 1.3	AP-42, Section 1.4	AP-42, Section 1.4	
Emission Factors	1,1,1-Trichloroethane			2.36E-04 $lb/10^3$ gal			
	2,Methylnaphthalene	2.4E-05 $lb/10^6 ft^3$	2.4E-05 $lb/10^6 ft^3$		2.4E-05 $lb/10^6 ft^3$	2.4E-05 $lb/10^6 ft^3$	
	3,-Methylchloranthrene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$		1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	7,12-Dimethylbenz(a)anthracene	1.6E-05 $lb/10^6 ft^3$	1.6E-05 $lb/10^6 ft^3$		1.6E-05 $lb/10^6 ft^3$	1.6E-05 $lb/10^6 ft^3$	
	Acenaphthene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	2.11E-05 $lb/10^3$ gal	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Acenaphthylene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	2.53E-07 $lb/10^3$ gal	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Anthracene	2.4E-06 $lb/10^6 ft^3$	2.4E-06 $lb/10^6 ft^3$	1.22E-06 $lb/10^3$ gal	2.4E-06 $lb/10^6 ft^3$	2.4E-06 $lb/10^6 ft^3$	
	Benz(a)anthracene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	4.01E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Benzene	2.1E-03 $lb/10^6 ft^3$	2.1E-03 $lb/10^6 ft^3$	2.14E-04 $lb/10^3$ gal	2.1E-03 $lb/10^6 ft^3$	2.1E-03 $lb/10^6 ft^3$	
	Benzo(a)pyrene	1.2E-06 $lb/10^6 ft^3$	1.2E-06 $lb/10^6 ft^3$		1.2E-06 $lb/10^6 ft^3$	1.2E-06 $lb/10^6 ft^3$	
	Benzo(b)fluoranthene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	1.48E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Benzo(g,h,i)perylene	1.2E-06 $lb/10^6 ft^3$	1.2E-06 $lb/10^6 ft^3$	2.26E-06 $lb/10^3$ gal	1.2E-06 $lb/10^6 ft^3$	1.2E-06 $lb/10^6 ft^3$	
	Benzo(k)fluoranthene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$		1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Chyrsene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	2.38E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Dibenzo(a,h)anthracene	1.2E-06 $lb/10^6 ft^3$	1.2E-06 $lb/10^6 ft^3$	1.67E-06 $lb/10^3$ gal	1.2E-06 $lb/10^6 ft^3$	1.2E-06 $lb/10^6 ft^3$	
	Dichlorobenzene	1.2E-03 $lb/10^6 ft^3$	1.2E-03 $lb/10^6 ft^3$		1.2E-03 $lb/10^6 ft^3$	1.2E-03 $lb/10^6 ft^3$	
	Ethylbenzene			6.36E-05 $lb/10^3$ gal			
	Fluoranthene	3.0E-06 $lb/10^6 ft^3$	3.0E-06 $lb/10^6 ft^3$	4.84E-06 $lb/10^3$ gal	3.0E-06 $lb/10^6 ft^3$	3.0E-06 $lb/10^6 ft^3$	
	Fluorene	2.8E-06 $lb/10^6 ft^3$	2.8E-06 $lb/10^6 ft^3$	4.47E-06 $lb/10^3$ gal	2.8E-06 $lb/10^6 ft^3$	2.8E-06 $lb/10^6 ft^3$	
	Formaldehyde	7.5E-02 $lb/10^6 ft^3$	7.5E-02 $lb/10^6 ft^3$	3.30E-02 $lb/10^3$ gal	7.5E-02 $lb/10^6 ft^3$	7.5E-02 $lb/10^6 ft^3$	
	Hexane	1.8 $lb/10^6 ft^3$	1.8 $lb/10^6 ft^3$		1.8 $lb/10^6 ft^3$	1.8 $lb/10^6 ft^3$	
	Indeno(1,2,3-c,d)pyrene	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	2.14E-06 $lb/10^3$ gal	1.8E-06 $lb/10^6 ft^3$	1.8E-06 $lb/10^6 ft^3$	
	Naphthalene	6.1E-04 $lb/10^6 ft^3$	6.1E-04 $lb/10^6 ft^3$	1.13E-03 $lb/10^3$ gal	6.1E-04 $lb/10^6 ft^3$	6.1E-04 $lb/10^6 ft^3$	
	Phenanthrene	1.7E-05 $lb/10^6 ft^3$	1.7E-05 $lb/10^6 ft^3$	1.05E-05 $lb/10^3$ gal	1.7E-05 $lb/10^6 ft^3$	1.7E-05 $lb/10^6 ft^3$	
	Pyrene	5.0E-06 $lb/10^6 ft^3$	5.0E-06 $lb/10^6 ft^3$	4.25E-06 $lb/10^3$ gal	5.0E-06 $lb/10^6 ft^3$	5.0E-06 $lb/10^6 ft^3$	
	Toluene	3.4E-03 $lb/10^6 ft^3$	3.4E-03 $lb/10^6 ft^3$	6.20E-03 $lb/10^3$ gal	3.4E-03 $lb/10^6 ft^3$	3.4E-03 $lb/10^6 ft^3$	
	o-Xylene			1.09E-04 $lb/10^3$ gal			
	Arsenic	2.0E-04 $lb/10^6 ft^3$	2.0E-04 $lb/10^6 ft^3$	4 $lb/10^{12}$ Btu	2.0E-04 $lb/10^6 ft^3$	2.0E-04 $lb/10^6 ft^3$	
	Beryllium	1.2E-05 $lb/10^6 ft^3$	1.2E-05 $lb/10^6 ft^3$	3 $lb/10^{12}$ Btu	1.2E-05 $lb/10^6 ft^3$	1.2E-05 $lb/10^6 ft^3$	
	Cadmium	1.1E-03 $lb/10^6 ft^3$	1.1E-03 $lb/10^6 ft^3$	3 $lb/10^{12}$ Btu	1.1E-03 $lb/10^6 ft^3$	1.1E-03 $lb/10^6 ft^3$	
	Chromium	1.4E-03 $lb/10^6 ft^3$	1.4E-03 $lb/10^6 ft^3$	3 $lb/10^{12}$ Btu	1.4E-03 $lb/10^6 ft^3$	1.4E-03 $lb/10^6 ft^3$	
	Cobalt	8.4E-05 $lb/10^6 ft^3$	8.4E-05 $lb/10^6 ft^3$		8.4E-05 $lb/10^6 ft^3$	8.4E-05 $lb/10^6 ft^3$	
	Lead			9 $lb/10^{12}$ Btu			
	Manganese	3.8E-04 $lb/10^6 ft^3$	3.8E-04 $lb/10^6 ft^3$	6 $lb/10^{12}$ Btu	3.8E-04 $lb/10^6 ft^3$	3.8E-04 $lb/10^6 ft^3$	
	Mercury	2.6E-04 $lb/10^6 ft^3$	2.6E-04 $lb/10^6 ft^3$	3 $lb/10^{12}$ Btu	2.6E-04 $lb/10^6 ft^3$	2.6E-04 $lb/10^6 ft^3$	
	Nickel	2.1E-03 $lb/10^6 ft^3$	2.1E-03 $lb/10^6 ft^3$	3 $lb/10^{12}$ Btu	2.1E-03 $lb/10^6 ft^3$	2.1E-03 $lb/10^6 ft^3$	
	Selenium	2.4E-05 $lb/10^6 ft^3$	2.4E-05 $lb/10^6 ft^3$	15 $lb/10^{12}$ Btu	2.4E-05 $lb/10^6 ft^3$	2.4E-05 $lb/10^6 ft^3$	

Fuel Burning Source Potential to Emit Calculations - HAPs

Parameter		Plant #1 Combustion Chamber (EU1)	Plant #2 Combustion Chamber (EU5)		Plant #2 Heater (EU7)	Auxiliary Boiler (EU10)	Total
Potential Maximum Hourly Emissions[a]	1,1,1-Trichloroethane			1.1E-05 lb/hr			1.1E-05 lb/hr
	2,Methylnaphthalene	2.4E-07 lb/hr	5.4E-07 lb/hr		1.2E-07 lb/hr	2.5E-07 lb/hr	1.1E-06 lb/hr
	3,-Methylchloranthrene	1.8E-08 lb/hr	4.0E-08 lb/hr		8.8E-09 lb/hr	1.9E-08 lb/hr	8.6E-08 lb/hr
	7,12-Dimethylbenz(a)anthracene	1.6E-07 lb/hr	3.6E-07 lb/hr		7.8E-08 lb/hr	1.6E-07 lb/hr	7.6E-07 lb/hr
	Acenaphthene	1.8E-08 lb/hr	4.0E-08 lb/hr	1.0E-06 lb/hr	8.8E-09 lb/hr	1.9E-08 lb/hr	1.1E-06 lb/hr
	Acenaphthylene	1.8E-08 lb/hr	4.0E-08 lb/hr	1.2E-08 lb/hr	8.8E-09 lb/hr	1.9E-08 lb/hr	9.8E-08 lb/hr
	Anthracene	2.4E-08 lb/hr	5.4E-08 lb/hr	5.9E-08 lb/hr	1.2E-08 lb/hr	2.5E-08 lb/hr	1.7E-07 lb/hr
	Benz(a)anthracene	1.8E-08 lb/hr	4.0E-08 lb/hr	1.9E-07 lb/hr	8.8E-09 lb/hr	1.9E-08 lb/hr	2.8E-07 lb/hr
	Benzene	2.1E-05 lb/hr	4.7E-05 lb/hr	1.0E-05 lb/hr	1.0E-05 lb/hr	2.2E-05 lb/hr	1.1E-04 lb/hr
	Benzo(a)pyrene	1.2E-08 lb/hr	2.7E-08 lb/hr		5.9E-09 lb/hr	1.2E-08 lb/hr	5.7E-08 lb/hr
	Benzo(b)fluoranthene	1.8E-08 lb/hr	4.0E-08 lb/hr	7.1E-08 lb/hr	8.8E-09 lb/hr	1.9E-08 lb/hr	1.6E-07 lb/hr
	Benzo(g,h,i)perylene	1.2E-08 lb/hr	2.7E-08 lb/hr	1.1E-07 lb/hr	5.9E-09 lb/hr	1.2E-08 lb/hr	1.7E-07 lb/hr
	Benzo(k)fluoranthene	1.8E-08 lb/hr	4.0E-08 lb/hr		8.8E-09 lb/hr	1.9E-08 lb/hr	8.6E-08 lb/hr
	Chyrsene	1.8E-08 lb/hr	4.0E-08 lb/hr	1.1E-07 lb/hr	8.8E-09 lb/hr	1.9E-08 lb/hr	2.0E-07 lb/hr
	Dibenzo(a,h)anthracene	1.2E-08 lb/hr	2.7E-08 lb/hr	8.1E-08 lb/hr	5.9E-09 lb/hr	1.2E-08 lb/hr	1.4E-07 lb/hr
	Dichlorobenzene	1.2E-05 lb/hr	2.7E-05 lb/hr		5.9E-06 lb/hr	1.2E-05 lb/hr	5.7E-05 lb/hr
	Ethylbenzene			3.1E-06 lb/hr			3.1E-06 lb/hr
	Fluoranthene	3.0E-08 lb/hr	6.7E-08 lb/hr	2.3E-07 lb/hr	1.5E-08 lb/hr	3.1E-08 lb/hr	3.8E-07 lb/hr
	Fluorene	2.8E-08 lb/hr	6.3E-08 lb/hr	2.2E-07 lb/hr	1.4E-08 lb/hr	2.9E-08 lb/hr	3.5E-07 lb/hr
	Formaldehyde	7.5E-04 lb/hr	1.7E-03 lb/hr	1.6E-03 lb/hr	3.7E-04 lb/hr	7.7E-04 lb/hr	5.2E-03 lb/hr
	Hexane	1.8E-02 lb/hr	4.0E-02 lb/hr		8.8E-03 lb/hr	1.9E-02 lb/hr	8.6E-02 lb/hr
	Indeno(1,2,3-c,d)pyrene	1.8E-08 lb/hr	4.0E-08 lb/hr	1.0E-07 lb/hr	8.8E-09 lb/hr	1.9E-08 lb/hr	1.9E-07 lb/hr
	Naphthalene	6.1E-06 lb/hr	1.4E-05 lb/hr	5.5E-05 lb/hr	3.0E-06 lb/hr	6.3E-06 lb/hr	8.4E-05 lb/hr
	Phenanthrene	1.7E-07 lb/hr	3.8E-07 lb/hr	5.1E-07 lb/hr	8.3E-08 lb/hr	1.7E-07 lb/hr	1.3E-06 lb/hr
	Pyrene	5.0E-08 lb/hr	1.1E-07 lb/hr	2.1E-07 lb/hr	2.5E-08 lb/hr	5.1E-08 lb/hr	4.4E-07 lb/hr
	Toluene	3.4E-05 lb/hr	7.6E-05 lb/hr	3.0E-04 lb/hr	1.7E-05 lb/hr	3.5E-05 lb/hr	4.6E-04 lb/hr
	o-Xylene			5.3E-06 lb/hr			5.3E-06 lb/hr
	Arsenic	2.0E-06 lb/hr	4.5E-06 lb/hr	2.7E-05 lb/hr	9.8E-07 lb/hr	2.1E-06 lb/hr	3.7E-05 lb/hr
	Beryllium	1.2E-07 lb/hr	2.7E-07 lb/hr	2.0E-05 lb/hr	5.9E-08 lb/hr	1.2E-07 lb/hr	2.1E-05 lb/hr
	Cadmium	1.1E-05 lb/hr	2.5E-05 lb/hr	2.0E-05 lb/hr	5.4E-06 lb/hr	1.1E-05 lb/hr	7.3E-05 lb/hr
	Chromium	1.4E-05 lb/hr	3.1E-05 lb/hr	2.0E-05 lb/hr	6.9E-06 lb/hr	1.4E-05 lb/hr	8.7E-05 lb/hr
	Cobalt	8.4E-07 lb/hr	1.9E-06 lb/hr		4.1E-07 lb/hr	8.6E-07 lb/hr	4.0E-06 lb/hr
	Lead			6.1E-05 lb/hr			6.1E-05 lb/hr
	Manganese	3.8E-06 lb/hr	8.5E-06 lb/hr	4.1E-05 lb/hr	1.9E-06 lb/hr	3.9E-06 lb/hr	5.9E-05 lb/hr
	Mercury	2.6E-06 lb/hr	5.8E-06 lb/hr	2.0E-05 lb/hr	1.3E-06 lb/hr	2.7E-06 lb/hr	3.3E-05 lb/hr
	Nickel	2.1E-05 lb/hr	4.7E-05 lb/hr	2.0E-05 lb/hr	1.0E-05 lb/hr	2.2E-05 lb/hr	1.2E-04 lb/hr
	Selenium	2.4E-07 lb/hr	5.4E-07 lb/hr	1.0E-04 lb/hr	1.2E-07 lb/hr	2.5E-07 lb/hr	1.0E-04 lb/hr

Notes:

[a] Assumes a heating value of 140 MMBtu/10^3 gal for distillate fuel oil, based on AP-42, Section 1.3.

Process Source Potential to Emit Calculations

Emission Unit (Designation)	Product	Production Rate		Operating Hours	Maximum Short-Term Emissions[a] (lb/ton)		Maximum Hourly Emissions[a,b] (lb/hr)			Annual Potential Emissions[a] (tons/yr)		
		(tons/hr)	(tons/yr)	(hrs/yr)	SO_2	H_2SO_4	SO_2	H_2SO_4	NO_x	SO_2	H_2SO_4	NO_x
Plant #1 Combustion Chamber (EU1)	100% H_2SO_4	4.17	36,500	8,760	1.9		7.92		1.18	35.0		5.15
Plant #1 Absorbing Tower (EU2)	100% H_2SO_4	4.17	36,500	8,760		0.15		0.63			2.74	
Plant #2 Combustion Chamber (EU5)	100% H_2SO_4	4.17	36,500	8,760	2.1		8.75		6.60	38.0		28.90
Plant #2 Absorbing Tower (EU6)	100% H_2SO_4	4.17	36,500	8,760		0.15		0.63			2.74	
TOTAL										**73.0**	**5.48**	**34.05**

Notes:

[a] Maximum SO_2 and H_2SO_4 emission rates based on Consent Decree. Limts represent the maximum combined emissions from fuel and sulfur combustion.

[b] See "Emission Factors from Stack Tests" table for explanation of actual NO_x emission factors.

Cooling Tower Emission Calculations

Emission Unit (Designation)	Product	Flow Rate (gpm)	Flow Rate (10^3 gpy)	Operating Hours	PM_{10} Emission Factor[a]	PM_{10} Emissions	
						Annual Potential	Maximum Hourly
		Potential	Potential	Potential	(lb/10^3 gal)	(tons/yr)	(lb/hr)
Main Cooling Tower (EU3)	Cooled Water	3,400	1,787,040	8,760	5.5E-03	4.9	1.1
UPA Cooling Tower (EU4)	Cooled Water	1,500	788,400	8,760	5.5E-03	2.2	0.50
TOTAL						**7.1**	

Notes:

[a] PM_{10} emission factor for cooling towers is based on AP-43, Section 13.4 and is the product of total liquid drift and the concentration of TDS in the cooling water.

Total Controlled VOC Emissions (Sum of Working and Breathing Losses @ 98% Control Efficiency)

Emission Unit	Tank Capacity (gallons)	Potential Annual VOC Emissions[a] (tons/yr)	Maximum Hourly VOC Emissions[b] (lb/hr)
Spent Sulfuric Acid Tank (EU9a)	406,000	0.08	0.22
Spent Sulfuric Acid Tank (EU9b)	406,000	0.08	0.22
Total		**0.16**	**0.45**

Notes:

[a] See TANKS report; assume 98% VOC control efficiency in the EU5

[b] To estimate maximum hourly emissions, it is assumed that loading takes place two hours per day, 365 days per year. Actual loading is anticipated to require 45 minutes three times per day, 350 days per year.

SO_2 is also present in the uncontrolled off-gas from these tanks. The capture efficiency from the tanks to the EU5 combustion chamber is assumed to be 100%. In the EU5 combustion chamber, the SO_2 is a vapor form of feedstock and is accounted for in the EU5 emission estimates.

Other combustion products from the VOC are assumed to be accounted for in the "fuel burning sources" emission calculations.

Appendix C

Emissions Inventory: 2012 Actual Emissions

Emissions Summary

Chemtrade Refinery Services, Inc.

Fees Based on Actual Facility-Wide Total Emissions (tpy)

Emission Unit (Designation)	Part[a]	NO_x	SO_2	CO	VOC	Lead	H_2SO_4
Plant #1 Combustion Chamber (EU1)	0.03	0.93	315.71	0.04	0.00	0.00	0.00
Plant #1 Absorbing Tower (EU2)	0.00	0.000	0.00	0.00	0.00	0.00	3.90
Plant #2 Combustion Chamber (EU5)	2.50	5.84	247.65	8.83	0.55	0.00	0.00
Plant #2 Absorbing Tower (EU6)	0.00	0.000	0.00	0.00	0.00	0.00	3.33
Plant #2 Heater (EU7)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Main Cooling Tower (EU3)	4.93	0.000	0.00	0.00	0.00	0.00	0.00
UPA Cooling Tower (EU4)	2.18	0.000	0.00	0.00	0.00	0.00	0.00
Spent Acid Storage Tanks (EU9a and 9b)	0.00	0.000	0.00	0.00	1.27	0.00	0.00
Auxiliary Boiler (EU10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**9.64**	**6.77**	**563.36**	**8.87**	**1.83**	**0.00**	**7.23**
Fees @ $48.33/ton				**No Fee Paid**			
Total	**$28,466.37**						

Total Emmisions (tpy)	**589.00**
Fee Charge ($/Ton)	**$ 48.33**

Fuel Burning Sources

Chemtrade Refinery Services, Inc.

Emission Unit (Designation)	Fuel	Fuel Use Capacity		Actual Op. Hours (Yr)[a]	Potential Op. Hours (Yr) [a]	Emission Factors [b]						E-Factor Reference (unless otherwise noted)	Actual Emissions (tons/year)					
						PM_{10}	NO_x	SO_2	CO	VOC	Lead		PM_{10}	NO_x	SO_2	CO	VOC	Lead
						Lb/hr from stack tests	Lb/MM Ft^3											
Plant #1 Combustion Chamber (EU1)[1]	Nat. Gas	10,000	Ft^3/Hr	91.30	8,640	0.57	140	0.6	84	5.5	0.0005	AP-42, Sec 1.4	0.03	0.06	0.00	0.04	0.00	0.00000
						Lb/hr from stack tests	Lb/MM Ft^3											
Plant #2 Combustion Chamber (EU5)	Nat. Gas	22,353	Ft^3/Hr	8,337.40	8,640	0.51	-----[3]	0.6	84	5.5	0.0005	AP-42; Set 1.4	2.50	-----[3]	0.06	7.83	0.51	0.00005
							Lb/10^3 Gallons											
	Hydrocarbon[2]	48.3	Gal/Hr	8,337.40	8,640	included above	-----[3]	7.1	5	0.2	0.001	AP-42; Sec 1.3	included above	-----[3]	1.43	1.01	0.04	0.00020
						Lb/MM Ft^3												
Plant #2 Heater (EU7)	Nat. Gas	4,902	Ft^3/Hr	11.5	8,640	7.6	140	0.6	84	5.5	0.0005	AP-42; Sec 1.4	0.00	0.00	0.00	0.00	0.00	0.00000
Auxiliary Boiler (EU 10)	Nat. Gas	10,000	Ft^3/Hr	0	8,640	7.6	140	0.6	84	5.5	0.0005	AP-42; Sec 1.4	0.00	0.00	0.00	0.00	0.00	0.00000

Notes:
For PM, the actual annual emission factor for EU1 and EU5 from stack test results is 0.6 lb/hr (See Emission Factors from Stack Test
For PM, actual EU2 emissions are estimated to be 8,379 actual average 98/99 operating hours x 0.6 lb/hr x 1 ton/2000 lb
For PM, actual EU1 emissions are estimated to be 8,376 actual average 98/99 operating hours x 0.6 lb/hr x 1 ton/2000 lb
For all pollutants other than PM from EU1, actual operating hours are 8379 / 4, representing a conservative estimate for combustion products from natural gas combustion during cold startup conditions.
For natural gas combustion in Plant #1 and for the Plant #2 Heater, actual and potential operating hours are conservative overestimat (they are only needed for startups)

Fuel Burning Sources Annual Emission Totals												
Total Actual Emissions (tpy)												
PM_{10}	NO_x	SO_2	CO	VOC	Lead							
2.5	0.1	1.5	8.9	0.6	0.0							

[a] Actual hours of operation are based on the 98/99 average, and potential hours of operation are based on 24 hr/day, 365 days/year less 4 days for startup, shutdown, malfunction, or maintenance; the auxiliary boiler is new, so actual hours are shown as zero
[b] Assume PM_{10} = PM for these sources

[1] Natural gas capacity is estimated based on best engineering judgment; actual hours of operation are based on worse case cold startup scenario.
[2] E-factors for the hydrocarbon portion of the spent sulfuric acid, which is comparable to an unleaded mid-range gasoline, are those for distillate fuel oil for boilers less than 100 MMBtu/hour.
[3] NO_x emissions calculated based on source test data; it is assumed that all combustion NO_x is captured in the source test results, as accounted in the process sources emission calculations.

Chemtrade Refinery Services, Inc.

Process Sources

Sulfuric Acid Production Units

Emission Unit	Product	Actual Op. Hours (Yr) [b]	Potential Op. Hours (Yr) [b]	Actual Annual Emission Factor [1] lb/hr			E-Factor Ref.	Annual Actual Emissions Tons/Year		
				SO_2	H_2SO_4	NO_x		SO_2	H_2SO_4	NO_x
Plant #1 Combustion Chamber (EU1) [c]	100% H_2SO_4	8,661.60	8,760	73.1	0.0	0.2	See Notes 2 and 3	315.7	0.0	0.9
Plant #1 Absorbing Tower (EU2)	100% H_2SO_4	8,661.60	8,760	0.0	0.9	0.0	See Notes 2 and 3	0.0	3.9	0.0
Plant #2 Combustion Chamber (EU5) [d]	100% H_2SO_4	8,337.40	8,760	82.3	0.0	1.4	See Notes 2 and 3	246.2	0.0	5.8
Plant #2 Absorbing Tower (EU6)	100% H_2SO_4	8,337.40	8,760	0.0	0.8	0.0	See Notes 2 and 3	0.0	3.3	0.0

Cooling Towers

Emission Unit (Designation)	Product	Flow Rate (gpm)		Flow Rate (10^3 gpy)		Actual Op. Hours (Yr)	Emission Factor PM_{10} [3] Lb/10^3 Gal	E-Fact Ref.	PM_{10} Emissions [3]		
		Actual	Potential	Actual	Potential				Annual Actual Tons/Year		lb/hr
Main Cooling Tower (EU3)	Cooled Water	3400	3400	1,787,040	1,767,456	8,760	0.0055199	AP-42. Section 13.4	4.93		
UPA Cooling Tower (EU4)	Cooled Water	1,500.00	1500	788,400	779,760	8,662	0.0055199	AP-42. Section 13.4	2.18		

Process Sources Annual Emission Totals							
Total Actual (tpy)				Total Potential (tpy)			
PM_{10}	SO_2	H_2SO_4	NO_x	PM_{10}	SO_2	H_2SO_4	NO_x
7.1	561.9	7.2	6.7	0.0	#REF!	#REF!	#REF!

[a] The actual production rate shown is the average production rate for 1998 and 1999. The potential production rate is based on the plant operating at full capacity.

[b] Actual hours of operation are based on the 98/99 average; potential hours are based on 24 hours per day, 365 days per year less 4 days for startup, shutdown, or malfunction; for cooling towers, potential hours assumes 365 days per year.

[c] For EU1, combustion NOx is shown in the emission calculations for Fuel Burning Sources, since natural gas combustion does not occur during sulfur processing (when the stack tests were done).

[d] For EU5, combustion NOx from natural gas and hydrocarbon is included in the source test results.

[1] See Emission Factors From Stack Tests for explanation of Maximum and Actual Annual Emission Factors.

[2] See Emission Factors From Stack Tests for explanation of Maximum Hourly Emission Factors.

[3] PM_{10} emission factor is product of Total Liquid Drift and the concentration of TDS in the cooling water.

In 2004 actual operating hours is used

In 2005 actual operating hours is used

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Spent Acid Storage Tank **Chemtrade Refinery Services, Inc.**

Total Controlled VOC Emissions (Sum of Working and Breathing Losses @ 98% control efficiency)

Emission Unit	Tank Throughput, gal/year	Annual Actual Emissions [2] VOC tons/year	
Spent Sulfuric Acid Tank, EU9a[1]	1,778,101	0.11	Vapor recovery to furnace
Spent Sulfuric Acid Tank, EU9b	O/S	O/S	No Vapor recovery to furnace
Spent Off-Loading [3]		1.16	
Total Controlled VOC Emissions from Spent Acid Storage Tanks		1.27	

[1] See TANKS Report (worst case scenario devloped in 2001); assume 98% VOC control efficiency in the EU5 combustion chamber.
[2] Actual Emissions are estimated to be 90% of potential emissions based on a similar historical ratio of actual/potential production.
3 Taken from worst case scenario developed in 2001

SO_2 is also present in the uncontrolled off-gas from this tank; the capture efficiency from the tank to the EU5 combustion chamber is assumed to be 100%; in the EU5 combustion chamber, the SO_2 is a vapor form of feedstock and is accounted for in the EU5 emission estimates.

Other combustion products from the VOC are assumed accounted for in the 'fuel burning sources' emission calculations.

Emission Factors From Stack Tests

Chemtrade Refinery Services, Inc.

Emission Factor Development Strategy:

The goal was to develop a set of emission factors based on available stack test results that the Plant believes will not be exceeded during normal operations. A maximum annual and a maximum hourly lb/hr emission factor was developed from the data as noted by bold font in the Plant 1 and Plant 2 Tables.

For actual annual emission factors (in lb/hr) the average of all test results are used for estimating actual emissions for this permit application. As more tests are performed, the actual emission factors my vary year by year according to the most current stack test results. The maximum hourly and maximum annual emission factors are not expected to change over time.

PLANT 1						SO2		H2SO4		SO3		NOx		PM	
Year	Month (Test Title)	Stack Diameter (feet)	Actual Floweret (acfm)	Dry Floweret (dscfm)	Stack Velocity (ft/sec)	ppm	lb/hr	ppm	lb/hr	ppm	lb/hr [A]	ppm	lb/hr	ppm	lb/hr
1993	November (Stack Emissions Survey)	2.52	11273	8133	37.63	1822	147.77	-	-	-	-	-	-	Not reported	0.77
1994	December (Stack Emissions Survey; RATA)	2.52	9366	6819	31.28	1822	123.75	-	-	-	-	8.7	0.43	-	-
1995	December (RATA)	2.52	-	-	-	1891	*139.03*	-	-	-	-	-	-	-	-
1996	January (Stack Emissions Survey)	2.52	9147	6746	30.54	-	-	-	-	-	-	0.68	0.03	Not Reported	0.37
1996	November (RATA)	2.52	7158	5246	23.92	1492	78.26	-	-	-	-	-	-	-	-
1997	June (RATA)	2.52	-	-	-	1834	*134.84*	-	-	-	-	-	-	-	-
1999	March (RATA; Sulfuric Acid Mist Test)	2.52	10230	7120	31.50	2107	149.77	1.88	0.21	-	-	-	-	-	-
2000	March (RATA; Sulfuric Acid Mist Test)	2.52	10127	7363	31.20	1815.81	133.68	2.42	0.27	-	-	-	-	-	-
2001	March (RATA; Sulfuric Acid Mist Test)	2.52	9503	7023	29.27	1678.13	117.65	3.72	0.41	-	-	-	-	-	-
2002	March (RATA; Sulfuric Acid Mist Test)	2.52	4031	3959				4.491	0.21	-	-	-	-	-	-
2003	March (RATA; Sulfuric Acid Mist Test)	2.52	10396	10389	35.02	1860	160.30	-	-	-	-	-	-	-	-
2004	Dec. (RATA; Sulfuric Acid Mist Test)	2.0	9629	9493	32.30	1295	79.80	7.32	0.70	-	-	-	-	-	-
2005	December (RATA)	2.0				995.1	64.90	14.421	1.50	14.446	1.22				
2006	December (RATA)	2.0				947.4	57.70	25	2.39	25	1.95				
2007	December (RATA)	2.0				1188.2	75.63	8.4	0.92	8.4	0.75				
2008	October (RATA)	2.0				1294.5	81.61	15.7	1.46	15.8	1.2				
2009	October (RATA)	2.0				1092.32	44.43	7.4	0.48	7.4	0.39				
2010	October (RATA)	2.0				1014.189	60.23	5.6	0.51	5.6	0.42				
2011	October (RATA)	2.0				1484.7	95.86	3.3	0.29	3.3	0.24				
2012	October (RATA)	2.0				1135.62	72.90	3	0.25	3	0.21				
	average flow:		*10119*	*7487*	Average	1487.16	101.01	7.90	0.74	see H2SO4		4.69	0.23	-	0.57
					STD	373.80	37.08	6.72	0.77	see H2SO4		4.01	0.20	-	0.20
Dash (-) means not tested or not reported					MAX	2107.00	160.30	25.00	2.39	see H2SO4		8.7	0.43	-	0.77
Italics indicates calculated value using average SO2 flow rates					Ave+2STD	2234.77	175.17	21.34	2.28	see H2SO4		12.71	0.62	-	0.97
					Max Annual result for Plant 1	ave ratioed up to 2000 ppm	135.84	ave ratioed up to 2000 ppm	0.99	-	-	ave ratioed up to 2000 ppm	0.31	ave ratioed up to 2000 ppm	0.76
					Max Hourly Result for Plant 1	ave + 2STD	175.17	(ave + 2STD) + 100% buffer	4.56	-	-	(ave + 2STD) + 50% buffer	0.93	(ave + 2STD) + 50% buffer	1.45
					Act Annual Result for Plant 1	Actual Result	72.90	ave result	0.74	-	-	ave result	0.23	ave result	0.57

Emission Factors From Stack Tests

Chemtrade Refinery Services, Inc.

PLANT 2						SO2		H2SO4		SO3		NOx		PM	
Year	Month (Test Title)	Stack Diameter (feet)	Actual Floweret (acfm)	Dry Floweret (dscfm)	Stack Velocity (ft/sec)	ppm	lb/hr	ppm	lb/hr	ppm	lb/hr [A]	ppm	lb/hr	ppm	lb/hr
1993	November (RATA)	2.52	-	-	-	1805	*146.0587*	-	-	-	-	-	-	-	-
1994	December (Stack Emissions Survey; RATA	2.52	11274	8147	37.63	1725	140.42	-	-	-	-	18.77	1.10	-	-
1995	December (RATA)	2.52	-	-	-	1824	*147.5961*	-	-	-	-	-	-	-	-
1996	January (Stack Emissions Survey)	2.52	10905	7973	36.40	-	-	-	-	-	-	0.74	0.04	-	0.51
1997	June (RATA)	2.52	-	-	-	1672	*135.2964*	-	-	-	-	-	-	-	-
1998	March (NOx Test)	2.52	9860	6977	33.48	-	-	-	-	-	-	62.48	3.12	-	-
1999	March (RATA & Sulfuric Acid Mist Test)	2.52	9990	6890	38.93	1965	135.11	1.72	0.18	-	-	-	-	-	-
2000	March (RATA; Sulfuric Acid Mist Test)	2.52	10060	7273	39.22	1636.23	118.73	2.79	0.31	-	-	-	-	-	-
2001	March (RATA; Sulfuric Acid Mist Test)	2.52	5727	4390	22.32	1394.5	61.09	1.11	0.07	-	-	-	-	-	-
2002	March (RATA; Sulfuric Acid Mist Test)	2.52	7934	7791				4.809	0.23	-	-	-	-	-	-
2003	March (RATA)	2.52	9992	10389	35.60	1756	124.2	-	-	-	-	-	-	-	-
2004	Dec. (RATA;)	2.0	10824	10688	38.50	1417.9	96.1	-	-	-	-	-	-	-	-
2005	December (RATA)	2.0				1403.5	95.3	5.659	0.56	5.67	0.46				
2006	December (RATA)	2.0				1192.2	78.7	18.4	1.86	18.4	1.52				
2007	December (RATA)	2.0				1222.17	84.26	7	0.8	7.1	0.66				
2008	October (RATA)	2.0				1091.7	75.7	11.5	1.28	11.5	1.05				
2009	October (RATA)	2.0				1172.32	73.02	5.2	0.49	5.2	0.4				
2010	October (RATA)	2.0				1017.87	76.73	5.1	0.57	5.1	0.47				
2011	October (RATA)	2.0				998.41	75.87	5.2	0.61	5.2	0.5				
2012	October (RATA)	2.0				778.01	59.05	4	0.47	4	0.39				
			10958	*8240*	Average	1722.22	101.37	6.04	0.62	see H2SO4		27.33	1.42	-	0.51
					STD	345.19	31.40	4.72	0.50	see H2SO4		25.92	1.28	-	0.00
Dash (-) means not tested or not reported					MAX	1965.00	147.60	18.40	1.86	see H2SO4		62.48	3.12	-	0.51
Italics indicates calculated value using average SO2 flow rates					Ave+2STD	2412.59	164.17	15.48	1.63	see H2SO4		79.17	3.98	-	0.51
					Max Annual result for Plant 2	ave ratioed up to 2000 ppm	117.72	ave ratioed up to 2000 ppm	0.72	-	-	ave ratioed up to 2000 ppm	1.91	ave ratioed up to 2000 ppm	0.69
					Max Hourly Result for Plant 2	ave + 2STD	164.17	(ave + 2STD) + 100% buffer	3.25	-	-	(ave + 2STD) + 45% buffer	5.77	(ave + 2STD) + 50% buffer	0.77
					Act Annual Result for Plant 2	Actual Result	59.05	ave result	0.47	-	-	ave result	1.42	ave result	0.51

Notes:

For SO2, H2SO4, and PM, the emission factors chosen are the max for either plant as the emissions are expected to be the similar and can be considered a single sampling pool

Fo For NOx, the emission factors chosen are specific to Plant 1 or Plant 2 as there is a process difference that impacts NOx formation

All emission factors for use in calculations (in bold font) are rounded to the nearest lb/hr for SO2 and to one decimal point for other pollutants

[A] For SO3 lb/hr results, the value is multiplied by 90.08/80.07 to adjust for the difference in molecular weight between H2SO4 and SO, and the adjusted value is entered in the H2SO4 column as an H2SO4 data point

Emission factors were developed based on available stack test reports; these span from 1988-1999; some data points were discarded for valid reasons (engineering test data points were discarded because they were not representative of normal operations, two data points that were Q-test outliers were discarded to include only reliable data in analysis)

For 2004 actual SO2 lb/hr is used. Data is from DAS reports 2 hr avg.

For 2005 actual SO2 lb/hr is used. Data is from DAS reports 2 hr avg.

PUBLIC / NON-CONFIDENTIAL

2011 Operating Hours of Start-Up Heater

January	February	March	April	May	June	July	August	September	October	November	December	
0	9	0	6	8.5	0	17	12.83	1.58	2.08	3.25	0	
	24		24	23.08		20			3			
	16.5		6	17.58		12						
			24	6.33		13						**Total Year**
			2	11.5								
			12	2.5								
0	49.5	0	74	69.49	0	62	12.83	1.58	5.08	3.25	0	**277.73**

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
WESTERN DIVISION

UNITED STATES OF AMERICA, STATE OF LOUISIANA, STATE OF OHIO, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY, Plaintiffs, NORTHERN ARAPAHO TRIBE, Plaintiff-Intervenor, v. CHEMTRADE LOGISTICS (US), INC., CHEMTRADE REFINERY SERVICES INC., MARSULEX, INC., Defendants.	)	Civil Action No. 3:09-cv-00067-JGC

CONSENT DECREE

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CONSENT DECREE

WHEREAS, Plaintiff the United States of America ("United States"), on behalf of the United States Environmental Protection Agency ("U.S. EPA"), Co-Plaintiff the State of Louisiana ("Louisiana"), on behalf of the Louisiana Department of Environmental Quality ("LDEQ"), Co-Plaintiff the State of Ohio, ("Ohio"), on behalf of the Ohio Environmental Protection Agency ("Ohio EPA"), Co-Plaintiff Oklahoma Department of Environmental Quality ("Oklahoma DEQ"), have filed a complaint concurrently with this Consent Decree, alleging that Defendants Chemtrade Logistics (US), Inc. ("CLI(US)"), Chemtrade Refinery Services Inc. ("Chemtrade Refinery Services") (collectively "Chemtrade"), and Marsulex, Inc. ("Marsulex") violated Sections 111 and 165 of the Clean Air Act ("CAA"), 42 U.S.C. §§ 7401 *et seq.*, and the federally-enforceable State Implementation Plans ("SIPs") for Louisiana, Ohio, and Oklahoma approved by U.S. EPA pursuant to Section 110 of the CAA, 42 U.S.C. § 7410, which incorporate and/or implement the above-listed federal requirements, and that Chemtrade and Marsulex violated the Title V permit requirements of the CAA, 42 U.S.C. §§ 7661 *et seq.*, with respect to emissions of sulfur dioxide and sulfuric acid mist;

WHEREAS, the Complaint alleges that a sulfuric acid manufacturing facility located in or near Cairo, Ohio ("Cairo Facility") was owned and operated by Chemical Company, LP (f/k/a Coulton Chemical Co. LP) ("Coulton") from 1993 to 1996; by Marsulex from 1996 to 2001; and by CLI(US) from 2001 to the present;

WHEREAS, the Complaint alleges that a sulfuric acid manufacturing facility located in Oregon, Ohio ("Oregon Facility") was owned and operated by Coulton from 1993 to 1996; and by Marsulex from 1996 to the present;

WHEREAS, the Complaint alleges that sulfuric acid manufacturing facilities located in or near Beaumont, Texas ("Beaumont Facility"), Shreveport, Louisiana ("Shreveport Facility"), Tulsa, Oklahoma ("Tulsa Facility"), and Riverton, Wyoming ("Riverton Facility") (collectively, the "BSTR Facilities") have been owned and operated by Chemtrade Refinery Services from approximately August 2005 to the present;

WHEREAS, the Complaint alleges that: (i) Marsulex and/or its predecessors in interest with respect to the Oregon Facility, (ii) Chemtrade and/or its predecessors in interest with respect to the BSTR Facilities; and (iii) Marsulex and Chemtrade and/or their predecessors in interest with respect to the Cairo Facility, constructed or modified the above-referenced sulfuric acid manufacturing facilities without obtaining required permits, without installing required control technology, without meeting emission limits, without a valid Title V permit, and without complying with requirements for monitoring, recordkeeping and reporting, as required in the CAA;

WHEREAS, Plaintiff-Intervenor, the Northern Arapaho Tribe, is a federally-recognized tribe located on the Wind River Reservation in the State of Wyoming, and is moving to intervene in this matter and is filing a Complaint in Intervention only asserting claims against Chemtrade Refinery Services involving the Riverton Facility;

WHEREAS, as more specifically described in Section V, Marsulex, with respect to the Cairo and Oregon Facilities, and Chemtrade, with respect to the BSTR Facilities, have agreed to install and/or enhance emission control technology to reduce emissions of sulfur dioxide to levels no greater than emission levels equivalent to those that would result from the application of the

Best Available Control Technology ("BACT"), as defined at 40 C.F.R. § 52.21(b)(12), and to implement best work practices at these Facilities;

WHEREAS, in achieving the air emissions reductions required by this Consent Decree at the Riverton Facility, Chemtrade intends to install equipment to allow Chemtrade to market the scrubbers' effluent, sodium bisulfite, and Chemtrade recognizes that it cannot allow the quality of its wastewater effluent to cause a violation of the terms and conditions of its National Pollutant Discharge Elimination System permit;

WHEREAS, Defendants do not admit any liability to the United States or any of the Co-Plaintiffs arising out of the acts or omissions alleged in the Complaint and Chemtrade Refinery Service does not admit any liability to Plaintiff-Intervenor arising out of the acts or omissions alleged in the Complaint in Intervention and this Consent Decree resolves all allegations stated in the Complaint and Complaint in Intervention. Nothing in the Complaint, the Complaint in Intervention, nor this Consent Decree, nor in the execution and implementation of this Consent Decree, shall be treated as an admission or evidence of any violation of the CAA, its implementing regulations or any state or local equivalent act or implementing regulations cited herein in any litigation or forum whatsoever, except that the terms of this Consent Decree may be used in any action or dispute resolution proceeding to enforce the terms of this Consent Decree;

WHEREAS, the Parties recognize, and this Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith, will avoid litigation among the Parties, and that this Consent Decree is fair, reasonable, and in the public interest;

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section I, and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331, 1345, 1355, 1362, and 1367, and Sections 113(b) and 304(a) of the CAA, 42 U.S.C. §§ 7413(b) and 7604(a), and over the Parties. Venue lies in this District pursuant to Sections 113(b) and 304(c) of the CAA, 42 U.S.C. §§ 7413(b) and 7604(c), and 28 U.S.C. §§ 1391(b) and (c) and 1395(a), because some of the violations alleged in the Complaint are alleged to have occurred in, and two of the three Defendants conduct business in, this judicial district. Defendants consent to this Court's jurisdiction over this Consent Decree and any action to enforce this Consent Decree, and to venue in this judicial district. Solely for the purpose of the Complaint in Intervention filed in this matter and resolved by this Consent Decree, for the purposes of entry and enforcement of this Consent Decree, and for no other purpose, Chemtrade Refinery Service waives any defense or objection based on standing, waives any objection to the motion to intervene filed by the Northern Arapaho Tribe, and consents to the intervention by the Northern Arapaho Tribe as a Plaintiff-Intervenor in this matter. The United States likewise consents to the intervention. No other party to this matter has any interest in nor opposition to the intervention.

2. For purposes of this Consent Decree, Defendants agree that the Complaint states claims upon which relief may be granted pursuant to Sections 111, 165, 304, and 502 of the CAA, 42 U.S.C. §§ 7411, 7475, 7604, and 7661a, and/or pursuant to state law.

3. Notice of the commencement of this action has been given to the States of Louisiana, Ohio, Oklahoma, Texas, and Wyoming as required by Section 113 of the CAA, 42 U.S.C. § 7413.

II. APPLICABILITY

4. The obligations of this Consent Decree apply to and are binding upon the United States, the Co-Plaintiffs, the Plaintiff-Intervenor, and upon Defendants and their officers, employees, agents, subsidiaries, successors, assigns, and other entities or persons otherwise bound by law, except that, notwithstanding any other provision of this Consent Decree, Marsulex shall have no liability, responsibility, duties, or obligations under this Consent Decree to the Plaintiff-Intervenor and this Consent Decree shall not confer any rights to the Plaintiff-Intervenor as to Marsulex.

5. No transfer of ownership or operation of any of the Covered Sulfuric Acid Plants, whether in compliance with the procedures of Paragraphs 5 or 6 or otherwise, shall relieve the Defendants of their respective obligations to ensure that the terms of this Consent Decree are implemented unless and until:

a. The transferee agrees in writing to undertake the obligations required by this Consent Decree with respect to the Facility(ies) being transferred, and to intervene as a Defendant in this action for the purpose of being bound by the applicable terms of this Consent Decree; and

b. The United States and the Applicable Co-Plaintiff after receiving information sufficient to demonstrate that the transferee has the technical and financial means to

comply with the applicable obligations of this Consent Decree, consent in writing to substitute the transferee for the Defendant with respect to such obligations; and

c. The Court approves such substitution.

6. By no later than 10 days prior to the closing date of any transfer of ownership or operation of any of the Covered Sulfuric Acid Plants, the Defendant undertaking the transfer shall provide a copy of this Consent Decree to the proposed transferee. By no later than the closing date of any such transfer, the Defendant undertaking the transfer shall provide written notice of the prospective transfer, together with a copy of a written agreement or acknowledgment by which the transferee agrees to undertake the obligations of this Consent Decree, to the United States and to the Applicable Co-Plaintiff, in the manner set forth in Section XV of this Decree (Notices). Any attempt to transfer ownership or operation of a Covered Sulfuric Acid Plant, or any portion thereof, without complying with the foregoing notice requirements constitutes a violation of this Decree. Defendant may prominently label each page of any written agreement or acknowledgment submitted under this Paragraph as "Confidential Business Information." If so labeled, the United States and the Applicable Co-Plaintiff shall treat the Written Agreement as Confidential Business Information under, respectively, 40 C.F.R. Part 2 and the corollary state laws and regulations applicable to maintaining information in a confidential manner.

7. In any action to enforce this Consent Decree, Defendants shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

III. DEFINITIONS

8. Terms used in this Consent Decree that are defined in the CAA or in federal and state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise provided in this Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

a. "Acid mist" shall mean the pollutant sulfuric acid mist as measured by Method 8 of 40 C.F.R Part 60, Appendix A consistent with 40 C.F.R. § 60.81(b).

b. "Alternative CEMS Plan" shall mean a plan, as more particularly described in Paragraph 32, for monitoring compliance with the SO_2 emissions limits required in Section V.A of this Consent Decree without the use of a Converter Inlet SO_2 Analyzer.

c. "Applicable Co-Plaintiff or Plaintiff-Intervenor" shall mean: (i) with respect to the Shreveport Facility, the State of Louisiana; (ii) with respect to the Cairo and Oregon Facilities, the State of Ohio; (iii) with respect to the Tulsa Facility, the Oklahoma Department of Environmental Quality; and (iv) with respect to the Riverton Facility, the Northern Arapaho Tribe.

d. "Beaumont Facility" shall mean the facility located at 1400 Olin Road, Beaumont, TX 77705, and currently owned and operated by Chemtrade Refinery Services.

e. "BSTR Facilities" shall mean the Beaumont Facility, the Shreveport Facility, the Tulsa Facility, and the Riverton Facility.

f. "Cairo Facility" shall mean the facility located at 7680 Ottawa Road, P.O. Box 310, Cairo, OH 45820, and currently owned and operated by CLI(US).

g. "CEMS" or "Continuous Emission Monitoring System" shall mean the total equipment, required under the CEMS Plans attached as Appendices A-G to this Consent Decree, used to sample and condition (if applicable), to analyze, and to provide a permanent record of emissions or process parameters.

h. "CEMS Plan" shall mean one of the CEMS Plans for each of the Covered Sulfuric Acid Plants that are attached in the following Appendices:

Appendix A --	Beaumont Sulfuric Acid Plant
Appendix B --	Shreveport Sulfuric Acid Plant
Appendix C --	Tulsa Sulfuric Acid Plant
Appendix D --	Riverton 1 Sulfuric Acid Plant
Appendix E --	Riverton 2 Sulfuric Acid Plant
Appendix F --	Cairo Sulfuric Acid Plant
Appendix G --	Oregon A and B Sulfuric Acid Plants

i. "Chemtrade" shall mean, collectively, CLI(US) and Chemtrade Refinery Services.

j. "Chemtrade Refinery Services" shall mean Chemtrade Refinery Services Inc.

k. "CLI(US)" shall mean Chemtrade Logistics (US), Inc.

l. "Complaint" shall mean the Complaint filed by the United States, the State of Louisiana, the State of Ohio, and the Oklahoma Department of Environmental Quality in this action.

m. "Complaint in Intervention" shall mean the Complaint in Intervention filed by the Northern Arapaho Tribe against Chemtrade Refinery Services.

n. "Consent Decree" or "Decree" shall mean this Consent Decree and all appendices attached hereto, but in the event of any conflict between the text of this Consent Decree and any Appendix, the text of this Consent Decree shall control.

o. "Converter Inlet SO_2 Analyzer" shall mean an analyzer that measures the concentration of SO_2 that is fed into the first bed of the converter at a Sulfuric Acid Plant.

p. "Co-Plaintiffs" shall mean the State of Louisiana, the State of Ohio, and the Oklahoma Department of Environmental Quality.

q. "Coulton" shall mean Chemical Company, LP (f/k/a Coulton Chemical Co., LP).

r. "Covered Sulfuric Acid Plants" shall mean the eight Sulfuric Acid Plants that are subject to this Consent Decree: one at the Beaumont Facility; one at the Shreveport Facility; one at the Tulsa Facility; two (Riverton 1 and Riverton 2) at the Riverton Facility; one at the Cairo Facility; and two (Plants A and B) at the Oregon Facility.

s. "Day" shall mean a calendar day unless expressly stated to be a working day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

t. "Defendants" shall mean Chemtrade Refinery Services, CLI(US), and Marsulex.

u. "Effective Date" shall have the meaning given in Section XVI.

v. "Facility" shall mean a plant site at which one or more Covered Sulfuric Acid Plants are located.

w. "LDEQ" shall mean the Louisiana Department of Environmental Quality and any of its successor departments or agencies.

x. "Long-Term Limit" shall mean a 365-day rolling average sulfur dioxide emission limit expressed as pounds of sulfur dioxide emitted per ton of 100% Sulfuric Acid Produced ("lb/ton"); compliance with the Long-Term Limit shall be calculated in accordance with the CEMS Plans attached to this Consent Decree as Appendices F and G. The Long-Term Limit applies at all times, including during periods of Startup, Shutdown, or Malfunction.

y. "Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in whole or in part by poor maintenance or careless operation.

z. "Marsulex" shall mean Marsulex, Inc.

aa. "Mass Cap" shall mean the maximum amount of SO_2 emissions for a Sulfuric Acid Plant expressed in tons of sulfur dioxide emitted during each 12-month period consisting of the most recently concluded month and the eleven months immediately preceding it. Compliance with the Mass Cap shall be calculated in accordance with the CEMS Plans attached to this Consent Decree as Appendices A-E. In determining compliance with the Mass Cap, all SO_2 emissions from a Covered Sulfuric Acid Plant, including emissions during times of Startup, Shutdown, and Malfunction, shall be counted.

bb. "Month" shall mean calendar month.

cc. "NSR" shall mean a program for New Source Review under the CAA. Specifically, "non-attainment NSR" and "major NSR" as used herein refer to the non-attainment

area New Source Review program within the meaning of Part D of Subchapter I of the CAA, 42 U.S.C. §§ 7501-7515; "minor NSR" as used herein refers to any state, regional or local statutes, ordinances or regulations calling for review and approval of non-major new and modified sources of air pollution.

dd. "NSPS" shall mean the standards of performance for new stationary sources codified at 40 C.F.R. Part 60. General NSPS requirements are codified at 40 C.F.R. Part 60, Subpart A. NSPS requirements specifically for sulfuric acid plants are codified at 40 C.F.R. Part 60, Subpart H.

ee. "Ohio EPA" shall mean the Ohio Environmental Protection Agency and any of its successor departments or agencies.

ff. "Oklahoma DEQ" shall mean the Oklahoma Department of Environmental Quality and any of its successor departments or agencies.

gg. "100% Sulfuric Acid Produced" shall mean the stoichiometric quantity of sulfuric acid that would be produced at a Covered Sulfuric Acid Plant if all sulfur trioxide (SO_3) exiting the converter were used to produce sulfuric acid monohydrate. For purposes of this definition, scrubber byproduct (if any) shall be considered to be included in "100% Sulfuric Acid Produced."

hh. "Operating Periods" shall mean periods during which Sulfur or Sulfur-Bearing Compounds are being fed to the furnace of a Covered Sulfuric Acid Plant.

ii. "Oregon Facility" shall mean the facility located at 1400 Otter Creek Road, Oregon Ohio 43616, which includes two Covered Sulfuric Acid Plants (known as Plant A and Plant B), and which is currently owned and operated by Marsulex.

jj. "Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral.

kk. "Parties" shall mean the United States, the State of Louisiana, the State of Ohio, the Oklahoma Department of Environmental Quality, the Northern Arapaho Tribe, Chemtrade Refinery Services, CLI(US), and Marsulex.

ll. "Plaintiff-Intervenor" shall mean the Northern Arapaho Tribe which is a federally-recognized tribe located on the Wind River Reservation in the State of Wyoming.

mm. "PSD" shall mean the attainment area New Source Review program (prevention of significant deterioration) within the meaning of Part C of Subchapter I of the CAA, 42 U.S.C. §§ 7470-7492.

nn. "Riverton Facility" shall mean the facility located at 140 Goes In Lodge Road, Riverton, WY 82501, which includes two Covered Sulfuric Acid Plants (known as Riverton 1 and Riverton 2), and which is currently owned and operated by Chemtrade Refinery Services.

oo. "Section" shall mean a portion of this Consent Decree identified by a roman numeral.

pp. "Short-Term Limit" shall mean a 3-hour rolling average sulfur dioxide emission limit expressed in terms of pounds of sulfur dioxide emitted per ton of 100% Sulfuric Acid Produced ("lb/ton"); compliance with the Short-Term Limit shall be calculated in accordance with the CEMS Plans attached to this Consent Decree as Appendices A-G. The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction.

qq. "Shreveport Facility" shall mean the facility located at 10889 Highway 1 South, Shreveport, LA 71115, and currently owned and operated by Chemtrade Refinery Services.

rr. "Shutdown" shall mean the cessation of operation of a Covered Sulfuric Acid Plant for any reason. Shutdown begins at the time the feed of Sulfur or Sulfur-Bearing Compounds to the furnace ceases and ends at the earlier of three hours later or when the flow rate on the stack volumetric flow rate analyzer falls below 10% of span.

ss. "SO_2" shall mean the pollutant sulfur dioxide.

tt. "Startup" shall mean, with respect to any Covered Sulfuric Acid Plant, the period of time beginning when the feed of Sulfur or Sulfur-Bearing Compounds to the furnace commences and lasting for no more than 24 hours.

uu. "Sulfur or Sulfur-Bearing Compounds" shall mean elemental sulfur, alkylation or other spent sulfuric acids, hydrogen sulfide, organic sulfides, mercaptans, or acid sludge, but they exclude hydrocarbon and conventional fossil fuels such as natural gas or fuel oil.

vv. "Sulfuric Acid Plant" shall mean a process unit engaged in the production of sulfuric acid and related products using the contact process. Marsulex owns and operates two Sulfuric Acid Plants that are subject to this Consent Decree: the A and B Plants at the Oregon Facility. Chemtrade owns and operates the remaining six Sulfuric Acid Plants that are subject to this Consent Decree: one each at the Cairo, Beaumont, Shreveport, and Tulsa Facilities and two (Riverton 1 and 2) at the Riverton Facility.

ww. "Title V Permit" shall mean a permit required by or issued pursuant to the requirements of 42 U.S.C. §§ 7661 - 7661f.

xx. "Ton" or "tons" shall mean short ton or short tons. One Ton equals 2000 pounds.

yy. "Tulsa Facility" shall mean the facility located at 5201 West 21st St., Tulsa, OK 74107, and currently owned and operated by Chemtrade Refinery Services.

zz. "United States" shall mean the United States of America, acting on behalf of U.S. EPA.

aaa. "U.S. EPA" shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.

IV. CIVIL PENALTY

9. Prior to the Lodging of this Consent Decree, Defendants deposited $700,000 into an interest-bearing escrow account as a civil penalty. Within 30 days after the Effective Date of this Consent Decree, Defendants shall transfer to the United States and the Co-Plaintiffs the entire balance in the escrow account, in the following manner:

a. $460,000, plus all accrued interest on the original $700,000, to the United States by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice in accordance with written instructions to be provided to Defendants, following lodging of the Consent Decree, by the Financial Litigation Unit of the U.S. Attorney's Office for the Northern District of Ohio, 801 W. Superior Ave., Suite 400, Cleveland, OH 44113. At the time of payment, Defendants shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in United States, et al. v. Chemtrade Logistics, et al., and shall reference the civil action number, USAO File Number 2008V02383, DOJ case number

90-5-2-1-06944/1, to the United States in the manner set forth in Section XV of this Decree (Notices); by email to acctsreceivable.CINWD@epa.gov; and by mail to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive
Cincinnati, Ohio 45268

b. $60,000 to the State of Louisiana by bank check made payable to the Louisiana Department of Environmental Quality and sent to Darryl Serio, Fiscal Director, Office of Management and Finance, LDEQ, P.O. Box 4303, Baton Rouge, Louisiana 70821-4303.

c. $120,000 to the State of Ohio by three separate checks in the following manner:

i. $72,000 shall be delivered by bank check payable to the order of "Treasurer, State of Ohio" and delivered to Martha Sexton, Paralegal, or her successor, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3400; the memorandum portion of the check, or some other prominent location on the transmittal letter or documentation, shall include reference to "A.G. EAGO No. 363812;"

ii. $24,000 shall be delivered by bank check payable to the order of "Treasurer, State of Ohio" and delivered to Martha Sexton, Paralegal, or her successor, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3400, to fund the Clean Diesel School Bus Program established by the Ohio Director of Environmental Protection pursuant to O.R.C. 3704.144 and O.A.C. Chapters 3745-50 through 52, for the purpose of installing, in accordance with Ohio Environmental Protection Agency guidelines, diesel particulate filters for school buses operated by school districts in the State of Ohio, and which is made available to Ohio school districts in accordance with a grant established by the Ohio Director of Environmental Protection; the memorandum portion of the check, or some other prominent location on the transmittal letter or documentation, shall include a reference to "A.G. EAGO No. 363812" and specify that such monies are to be

deposited into the fund established by Ohio Environmental Protection Agency for the Clean Diesel School Bus Program (Fund 5CD0); and

iii. $24,000 shall be delivered by bank check payable to the order of "Treasurer, State of Ohio" and delivered to Martha Sexton, Paralegal, or her successor, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3400, to fund the Ohio Department of Natural Resources, Division of Forestry, Urban Forestry Grant Program in order to provide for tree-planting projects in the City of Oregon, Ohio; the memorandum portion of the check, or some other prominent location on the transmittal letter or documentation, shall include a reference to "A.G. EAGO No. 363812" and specify that such monies are to be deposited into the fund established by Ohio Department of Natural Resources for the Urban Forestry Grant Program (Fund 5090).

d. $60,000 to the Oklahoma Department of Environmental Quality by bank check or money order made payable to the Oklahoma Department of Environmental Quality Revolving Fund and delivered to: Accounts Receivable, Financial and Human Resources Management, Department of Environmental Quality, P.O. Box 2036, Oklahoma City, Oklahoma 73101-2036.

10. If any portion of the civil penalty due to the United States or a Co-Plaintiff is not paid when due, Defendants shall pay interest on the amount past due, accruing from the Effective Date through the date of payment, at the rate specified in 28 U.S.C. § 1961. Interest payment under this Paragraph shall be in addition to any stipulated penalty due.

11. In the event that this Consent Decree is not entered by the Court, the entire sum of the money deposited in the escrow account, plus all accrued interest thereon, shall be returned to Defendants.

12. Defendant shall not deduct any penalties paid under this Decree pursuant to this Section or Section IX (Stipulated Penalties) in calculating its federal or state or local income tax.

V. COMPLIANCE REQUIREMENTS

A. SO_2 Emission Limits, Mass Caps, and Schedule of Compliance

13. Beaumont Sulfuric Acid Plant. By no later than July 1, 2011, Chemtrade shall comply with the following SO_2 emission requirements at the Beaumont Sulfuric Acid Plant:

a. Short-Term Limit: 2.2 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 380.0 tons/year. Chemtrade shall commence monitoring by July 1, 2011, but shall have until July 1, 2012, to meet this limit, and until July 15, 2012, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

14. Shreveport Sulfuric Acid Plant. By no later than January 1, 2012, Chemtrade shall comply with the following SO_2 emission requirements at the Shreveport Sulfuric Acid Plant:

a. Short-Term Limit: 2.0 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 215.0 tons/year. Chemtrade shall commence monitoring by January 1, 2012, but shall have until January 1, 2013, to meet this limit, and until January 15, 2013, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

15. Tulsa Sulfuric Acid Plant. By no later than January 1, 2010, Chemtrade shall comply with the following SO_2 emission requirements at the Tulsa Sulfuric Acid Plant:

a. Short-Term Limit: 1.7 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 92.4 tons/year. Chemtrade shall commence monitoring by January 1, 2010, but shall have until January 1, 2011, to meet this limit, and until January 15, 2011, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

16. Riverton 1 Sulfuric Acid Plant. By no later than January 1, 2013, Chemtrade shall comply with the following SO_2 emission requirements at the Riverton 1 Sulfuric Acid Plant:

a. Short-Term Limit: 1.9 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 35.0 tons/year. Chemtrade shall commence monitoring by January 1, 2013, but shall have until January 1, 2014, to meet this limit, and until January 15, 2014, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

17. Riverton 2 Sulfuric Acid Plant. By no later than January 1, 2013, Chemtrade shall comply with the following SO_2 emission requirements at the Riverton 2 Sulfuric Acid Plant:

a. Short-Term Limit: 2.1 lb/ton.

b. Emissions During Startup: Set forth in Appendix H. These limits shall be applicable for no more than 26 hours.

c. Mass Cap: 38.0 tons/year. Chemtrade shall commence monitoring by January 1, 2013, but shall have until January 1, 2014, to meet this limit,

and until January 15, 2014, to calculate the amount of SO_2 emitted for the first 12-month period. Thereafter, by no later than the 15th day of each month, Chemtrade shall calculate the amount of SO_2 emitted for the immediately preceding 12-month period.

18. Oregon A Sulfuric Acid Plant. By no later than July 1, 2011, Marsulex shall comply with the following SO_2 emission requirements at the Oregon A Sulfuric Acid Plant:

a. Long-Term Limit: 2.40 lb/ton. Marsulex shall commence monitoring by July 1, 2011, but shall have until June 30, 2012, to demonstrate compliance with this Long-Term Limit.

b. Short-Term Limit: 3.5 lb/ton.

19. Oregon B Sulfuric Acid Plant. By no later than July 1, 2011, Marsulex shall comply with the following SO_2 emission requirements at the Oregon B Sulfuric Acid Plant:

a. Long-Term Limit: 2.50 lb/ton. Marsulex shall commence monitoring by July 1, 2011, but shall have until June 30, 2012, to demonstrate compliance with this Long-Term Limit.

b. Short-Term Limit: 3.5 lb/ton.

20. Cairo Sulfuric Acid Plant. By no later than July 1, 2011, Marsulex shall cause the Cairo Facility to comply with the following SO_2 emission requirements:

a. Long-Term Limit: 1.90 lb/ton. Chemtrade shall be responsible for demonstrating and maintaining compliance with this limit. Monitoring shall commence by July 1, 2011, but demonstration of compliance with this Long-Term Limit shall not commence until June 30, 2012.

b. Short-Term Limit: 3.0 lb/ton.

21. Proposed Increases to a Mass Cap. Any proposal to increase a Mass Cap in this Decree must be agreed to by all of the applicable Parties and submitted to the Court for approval as a modification to this Decree. Until such time as the Court approves such modification, all Mass Caps in this Decree shall remain in full force and effect. Chemtrade shall provide notice to

the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), prior to submitting or at the time that it submits any permit application that seeks to increase the production capacity or emission limits (including the Mass Cap) for any of Chemtrade's Sulfuric Acid Plants if the proposed increase(s) would be permissible only if the applicable Mass Cap and/or other applicable emission limit(s) in this Decree were relaxed.

B. Scrubber Design

22. In order to achieve compliance with the SO_2 emissions limits in Paragraph 20 for the Cairo Facility, Marsulex shall install a new scrubber. Marsulex shall design the new scrubber to be capable of achieving at least 95% removal efficiency, except during periods of Startup, Shutdown, and Malfunction.

C. Acid Mist Emission Limits

23. Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall comply with the NSPS, Subpart H sulfuric acid mist emission limitation of 0.15 lb/ton of 100% Sulfuric Acid Produced, as set forth at 40 C.F.R. § 60.83, by no later than the following dates:

a. Beaumont: July 1, 2011

b. Shreveport: Date of Lodging

c. Tulsa: Date of Lodging

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: Date of Lodging

h. Oregon B: Date of Lodging

Compliance with the acid mist limit shall be demonstrated using the performance test required by Paragraph 34 of this Consent Decree. For all Facilities, the acid mist performance tests required under Paragraph 34 may be undertaken at the same time as the performance tests for the SO_2 limits required under Paragraph 35 and scheduled under Paragraph 33, notwithstanding that the Shreveport, Tulsa, and Oregon Facilities are required to comply with the NSPS acid mist limits as of the Date of Lodging.

24. Ongoing Responsibility for Compliance with the Acid Mist Limits at the Cairo Facility. For the Cairo Facility, Marsulex shall be responsible for timely complying with the limit set forth in Paragraph 23 and shall remain responsible until the date set forth in a Joint Notice from Marsulex and Chemtrade, pursuant to Paragraph 41, that identifies the date on which Chemtrade accepts responsibility for compliance with the acid mist limit. The Joint Notice must include the results of a performance test that demonstrates compliance in order for the transfer to be effective.

D. NSPS Applicability

25. Each Covered Sulfuric Acid Plant shall be considered an affected facility for purposes of the New Source Performance Standards ("NSPS"), 40 C.F.R. Part 60, Subpart H, by no later than the following dates:

a. Beaumont: July 1, 2011

b. Shreveport: Date of Lodging

c. Tulsa: Date of Lodging

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: Date of Lodging

h. Oregon B: Date of Lodging

After such date, each Sulfuric Acid Plant shall comply with all applicable requirements for affected facilities under the NSPS 40 C.F.R. Part 60, Subparts A and H, or with the requirements of this Consent Decree (if more stringent). A continuous opacity monitoring system ("COMS") may be used for monitoring compliance with the opacity limit found at 40 C.F.R. § 60.83(a)(2) at any of the Facilities. Satisfactory compliance with notice and compliance demonstration obligations set forth in this Consent Decree shall be deemed to satisfy all applicable initial notification and compliance demonstration requirements of NSPS Subparts A and H.

26. Ongoing Responsibility for Compliance with the NSPS at the Cairo Facility. For the Cairo Facility, Marsulex shall be responsible for timely complying with the requirements of the NSPS and shall remain responsible until the date set forth in a Joint Notice from Marsulex and Chemtrade, submitted pursuant to Paragraph 41, that identifies the date on which Chemtrade accepts responsibility for compliance with the NSPS.

27. Best Practices. At all times after the Effective Date of this Consent Decree, including periods of Startup, Shutdown, and Malfunction, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall to the extent practicable maintain and operate each of their Covered Sulfuric Acid Plants, including associated

air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

E. Emissions Monitoring

28. Installation, Certification, and Calibration. By no later than the following dates, Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall install, certify, and calibrate an SO_2 continuous emissions monitoring system ("CEMS") capable of directly measuring the SO_2 emission rate expressed as lb/ton of 100% Sulfuric Acid Produced:

a. Beaumont: July 1, 2011

b. Shreveport: January 1, 2012

c. Tulsa: January 1, 2010

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: July 1, 2011

h. Oregon B: July1, 2011

29. Responsibility for Emissions Monitoring. After the dates set forth in Paragraph 28, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the BSTR Facilities, shall operate and maintain the CEMS. For the CEMS at the Cairo Facility, Marsulex shall operate and maintain it from June 30, 2011, until the date set forth in a Joint Notice from Marsulex and Chemtrade, submitted pursuant to Paragraph 41, that identifies the

date on which Chemtrade accepts responsibility for the operation and maintenance of the Cairo CEMS.

30. Continuous Operation of CEMS and Minimization of CEMS Downtime. After the dates set forth in Paragraph 28, and except during CEMS breakdowns, repairs, calibration checks, and zero span adjustments, the CEMS shall be in continuous operation during all Operating Periods and Shutdowns to demonstrate compliance with the SO_2 emission limits established in Subsection V.A of this Consent Decree. The Defendant responsible for operating and maintaining the CEMS shall take all steps necessary to avoid CEMS breakdowns and minimize CEMS downtime. This shall include, but is not limited to, operating and maintaining the CEMS in accordance with best practices and maintaining an on-site inventory of spare parts or other supplies necessary to make rapid repairs to the equipment.

31. SO_2 CEMS Plans. CEMS Plans that describe how Marsulex and Chemtrade shall monitor compliance with the SO_2 emission limits established in Subsection V.A of this Consent Decree, including the methodology that they shall use to demonstrate compliance in the event of CEMS downtime lasting longer than 24 hours, are attached in Appendices A - G. On and after the dates set forth in Subparagraphs 28.a - e, Chemtrade shall implement the CEMS Plans at Appendices A - E for the BSTR Facilities. On and after July 1, 2011, Marsulex shall implement the CEMS Plan at Appendix G for the Oregon Facility. Marsulex also shall implement the CEMS Plan at Appendix F for the Cairo Facility from July 1, 2011, until the date set forth in a Joint Notice from Marsulex and Chemtrade, submitted pursuant to Paragraph 41, that identifies the date on which Chemtrade accepts responsibility for the implementation of the Cairo CEMS

Plan. The monitoring methods specified in the CEMS Plans have been approved as appropriate alternative monitoring methods for purposes of NSPS, pursuant to 40 C.F.R. § 60.13(i).

32. Modified or Alternative CEMS Plans for Beaumont, Shreveport, Riverton 2, Oregon A, and/or Oregon B Sulfuric Acid Plants. Chemtrade, with respect to the Beaumont, Shreveport, and/or Riverton 2 Sulfuric Acid Plants, and Marsulex, with respect to the Oregon A and/or B Sulfuric Acid Plants, may secure relief from the requirement, in the applicable CEMS Plan, to install a Converter Inlet SO_2 Analyzer by complying with the provisions of this Paragraph. A decision to seek relief from the requirement to install a Converter Inlet SO_2 Analyzer is within the discretion of the Applicable Defendant.

a. Basis for Proposing a CEMS Plan that Does not Include the Use of a Converter Inlet SO_2 Analyzer. Either Defendant may propose a CEMS Plan that does not include the use of a Converter Inlet SO_2 Analyzer ("Alternative CEMS Plan") only if all of the following conditions are met:

i. Defendant has undertaken best efforts to use a Converter Inlet SO_2 Analyzer in compliance with the requirements of the applicable CEMS Plan;

ii. Either the use of a Converter Inlet SO_2 Analyzer is technically infeasible or a Converter Inlet SO_2 Analyzer cannot be configured in such a way as to allow Defendant to measure SO_2 converter inlet concentration with sufficient accuracy; and

iii. Modifications to the applicable CEMS Plan and/or Performance Specifications for the Converter Inlet SO_2 Analyzer would not allow Defendant to alleviate the conditions that resulted in technical infeasibility or inaccuracy in measurement.

b. Modified CEMS Plan. If modifications to the applicable CEMS Plan and/or Performance Specifications for the Converter Inlet SO_2 Analyzer will allow Defendant to use a Converter Inlet SO_2 Analyzer to measure converter inlet SO_2 concentration, Defendant shall submit a proposal to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), to modify the applicable CEMS Plan rather than propose an alternative that does not include the use of a Converter Inlet SO_2 Analyzer. U.S. EPA, after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor, will either approve or disapprove, in whole or in part, the proposed modification(s). Agreed-upon modifications to the applicable CEMS Plan under this Subparagraph are non-material modifications to this Consent Decree and will be effective when approved by U.S. EPA. Within thirty (30) days after receipt of a U.S. EPA notice disapproving Defendant's proposed modified CEMS Plan or directing Defendant to implement a Modified CEMS Plan with which Defendant disagrees, Defendant will invoke Section XI of this Decree (Dispute Resolution).

c. Technical Infeasibility and Alternative CEMS Plan Report. If all of the conditions in Subparagraph 32.a are satisfied, Defendant may submit a Technical Infeasibility and Alternative CEMS Plan Report, to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), that includes detailed descriptions of the following:

i. The efforts that Defendant undertook to use a Converter Inlet SO_2 Analyzer in compliance with the applicable CEMS Plan, including a detailed description of all of the efforts Defendant and its equipment vendors, contractors, and/or consultants undertook to install, certify, maintain, and/or operate the Converter Inlet SO_2 Analyzer, together with any supporting documentation;

ii. All potential remedies considered by Defendant and/or its equipment vendors, contractors, and/or consultants to install, certify, maintain, and/or operate a Converter Inlet SO_2 Analyzer;

iii. The relevant events and considerations that led Defendant to conclude that either the use of a Converter Inlet SO_2 Analyzer was technically infeasible or a Converter Inlet SO_2 Analyzer could not be configured in such a way to allow Defendant to measure SO_2 converter inlet concentration with sufficient accuracy, including all related correspondence with equipment vendors, contractors, and/or consultants, and any other supporting documentation;

iv. The modifications to the applicable CEMS Plan and/or Performance Specifications that Defendant considered to evaluate whether the conditions that resulted in technical infeasibility or measurement inaccuracy could be alleviated;

v. The alternative plan that Defendant proposes for measuring converter inlet SO_2 concentration or otherwise measuring the emission rate expressed as lb/ton ("Alternative CEMS Plan");

vi. Justifications for the proposed Alternative CEMS Plan;

vii. Procedures that Defendant proposes for verifying the accuracy and performance of the proposed Alternative CEMS Plan; and

viii. Any other information that Defendant deems relevant.

d. U.S. EPA Review and Approval of Alternative CEMS Plans. Defendant shall provide all information requested by U.S. EPA or the Applicable Co-Plaintiff or Plaintiff-Intervenor after Defendant's submission of the Technical Infeasibility and Alternative CEMS Plan Report. U.S. EPA, after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor, will either approve or disapprove, in whole or in part, Defendant's proposed Alternative CEMS Plan. If U.S. EPA plans to disapprove all of part of a proposed Alternative CEMS Plan, U.S. EPA first will consult with Defendant to determine if a mutually-agreeable CEMS Plan (whether it be the original CEMS Plan attached to this Decree, a Modified CEMS

Plan, or an Alternative CEMS Plan) can be agreed to. After consultation with Defendant, U.S. EPA will require Defendant to implement either the original CEMS Plan, a U.S. EPA-approved Modified CEMS Plan, or a U.S. EPA-approved Alternative CEMS Plan. In no event will U.S. EPA approve an Alternative CEMS Plan it deems to be inferior to the monitoring procedures specified in 40 C.F.R. Part 60, Subpart H. The basis for any decision by U.S. EPA to disapprove, in whole or in part, any Alternative CEMS Plan will be the failure to satisfy one or more of the conditions in Subparagraph 32.a. Within thirty (30) days after receipt of a U.S. EPA notice disapproving an Alternative CEMS Plan or directing Defendant to implement any CEMS Plan with which Defendant disagrees, Defendant must invoke Section XI of this Decree (Dispute Resolution) or will be deemed to have accepted U.S. EPA's decision.

e. Defendant shall implement any Modified or Alternative CEMS Plans that it proposes under Subparagraphs 32.b or 32.c unless and until: (i) a different Plan is mutually agreed to by Defendant and U.S. EPA (after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor) and Defendant consents to implement this Plan; or (ii) Defendant is required, by Court Order issued through dispute resolution proceedings (Section XI), to implement a Plan.

f. Timing for Proposing a Modified or Alternative CEMS Plan. If Defendant seeks to propose a Modified or Alternative CEMS Plan, Defendant shall submit its request to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), by no later than four (4) months prior to the compliance dates for the Short-Term SO_2 Limits in Subsection V.A. In the request, Defendant shall comply with the

requirements of Subparagraph 32.b (for a Modified CEMS Plan) or 32.c (for an Alternative CEMS Plan).

F. Performance Testing

33. Dates. The performance tests required in this Subsection V.F shall be performed at the following Covered Sulfuric Acid Plants by no later than the following dates:

a. Beaumont: July 1, 2011

b. Shreveport: January 1, 2012

c. Tulsa: January 1, 2010

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: July 1, 2011

h. Oregon B: July 1, 2011

34. Acid Mist. Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall conduct a performance test measuring the emission rate of acid mist in accordance with the applicable requirements of 40 C.F.R. Part 60, Appendix A, Reference Method 8, or an alternative method approved by U.S. EPA. These performance tests shall be used to demonstrate compliance with the acid mist emission limit established in Paragraph 23 and may serve as the NSPS performance test required under 40 C.F.R. § 60.8. Marsulex and Chemtrade shall take all steps necessary to assure accurate measurements of 100% sulfuric acid production during each test run.

35. SO_2 Emission Limits. Marsulex, with respect to the Oregon and Cairo Facilities, and Chemtrade, with respect to the BSTR Facilities, shall conduct a performance test measuring the emission rate of SO_2 in accordance with the applicable requirements of 40 C.F.R. Part 60, Appendix A, Reference Method 8, and Part 60, Appendix B, Performance Specification 2. This test shall consist of at least nine method test runs and may serve as the CEMS relative accuracy test required under Performance Specification 2. If applicable, this test may also serve as the NSPS performance test required under 40 C.F.R. § 60.8. Marsulex and Chemtrade shall take all steps necessary to assure accurate measurements of 100% sulfuric acid production during each test run.

36. Advance Notification. By no later than 30 days before any performance test required by this Section V.F. is conducted, Marsulex and Chemtrade, as applicable, shall provide notice, in the manner set forth in Section XV (Notices), of its intent to conduct such test to U.S. EPA, the state in which the Covered Sulfuric Acid Plant is located, and, if applicable, the Plaintiff-Intervenor. This notification must include the scheduled date of the test, an emissions test protocol, a description of the planned operating rate and operating conditions, and the procedures that will be used to measure 100% Sulfuric Acid Production. If U.S. EPA or a Co-Plaintiff requires any adjustment of the testing protocol or operating conditions, Defendant shall make such adjustments and conduct the performance test in conformity with U.S. EPA's and/or the Co-Plaintiff's requirements or submit the issue(s) for resolution under the dispute resolution provisions (Section XI) of this Consent Decree.

37. Report of Results. By no later than 60 days after conducting a performance test required under this Subsection V.F., Marsulex, with respect to the Oregon and Cairo Facilities,

and Chemtrade, with respect to the BSTR Facilities, shall submit to U.S. EPA and to the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), a report documenting the results of the performance tests.

G. Operation and Maintenance Plans

38. By no later than the following dates, Marsulex, with respect to the Oregon Facility, Chemtrade, with respect to the BSTR Facilities, and Marsulex and Chemtrade together, with respect to the Cairo Facility, shall prepare and submit to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), an Operation and Maintenance Plan ("O & M Plan") for each Covered Sulfuric Acid Plant:

a. Beaumont: July 1, 2011

b. Shreveport: January 1, 2012

c. Tulsa: January 1, 2010

d. Riverton 1: January 1, 2013

e. Riverton 2: January 1, 2013

f. Cairo: July 1, 2011

g. Oregon A: July 1, 2011

h. Oregon B: July 1, 2011

U.S. EPA and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor may provide comments and/or recommendations with respect to each Plan.

39. Each O & M Plan shall describe the operating and maintenance procedures necessary to: (i) minimize the frequency of Covered Sulfuric Acid Plant Shutdowns (thereby reducing the number of Startups of each Covered Sulfuric Acid Plant); and (ii) at all times,

including during periods of Startup, Shutdown, and Malfunction, maintain and operate each Covered Sulfuric Acid Plant, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

40. By no later than the dates set forth in Paragraph 38, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall implement the O & M Plan. No less frequently than once every three years, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities shall review, and update as necessary, the O & M Plan for their respective Covered Sulfuric Acid Plants.

H. Joint Notice Regarding the Transfer of Responsibilities for Compliance with Certain Requirements related to the Cairo Facility

41. Joint Notice.

a. Requirements Subject to the Transfer of Responsibility. Marsulex and Chemtrade expect to transfer responsibility for compliance with the following requirements at the Cairo Facility from Marsulex to Chemtrade at some time during the course of this Consent Decree: (i) the SO_2 Short-Term Limit in Subparagraph 20.b; (ii) the acid mist limit in Paragraph 23.f; (iii) the NSPS obligations of Paragraph 25; (iv) the operation and maintenance of the CEMS pursuant to Paragraphs 29 - 30; (v) the implementation of the CEMS Plan pursuant to Paragraph 31 and Appendix F; and (vi) the reporting requirements of Paragraph 55. Marsulex and Chemtrade have entered into a separate agreement (to which neither the United States nor the State of Ohio is a party) that governs, *inter alia,* that transfer of responsibility.

b. Liability for the Requirements of Subparagraph 41.a and Contents of a Joint Notice. Notwithstanding Subparagraph 41.a, for purposes of this Consent Decree,

Marsulex shall remain liable for each of the requirements identified in Subparagraph 41.a unless and until Marsulex and Chemtrade submit a notice, jointly executed by them ("Joint Notice"), to the United States and Ohio, in the manner set forth in Section XV (Notices) and by certified mail, that specifically references this Paragraph and identifies the date on which compliance with the relevant requirement will be transferred. In order for the transfer of responsibility for compliance with the SO_2 Short-Term Limit and the acid mist limit to be effective, the Joint Notice must include the results of a performance test that demonstrates compliance with each of these limits.

c. Multiple Joint Notices Allowed. Separate Joint Notices for separate compliance requirements may be submitted or a Joint Notice or Notices that include the transfer of more than one compliance requirement may be submitted.

42. For those requirements for which responsibility is transferred from Marsulex to Chemtrade pursuant to a Joint Notice under Paragraph 41, Marsulex shall have no further responsibility, liability, or obligation under this Consent Decree on and after the date specified in the Joint Notice for the transfer of responsibility for the requirement(s) of this Consent Decree that is(are) the subject of the Joint Notice; provided however, that nothing in this provision is intended to:

a. Prevent the United States and/or Ohio from seeking stipulated penalties from Marsulex, or otherwise enforcing this Consent Decree against Marsulex, after the transfer of responsibility date specified in a Joint Notice for violations or non-compliance that occurred prior to the transfer of responsibility date in the Joint Notice; or

b. Supersede any separate agreement, made outside of this Consent Decree, related to indemnification as between Chemtrade and Marsulex for stipulated penalties.

43. In no event shall the United States or Ohio be a party to any dispute or dispute resolution process between Marsulex and Chemtrade regarding the transfer of compliance responsibilities at the Cairo Facility, including the date on which a CEMS is capable of being operated and maintained. Such disputes are not governed by this Consent Decree or the dispute resolution provisions herein (Section XI).

VI. PERMITS

44. Permits Prior to Construction or Installation. Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall obtain all required federal, state, and local permits necessary for performing any compliance obligation under this Consent Decree, including without limitation permits for construction of pollution control technology and the installation of equipment at the Covered Sulfuric Acid Plants. Chemtrade and Marsulex may seek relief under the provisions of Section X (Force Majeure) of this Consent Decree for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation if Chemtrade or Marsulex, as applicable, has submitted timely and complete applications and has taken all other actions necessary to obtain such permit(s) or approval(s).

45. Permit Applications for Permits Incorporating the Limits in Subsection V.A. By no later than the dates set forth in Paragraph 46, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall submit to the relevant permitting authority a complete application to incorporate the following requirements into federally enforceable minor or major new source review permits or other federally-enforceable permits (other than Title V permits):

a. For each Covered Sulfuric Acid Plant:

i. The limits for SO_2 emissions and Mass Caps established in Section V.A. of this Consent Decree; and

ii. The monitoring requirements established in the CEMS Plans.

b. For the Beaumont, Riverton 1 and 2, and Cairo Sulfuric Acid Plants (which unlike the Tulsa, Shreveport, and Oregon A and B Sulfuric Acid Plants, do not already have these requirements incorporated into their permits):

i. The acid mist emission limit established in Section V.C. of this Consent Decree;

ii. The applicability of 40 C.F.R. Part 60, Subparts A and H, and all requirements therein.

46. Dates for Permit Applications. Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall submit the permit applications required in Paragraph 45 by the following dates:

a. Beaumont: January 1, 2013

b. Shreveport: July 1, 2013

c. Tulsa: July 1, 2011

d. Riverton 1: July 1, 2014

e. Riverton 2: July 1, 2014

f. Oregon A: January 1, 2013

g. Oregon B: January 1, 2013

h. Cairo: 365 days after the date of the Joint Notice from Chemtrade and Marsulex in which Chemtrade accepts responsibility for compliance with the Short-Term Limit set forth in Paragraph 20.

47. Following submission of the complete permit applications, Chemtrade and Marsulex shall cooperate with the applicable federal, state or local agency by promptly submitting to the applicable agency all available information that the applicable agency seeks following its receipt of the permit materials.

48. Title V or Other Operating Permits: Emission Limits and Standards. This Consent Decree shall not terminate until the requirements set forth in this Paragraph are incorporated into: (i) a Title V operating permit for all Facilities except the Tulsa Facility (which, as of the Effective Date of this Consent Decree, is a minor source and does not have a Title V permit); and (ii) the operating permit for the Tulsa Facility. Therefore, during the duration of this Consent Decree, Chemtrade and Marsulex shall file all applications necessary to incorporate the following Consent Decree requirements into the operating permits for each Facility in accordance with state rules, including applicable administrative amendment provisions of such rules:

a. For each Covered Sulfuric Acid Plant:

i. The limits for SO_2 emissions and Mass Caps established in Section V.A. of this Consent Decree;

ii. A requirement that the SO_2 and acid mist emission limits shall not be relaxed; and

iii. The monitoring requirements established in the CEMS Plans.

b. For the Beaumont, Riverton 1 and 2, and Cairo Sulfuric Acid Plants (which unlike the Tulsa, Riverton, and Oregon A and B Sulfuric Acid Plants, do not already have these requirements incorporated into their operating permits):

i. The acid mist emission limit established in Section V.C. of this Consent Decree;

ii. The applicability of 40 C.F.R. Part 60, Subparts A and H, and all requirements therein.

49. Requirements incorporated into Title V operating permits (for the non-Tulsa Facilities) or other operating permits (for the Tulsa Facility) pursuant to Paragraph 48 shall survive termination of this Consent Decree.

50. For any permit applications required by this Section VI that are filed after the Effective Date of this Consent Decree, Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the Cairo and BSTR Facilities, shall submit to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), a copy of each application, as well as a copy of any permit proposed as a result of such application, to allow for timely participation in any public comment opportunity. If, as of the Effective Date, Chemtrade and/or Marsulex, as applicable, already has received any permit necessary to implement the requirements of this Consent Decree, then no later than 30 days after the Effective Date, Chemtrade and/or Marsulex, as applicable, shall submit copies of such permits to U.S. EPA, and, for the Riverton Facility, to the Plaintiff-Intervenor, in the manner set forth in Section XV (Notices). U.S. EPA and/or the Plaintiff-Intervenor may excuse in writing all or part of the latter submissions if copies of such permits have already been submitted prior to the Effective Date.

51. Emission Credit Generation. Chemtrade and Marsulex shall not use any SO_2 or acid mist emission reductions resulting from any projects conducted pursuant to this Consent Decree for the purpose of obtaining netting credits or offsets in any Prevention of Significant

Deterioration (PSD), major NSR, and/or minor NSR permit or permit proceeding; provided however, that nothing in this Consent Decree is intended to prohibit a Defendant from:

a. Using emission reductions from the installation of controls required by this Consent Decree in determining whether a project that includes both the installation of controls under this Consent Decree and other construction or modifications (including construction or modifications that affect the facility's production capacity) that occur at the same time and are permitted as a single project triggers PSD and/or NSR requirements;

b. Using netting reductions or emission offset credits from units that are covered by this Decree to the extent that the proposed netting reductions or emission offset credits represent the difference between the emission limits set forth in this Consent Decree and the more stringent emission limits that the applicable Defendant may elect to accept for these units in a permitting process**;**

c. Using netting reductions or emissions offset credits from units that are not subject to an emission limitation under this Consent Decree;

d. Using netting reductions or emissions offset credits for any pollutants other than sulfur dioxide or sulfuric acid mist.

VII. MODIFICATIONS TO IMPLEMENTATION SCHEDULES RELATED TO THE UNAVAILABILITY OF A QUALIFIED CONTRACTOR/CONSULTANT

52. Modifications to Implementation Schedules related to the Unavailability of Qualified Contractors and/or Consultants for the Defendants.

a. Defendants' General Obligation. Chemtrade and Marsulex, as applicable, shall be solely responsible for compliance with any deadline or the performance of any work described in Section V of this Consent Decree, including work that is conducted using the services of a qualified contractor and/or consultant.

b. Conditions Precedent to Utilizing this Section. Before either Defendant may seek to extend any deadlines set forth in Section V through the use of this Section VII, the applicable Defendant must have: (i) developed and submitted to U.S. EPA and any Applicable

Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), at the outset of the project, a Gantt chart or similar document identifying the critical path analysis for the project including identifying when contractors and/or consultants first must be consulted and when it/they must be retained; Defendant may submit updates to this chart or document as the project proceeds; (ii) undertaken the steps in the project that could reasonably be undertaken without the retention of a qualified contractor or consultant; (iii) undertaken a good faith effort to identify all contractors or consultants that would be qualified and available to undertake the work in the area of the country where the Covered Sulfuric Acid Plant is located; and (iv) contacted all qualified contractors and consultants about their earliest availability for doing the work.

c. Notification. If it appears that the unavailability of a qualified contractor or consultant may delay a Defendant from meeting the compliance requirements in Section V pursuant to the schedule set forth therein, the Defendant shall notify U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor in writing, in the manner set forth in Section XV (Notices), of any such delays as soon as the Defendant reasonably concludes that the delay could affect its ability to comply with the implementation schedule.

d. Contents of the Notice. In the notice due under Paragraph 52.c, the Defendant must include: (i) the original Gantt chart and all updates, if any; (ii) the steps that Defendant undertook in furtherance of the project; (iii) an identification of each qualified contractor/consultant; (iv) a written representation from each qualified contractor/consultant regarding the earliest schedule under which that contractor/consultant could complete the work or an affidavit from the Defendant containing such information; (v) the date(s) that the Defendant contends it will be unable to meet; (vi) proposed revised date(s) for approval by U.S. EPA, after

consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor; and (vii) the specific efforts Defendant will take to continue to complete the project.

e. Cost Not a Factor. Cost shall not be a consideration in determining the unavailability of a qualified contractor and/or consultant unless the cost is significantly disproportionate to reasonable and customary commercial rates.

f. Dispute Resolution. Section XI ("Dispute Resolution") shall govern the resolution of any dispute respecting any claim by either Defendant that the unavailability of a qualified contractor/consultant will cause a delay, including any disputes about the duration of the delay attributable to the unavailability of a qualified contractor/consultant. U.S. EPA, in consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, will not unreasonably withhold its consent to a request for a schedule modification if the requirements of this Paragraph 52 are met.

g. Procedures for Modifying Dates. The provisions of Section XVIII ("Modification") shall govern the manner in which modifications under this Section shall be made.

h. Stipulated Penalties Inapplicable. Stipulated penalties shall not accrue nor be due and owing during any period between an originally scheduled implementation date and an approved modification to such date; provided however, that U.S. EPA and any Applicable Co-Plaintiff will retain the right to seek stipulated penalties if U.S. EPA does not approve a modification to a date or dates.

i. Force Majeure Inapplicable. The unavailability of a qualified contractor or consultant will not constitute a *force majeure* event triggering the requirements of Section X; instead this Section VII will apply.

53. [Reserved.]

VIII. REPORTING REQUIREMENTS

54. Information Documenting how Compliance will be Achieved. By no later than the following dates, Marsulex and Chemtrade, as applicable, shall submit to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), information (including, if applicable, preliminary design specifications) documenting how Marsulex or Chemtrade, as applicable, intends to comply with the emission limitations set forth in Subsection V.A:

Facility	Applicable Defendant	Date Compliance Information is Required
Beaumont	Chemtrade	July 1, 2010
Shreveport	Chemtrade	January 1, 2011
Tulsa	Chemtrade	January 1, 2009
Riverton	Chemtrade	January 1, 2012
Oregon	Marsulex	July 1, 2010
Cairo	Marsulex	July 1, 2010

55. Semi-Annual Reports: Contents. For the time frames and Covered Sulfuric Acid Plants set forth in Paragraph 56, the applicable Defendant named therein shall submit to U.S. EPA and the Co-Plaintiffs and Plaintiff-Intervenor, in the manner set forth in Section XV (Notices), a semi-annual progress report no later than January 31 and July 31 of each year, with

the first semi-annual report due on July 31, 2009. Each semi-annual report shall contain the following information with respect to, respectively, the half-year between July 1 and December 31, or the half-year between January 1 and June 30:

a. Work performed and progress made toward implementing the requirements of Section V;

b. Any significant modifications to previously-submitted design specifications of any pollution control system, or to monitoring equipment, required to comply with the requirements of Section V;

c. Any significant problems encountered or anticipated in complying with the requirements of Section V;

d. A summary of the emissions monitoring and testing data collected to demonstrate compliance with a requirement of this Consent Decree;

e. On and after the compliance dates for Short-Term Limits, a description of all periods of Startup, Shutdown, and Malfunction, including quantity of sulfur dioxide emitted during such periods and the causes of Malfunctions;

f. On and after the compliance dates for Short-Term Limits, all information required to be reported in the applicable CEMS Plan;

g. Status of permit applications and a summary of all permitting activity pertaining to compliance with this Consent Decree;

h. Any reports to State agencies pertaining to compliance with this Consent Decree;

i. For the Cairo Facility, the dates on which, pursuant to the requirements of Section V.H, the responsibility for compliance with each of the requirements that are subject to being transferred is in fact transferred from Marsulex to Chemtrade; and

j. After submission of the O&M Plans specified in Paragraph 38 of this Consent Decree, a description of any changes or updates made to such Plans.

56. Semi-Annual Reports: Responsible Party and Time Frame.

a. BSTR Facilities. Chemtrade shall be responsible for the semi-annual reports required in Paragraph 55 for the BSTR Facilities from the Effective Date of this Consent Decree until termination of the Consent Decree for the Facility being reported upon.

b. Oregon Facility. Marsulex shall be responsible for the semi-annual reports required in Paragraph 55 for the Oregon Facility from the Effective Date of this Consent Decree until termination of the Consent Decree for the Oregon Facility.

c. Cairo Facility.

i. Marsulex shall be responsible for the semi-annual reports (whether they cover a full six months or, for the first and last report, only part of six months) required in Paragraph 55 for the Cairo Facility from the Effective Date of this Consent Decree until the date of the transfer of the last compliance requirement between Marsulex and Chemtrade as specified in a final Joint Notice.

ii. Chemtrade shall be responsible for the semi-annual report (whether it covers a full six months or only part of six months) that is first due after the date of the transfer of the last compliance requirement between Marsulex and Chemtrade as specified in a final Joint Notice. This report shall cover the period of time between the date that Chemtrade accepts responsibility for the last compliance requirement for which responsibility will be transferred and December 31 or June 30, as applicable. Thereafter, Chemtrade shall be responsible for the semi-annual reports at the Cairo Facility until termination of this Consent Decree for the Cairo Facility.

57. Notification of Potential Non-Compliance. If Chemtrade or Marsulex violates, or has reason to believe that it may violate, any requirement of this Consent Decree or of any applicable permit, Chemtrade or Marsulex, as applicable, shall notify the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor of such violation or potential violation and its

duration or anticipated likely duration, in writing, within 45 calendar days of the day Chemtrade or Marsulex, as applicable, first becomes aware of the violation or potential violation, with an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Chemtrade or Marsulex, as applicable, shall so state in the report. Chemtrade or Marsulex, as applicable, shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 days of the day Chemtrade or Marsulex, as applicable, becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Chemtrade or Marsulex, as applicable, of its obligation to provide the notice required by Section X of this Consent Decree (Force Majeure).

58. Imminent Threat. Whenever any violation of this Consent Decree or of any applicable permit or any other event affecting the performance of Marsulex or Chemtrade under this Decree results in a reportable release of a hazardous substance, Chemtrade or Marsulex, as applicable, shall notify U.S. EPA, the state in which the Covered Sulfuric Acid Plant is located, and the Plaintiff-Intervenor, orally or by electronic or facsimile transmission as soon as possible, but no later than 24 hours after Chemtrade or Marsulex, as applicable, first knew of, or should have known of, the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

59. All reports shall be submitted to the persons and in the manner designated in Section XV of this Consent Decree (Notices).

60. Each report submitted by Chemtrade or Marsulex, as applicable, under this Section shall be signed by a plant manager, a corporate official responsible for environmental management and compliance, or a corporate official responsible for plant engineering management of Chemtrade or Marsulex, as applicable, and shall include the following certification:

> I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowingly and willfully submitting a materially false statement.

61. The reporting requirements of this Consent Decree do not relieve Chemtrade or Marsulex, as applicable, of any reporting obligations required by the CAA or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement. The reporting requirements of this Section are in addition to any other reports, plans, or submissions required by other Sections of this Consent Decree.

62. Any information provided pursuant to this Consent Decree may be used by the United States or the Co-Plaintiffs or the Plaintiff-Intervenor in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law. All information and documents submitted by Defendants to the United States or the Co-Plaintiffs or the Plaintiff-Intervenor pursuant to this Consent Decree shall be subject to public inspection unless identified and supported as confidential business information in accordance with 40 C.F.R. Part 2

and other applicable state law. No confidential business information shall be required to be submitted to the Plaintiff-Intervenor. Under no circumstances shall emissions data be identified or considered confidential business information.

IX. STIPULATED PENALTIES

63. Failure to Pay Civil Penalty. If Defendants fail to pay any portion of the civil penalty required to be paid under Section IV of this Decree (Civil Penalty) when due, Defendants shall be jointly and severally liable for a stipulated penalty of $1,000 per day for each day that the payment is late. Late payment of the civil penalty and any accrued stipulated penalties shall be made in accordance with Paragraph 9. Each stipulated penalty due under this Paragraph shall be paid exclusively to the Party or Parties to whom Defendants failed to make timely payment of the full civil penalty due.

64. Failure to Meet all Other Consent Decree Obligations. Marsulex, with respect to the Oregon Facility, and Chemtrade, with respect to the BSTR Facilities, shall be liable for stipulated penalties to the United States and to the Applicable Co-Plaintiff for violations of this Consent Decree as specified in Paragraphs 65 - 73 unless excused under Section X (Force Majeure). With respect to the Cairo Facility, the following Table identifies the time periods during which each Defendant is liable for stipulated penalties for Consent Decree violations. If no time period is specified, then the listed Defendant shall be exclusively responsible for stipulated penalties under that provision.

CD Requirement	Defendant Liable	Time Period
¶ 20.a: Long-Term SO_2 Limit	Chemtrade	
¶ 20.b: Short-Term SO_2 Limit	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
¶ 23.f Acid Mist Limit ¶ 25: NSPS, including opacity	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
	Chemtrade	On and after the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
¶ 27: Best Practices	Chemtrade	
¶¶ 28: Installation, Certification, and Calibration of a CEMS	Marsulex	
¶¶ 29 - 31: Maintenance and Operation of a CEMS and Implementation of the CEMS Plans in Appendix F	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
	Chemtrade	On and after the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
¶ 33 - 37: Performance Testing	Marsulex	
¶¶ 38 - 39: O & M Plan	Marsulex and Chemtrade	Jointly and Severally
¶ 40: O & M Implementation and Updates as necessary	Chemtrade	
¶¶ 44 - 50: Permit Requirements	Chemtrade	

¶¶ 54: Reporting: Information documenting how compliance will be achieved	Marsulex	
¶ 55: Reporting: Semi-Annual Reports	Marsulex	Until the date of the transfer of responsibility as specified in a ¶ 41 Joint Notice
	Chemtrade	On and after the date of the transfer of responsibility as specified in the ¶ 41 Joint Notice

65. Short-Term SO_2 Limits and SO_2 Limits During Startup, as set forth in Paragraphs 13 - 20. For each violation of a Short-Term SO_2 Limit or an SO_2 Limit during Startup, in any non-overlapping 3-hour period:

Percentage Over the Limit	Penalty per Violation
1 - 50%	$250
51 - 100%	$500
Over 100%	$750

An example of the computation of penalties under this Paragraph is set forth in Appendix I. Where a violation of the Short-Term SO_2 Limit also violates the NSPS SO_2 Limit, the provisions of this stipulated penalty paragraph shall apply.

66. Long-Term SO_2 Limits as set forth in Paragraphs 18 - 20. For each violation, per day, of the Long-Term SO_2 Limit:

Period of Noncompliance	Penalty per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

An example of the computation of penalties under this Paragraph is set forth in Appendix I.

67. Mass Cap. For each violation of a Mass Cap identified in Paragraphs 13 - 17, a stipulated penalty of $150,000 per violation shall accrue. A Mass Cap violation may occur only one time per month and only when the sum of the SO_2 emitted in the immediately preceding 12 months exceeds the Mass Cap.

68. Opacity Limits in the NSPS. For each violation of the opacity requirements of 40 C.F.R. § 60.83(a)(2), as demonstrated by a Method 9 reference test, $40 per six (6) minute average reading in excess of the limit, up to a maximum of $2000 per day.

69. Emissions Monitoring. For each violation of any of the requirements of Paragraphs 28 - 31 and the applicable CEMS Plan:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$1500
15th - 30th day	$2000
31st day and each day thereafter	$2500

70. Performance Testing. For each violation of any of the requirements of Paragraphs 33 - 37:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

71. Permitting Requirements. For each violation of any of the requirements of Paragraphs 44 - 50:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

72. Reporting Requirements. For each violation of any of the requirements of Paragraphs 37, 54, 55 and 57:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$150
15th - 30th day	$250
31st day and each day thereafter	$500

73. All Others. For each failure to comply with any requirement of this Consent Decree not specifically referenced in Paragraphs 65 - 72 or of any plan or schedule approved under this Consent Decree within the specified time established by or approved under this Decree:

Period of Noncompliance	Penalty per violation per day
1st - 14th day	$150
15th - 30th day	$250
31st day and each day thereafter	$500

74. Allocation of Stipulated Penalties Among the United States and the Co-Plaintiffs. Prior to making a written demand for stipulated penalties, the United States and the Applicable Co-Plaintiff will consult with each other to determine if they jointly are making the demand or not. Where both sovereigns seek stipulated penalties for the same violation of this Consent Decree, they each shall receive 50% of the total amount paid. Where only one sovereign demands stipulated penalties for a violation, that sovereign shall make the demand on its own behalf, and, if it has complied with the consultation requirements in this Paragraph, shall be entitled to receipt of the full amount of stipulated penalties paid for the violation. Chemtrade or Marsulex, as applicable, shall not be liable for additional stipulated penalties to any other sovereign if a demand is made by only one sovereign after consultation with the other affected

sovereigns as required above. In such cases, all other sovereigns shall be deemed to have waived the right to seek stipulated penalties.

75. Waiver of Payment. The United States and/or the Applicable Co-Plaintiff may, in its/their unreviewable discretion, waive payment of any portion or all of the stipulated penalties that may be due to it/them under this Consent Decree. The determination by one sovereign not to seek stipulated penalties, or subsequently to waive or reduce the amount it seeks, shall not preclude the other sovereign from seeking stipulated penalties up to the full amount specified for the violation.

76. Demand for Stipulated Penalties. A written demand for the payment of stipulated penalties will identify the particular violation(s) to which the stipulated penalty relates; the stipulated penalty amount that the United States and/or the Applicable Co-Plaintiff is demanding for each violation (as can be best estimated); the calculation method underlying the demand; and the grounds upon which the demand is based.

77. Stipulated Penalties' Accrual. Stipulated penalties will begin to accrue on the day after performance is due or the day a violation occurs, whichever is applicable, and will continue to accrue until performance is satisfactorily completed or the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

78. Stipulated Penalties Payment Due Date. Stipulated penalties shall be paid no later than sixty (60) days after receipt of a written demand by the United States and/or the Applicable Co-Plaintiff unless the demand is disputed through compliance with the requirements of Paragraph 80 and the dispute resolution provisions of this Decree.

79. Manner of Payment of Stipulated Penalties. Stipulated penalties owing to the United States of under $10,000 will be paid by check and made payable to "U.S. Department of Justice," referencing DOJ Number 90-5-2-1-06944/1 and USAO File Number 2008V02383, and delivered to the U.S. Attorney's Office in the Northern District of Ohio, 801 W. Superior Ave., Suite 400, Cleveland, OH 44113. Stipulated penalties owing to the United States of $10,000 or more and stipulated penalties owing to Co-Plaintiffs will be paid in the manner set forth in Section IV (Civil Penalty) of this Consent Decree. All transmittal correspondence shall state that the payment is for stipulated penalties, shall identify the violations to which the payment relates, and shall include the same identifying information required by Paragraph 9.

80. Disputes over Stipulated Penalties. By no later than 60 days after receiving a demand for stipulated penalties, the applicable Defendant may dispute liability for any or all stipulated penalties demanded by invoking the dispute resolution procedures of Section XI and by placing the disputed amount, if it is greater than $25,000, into an interest-bearing, commercial escrow account. The applicable Defendant shall provide the sovereigns making the demand with a copy of the escrow agreement and the bank statement showing the deposit of the disputed amount into the escrow account. If the dispute thereafter is resolved in the applicable Defendant's favor, the escrowed amount plus accrued interest will be returned to that Defendant; otherwise, U.S. EPA and/or the Applicable Co-Plaintiff will be entitled to the amount that was determined to be due, plus the interest that has accrued in the escrow account on such amount.

81. No amount of the stipulated penalties paid by the Defendants shall be used to reduce their federal or state tax obligations.

82. If any Defendant fails to pay stipulated penalties when due and does not prevail in dispute resolution and is not required to escrow the disputed sum pursuant to Paragraph 80, that Defendant shall be liable for interest at the rate specified in 28 U.S.C. § 1961, accruing as of the date payment became due.

83. Subject to the provisions of Section XIII of this Consent Decree (Effect of Settlement/Reservation of Rights), the stipulated penalties provided for in this Decree shall be in addition to any other rights, remedies, or sanctions available to the United States or the Applicable Co-Plaintiff or Plaintiff-Intervenor for a violation of this Consent Decree or applicable law. If the violations result in excess emissions, then the United States and/or Applicable Co-Plaintiff may elect to seek compensatory emissions reductions equal to or greater than the excess amounts emitted in addition to injunctive relief or stipulated penalties. Where a violation of this Consent Decree also is a violation of Subparts A or H of the NSPS or of the PSD or non-attainment NSR requirements, Chemtrade or Marsulex, as applicable, shall be allowed a credit for any stipulated penalties paid (whether to the United States and/or a Co-Plaintiff) against any statutory penalties imposed for such violation.

X. FORCE MAJEURE

84. As used in this Section X, "Defendant" refers to the particular Defendant – Chemtrade or Marsulex – that raises the Force Majeure claim.

85. A "Force Majeure Event" is any event beyond the control of Defendant, its contractors, or any entity controlled by Defendant that delays the performance of any obligation under this Consent Decree despite Defendant's best efforts to fulfill the obligation. "Best efforts" includes anticipating any potential force majeure event and addressing the effects of any such

event (a) as it is occurring; and (b) after it has occurred, to prevent or minimize any resulting delay to the greatest extent possible.

86. "Force Majeure" does not include Defendant's financial inability to perform any obligation under this Consent Decree. Unanticipated or increased costs or expenses associated with the performance of Defendant's obligations under this Consent Decree, or Defendant's failure to make complete and timely application for any required approval or permit, shall not constitute circumstances beyond Defendant's control nor serve as the basis for an extension of time under this Section X.

87. If any event occurs which causes or may cause a delay or impediment to performance in complying with any provision of this Consent Decree, Defendant shall notify U.S. EPA and any Applicable Co-Plaintiff or Plaintiff-Intervenor: (a) orally or by electronic or facsimile transmission as soon as possible, but not later than 72 hours after the time Defendant first knew of the event or should have known of the event by the exercise of due diligence; and (b) in writing not later than seven days after the time Defendant first knew of the event or should have known of the event by the exercise of due diligence. In this notice, Defendant shall specifically reference this Paragraph 87 of the Consent Decree and shall describe the anticipated length of time the delay may persist, the cause or causes of the delay, the measures taken and/or to be taken by Defendant to prevent or minimize the delay, the schedule by which those measures shall be implemented, and the reasons Defendant attributes the delay to a Force Majeure Event (if Defendant does so). Defendant shall take all necessary measures to avoid or minimize such delays. The written notice required by this Paragraph shall be effective upon the mailing of the

same by overnight mail or by certified mail, return receipt requested, to U.S. EPA and the Applicable Co-Plaintiff or Plaintiff-Intervenor in the manner set forth in Section XV (Notices).

88. Failure by Defendant to comply with the notice requirements specified in Paragraph 87 shall preclude Defendant from asserting any claims of Force Majeure with respect to the particular event involved.

89. Within forty-five (45) days of receipt of the written Force Majeure notice provided under Paragraph 87, the United States, after consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, will notify Defendant in writing regarding the United States' position regarding Defendant's claim of a delay or impediment to performance.

90. If the United States, after consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, agrees that the delay or impediment to performance has been or will be caused by a Force Majeure Event, the appropriate Parties shall stipulate in writing to an extension of the required deadline(s) for all requirement(s) affected by the Force Majeure Event for a period equivalent to the delay actually caused by the Force Majeure Event. Such stipulation shall be filed as a material modification to the Consent Decree pursuant to the procedures of Section XVIII (Modification). Defendant shall not be liable for stipulated penalties for the period of any such extension.

91. If the United States, after consultation with any Applicable Co-Plaintiff or Plaintiff-Intervenor, does not accept Defendant's claim of Force Majeure, stipulated penalties will accrue as provided in Section IX. No later than forty-five (45) days after receipt of the notice provided under Paragraph 89 above, Defendant may invoke formal dispute resolution with respect to the claim of Force Majeure, pursuant to Paragraph 100, by filing a petition for

determination with the Court. After Defendant has submitted its petition, the United States and any Applicable Co-Plaintiff or Plaintiff-Intervenor shall have forty-five (45) days to file their responses to the petition. If the Court determines that the delay or impediment to performance has been or will be caused by a Force Majeure Event, Defendant shall be excused as to that event(s) and delay (including stipulated penalties) for a period of time equivalent to the delay caused by the Force Majeure Event.

92. Defendant shall bear the burden of proving that any delay in satisfying any requirement(s) of this Consent Decree was caused by or will be caused by a Force Majeure Event. Defendant shall also bear the burden of proving the duration and extent of any delay(s) attributable to such Force Majeure Event. Any extension of one compliance date based on a particular Force Majeure Event may, but shall not necessarily, result in an extension of a subsequent compliance date or dates.

93. Notwithstanding any other provision of this Consent Decree, this Court shall not draw any inferences nor establish any presumptions adverse to either party as a result of a Defendant's serving of a Force Majeure notice or the Parties' inability to reach agreement with respect to the claim of Force Majeure.

94. In appropriate circumstances, as part of the resolution of any matter submitted to this Court under this Section X, the Parties involved in the dispute may agree to, or the Court may order, extension or modification of the schedule for completion of work under the Consent Decree to account for the delay in the work that occurred as a result of any Force Majeure Event claimed by Defendant that is agreed to by the United States or approved by this Court.

Defendant shall be liable for stipulated penalties for its failure thereafter to complete the work in accordance with the extended or modified schedule.

XI. DISPUTE RESOLUTION

95. As used in this Section XI, "Defendant" refers to the particular Defendant – Chemtrade or Marsulex – that invokes the dispute resolution provisions.

96. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Defendant's failure to seek resolution of a dispute under this Section shall preclude Defendant from raising any such issue as a defense to an action by the United States to enforce any obligation of Defendant arising under this Decree. The procedures set forth in this Section do not apply to actions by the United States or a Co-Plaintiff or the Plaintiff-Intervenor to enforce obligations of the Defendant that have not been disputed in accordance with this Section.

97. Except as otherwise expressly provided in this Consent Decree, the dispute resolution procedures set forth in this Section XI shall be available to resolve any and all disputes arising under this Consent Decree, provided that the Party invoking the procedures has made a good faith attempt to resolve the matter with the other Party or Parties involved.

98. The dispute resolution procedure required herein shall be invoked upon the giving of written notice by one of the Parties to this Consent Decree to another advising the other appropriate Party(ies) of a dispute pursuant to Section XI. The notice shall describe the nature of the dispute and shall state the noticing Party's position with regard to such dispute. The Party or Parties receiving such notice will acknowledge receipt of the notice and the Parties shall

expeditiously schedule a meeting to discuss the dispute as soon as possible after receipt of such notice. In the case of a notice provided by Chemtrade or Marsulex with respect to the Cairo Facility, copies of the notice shall be provided to the other Defendant contemporaneously with the original notice to the United States.

99. Disputes submitted to dispute resolution shall, in the first instance, be the subject of informal negotiations between the Parties. Such period of informal negotiations shall not extend beyond sixty (60) days from the date of the first meeting between representatives of the Parties, unless the Parties involved in the dispute agree that this period should be shortened or extended.

100. In the event that the Parties are unable to reach agreement during such informal negotiations period, the United States and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor shall provide Defendant with a written summary of its/their position regarding the dispute. The position advanced by the United States and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor will be considered binding unless, within forty-five (45) days of Defendant's receipt of the written summary, Defendant invokes formal dispute resolution by filing with the Court a petition which describes the nature of the dispute and Defendant's position on the dispute. The United States and/or the Applicable Co-Plaintiff or Plaintiff-Intervenor shall respond to the petition within forty-five (45) days of filing.

101. In the event that the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor are unable to reach agreement among themselves with regard to the Defendant's claim, the position of the United States shall be the Plaintiffs' final position. A

dissenting Co-Plaintiff or Plaintiff-Intervenor may file such other pleadings expressing its position as allowed by the Court.

102. In a formal dispute resolution proceeding under this Section, Defendant shall bear the burden of demonstrating that its position complies with this Consent Decree and the CAA. The Court shall decide the dispute based upon applicable principles of law. The United States reserves the right to argue that its position is reviewable only on the administrative record and must be upheld unless arbitrary and capricious or otherwise not in accordance with law.

103. Where the nature of the dispute is such that a more timely resolution of the issue is required, the time periods set forth in this Section XI may be shortened upon motion of one of the Parties to the dispute or by agreement of the Parties to the dispute.

104. The Parties do not intend that the invocation of this Section XI by a Party cause the Court to draw any inferences nor establish any presumptions adverse to either Party as a result of invocation of this Section.

105. In appropriate circumstances, as part of the resolution of any matter submitted to this Court under this Section XI, the Parties involved in the dispute may agree to, or the Court may order, an extension or modification of the schedule for completion of work under the Consent Decree to account for the delay in the work that occurred as a result of dispute resolution. Defendant shall be liable for stipulated penalties for its failure thereafter to complete the work in accordance with the extended or modified schedule. Invocation of dispute resolution with respect to any of Defendant's obligations under this Consent Decree shall not, of itself, excuse or extend the time for performance of any other obligation of Defendant under this Consent Decree.

XII. INFORMATION COLLECTION AND RETENTION

106. The United States, the Co-Plaintiffs, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any of the Covered Sulfuric Acid Plants covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States or a Co-Plaintiff or Plaintiff-Intervenor in accordance with the terms of this Consent Decree;

c. obtain samples and, upon request, splits of any samples taken by Defendants or their representatives, contractors, or consultants in connection with their performance under this Consent Decree;

d. obtain documentary evidence, including photographs and similar data, relevant to compliance with the terms of this Consent Decree; and

e. assess Defendants' compliance with this Consent Decree.

107. Until at least three years after the termination of this Consent Decree, each Defendant shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information in electronic form in its or its contractors' or agents' possession or control, or that come into it or its contractors' or agents' possession or control, and that directly relates to Defendant's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, the United States, a Co-Plaintiff, or Plaintiff-Intervenor may request copies of any documents, records, or other information required to be maintained under this Paragraph.

108. At the conclusion of the information retention period specified in the preceding Paragraph, each Defendant shall notify the United States, the Co-Plaintiffs, and the Plaintiff-Intervenor at least 90 days prior to destroying any document(s), record(s), or other information subject to the requirements of the preceding Paragraph and, upon request by the United States, a Co-Plaintiff, or Plaintiff-Intervenor, the applicable Defendant shall deliver any such document(s), record(s), or other information to the requesting Plaintiff; provided, however, that no privileged information or confidential business information shall be required to be submitted to the Plaintiff-Intervenor. The applicable Defendant may assert that certain documents, records, or other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the applicable Defendant asserts such a privilege, it shall provide the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of each author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Defendant. However, no documents, records, data, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

109. The applicable Defendant may also assert that information required to be provided under this Section is protected as Confidential Business Information (CBI) under 40 C.F.R. Part 2, or any similar state or tribal laws and regulations. As to any information that the applicable Defendant seeks to protect as CBI, the applicable Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

110. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or the States pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of any Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

111. This Consent Decree resolves the civil liability of Defendants to the United States the Co-Plaintiffs, and the Plaintiff-Intervenor for the violations alleged in the Complaint and Complaint in Intervention filed in this action (and any Notices of Violation cited therein) from the date those claims accrued through the Effective Date of this Consent Decree.

112. The United States, the Co-Plaintiffs, and the Plaintiff-Intervenor reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 111. This Consent Decree shall not be construed to limit the rights of the United States, the Co-Plaintiffs, or the Plaintiff-Intervenor to obtain penalties or injunctive relief under the CAA or implementing regulations, or under other federal, state, or tribal laws, regulations, or permit conditions, except as expressly specified in Paragraph 111. The United States, the Co-Plaintiffs, and the Plaintiff-Intervenor further reserve all legal and equitable remedies to address any situation that may present an imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, the Covered Sulfuric Acid Plants, whether related to the violations addressed in this Consent Decree or otherwise.

113. This Consent Decree is not a permit, or a modification of any permit, under any federal, state, or local laws or regulations. Defendants are responsible for achieving and

maintaining compliance with all applicable federal, state, and local laws, regulations, and permits and their compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits. The United States, the Co-Plaintiffs, and the Plaintiff-Intervenor do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that compliance by Marsulex and/or Chemtrade with any aspect of this Consent Decree will result in compliance with provisions of the CAA, or with any other provisions of federal, state, or local laws, regulations, or permits.

114. This Consent Decree does not limit or affect the rights of Defendants or of the United States, the Co-Plaintiffs, or Plaintiff-Intervenor against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendants, except as otherwise provided by law.

115. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party that is not a Party to this Consent Decree.

XIV. COSTS

116. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States, the Co-Plaintiffs, and the Plaintiff-Intervenor shall be entitled to collect the costs (including attorneys' fees), against the applicable Defendant incurred in any action necessary to enforce this Consent Decree or to collect any portion of the civil penalty or any stipulated penalties due but not paid by a Defendant.

XV. NOTICES

117. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and

addressed to: (i) the United States Department of Justice; (ii) U.S. EPA Headquarters; (iii) U.S. EPA Region 5; (iv) if different from U.S. EPA Region 5, the U.S. EPA Region where the relevant Plant is located; and (v) the Applicable Co-Plaintiff and Plaintiff-Intervenor. Submission of hard copies is required and shall be sufficient to comply with the notice requirements of this Consent Decree. The email addresses listed below are solely to permit the submission of courtesy copies.

Notice or submission to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, DC 20044-7611
Re: DOJ No. 90-5-2-1-06944/1

Notice or submission to U.S. EPA that concerns any or all of the Sulfuric Acid Plants:

Air Enforcement Division Director
U.S. Environmental Protection Agency
Office of Civil Enforcement
Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave, NW
Mail Code: 2242A
Washington, DC 20460

and

Charles Garlow
U.S. Environmental Protection Agency
Office of Civil Enforcement
Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Mail Code 2242A
Washington, DC 20460

Including an electronic copy to:

garlow.charlie@epa.gov

Nathan Frank
U.S. Environmental Protection Agency
Region 5
AE-17J
77 West Jackson. Blvd.
Chicago, IL 60604

and

Robert H. Smith
U.S. Environmental Protection Agency
Region 5
C-14J
77 West Jackson. Blvd.
Chicago, IL 60604

Including electronic copies to:

frank.nathan@epa.gov
smith.roberth@epa.gov

Notice or submission to U.S. EPA that concerns the Beaumont, Shreveport, and Tulsa Facilities:

Mark Ford
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Suite 1200
Mailcode 6EN-EA
Dallas, TX 75202

and

Amanda Ferguson
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Suite 1200
Mailcode 6EN-AA
Dallas, TX 75202

Notice or submission to U.S. EPA that concerns the Riverton Facility:

Air Program Director
c/o Scott Whitmore (8ENF-AT)
Office of Enforcement, Compliance & Environmental Justice
EPA Region 8
1595 Wynkoop St.
Denver, CO 80202-1129

Notice or submission to Louisiana concerning the Shreveport Facility:

Lourdes Iturralde
Administrator, Enforcement Division
Office of Environmental Compliance
Louisiana Department of Environmental Quality
P. O. Box 4312
Baton Rouge, Louisiana 70821-4312

Notice or submission to Ohio concerning either the Cairo or Oregon Facilities:

John Paulian
Supervisor, Compliance Monitoring Unit
Division of Air Pollution Control
Ohio EPA
P.O. Box 1049
Columbus, OH 43216-1049

Notice or submission to Ohio concerning the Oregon Facility:

Karen Granata, Administrator
City of Toledo Department of Environmental Services
348 S. Erie St.
Toledo, OH 43604

Notice or submission to Ohio concerning the Cairo Facility:

Don Waltermeyer, Unit Supervisor
Northwest District Office
Division of Air Pollution Control
Ohio EPA
347 N. Dunbridge Road
Bowling Green, OH 43402

Notice or submission to Oklahoma DEQ concerning the Tulsa Facility:

Eddie Terrill, Director
Oklahoma Department of Environmental Quality
Air Quality Division
P.O. Box 1677
Oklahoma City, Oklahoma 73101-1677

and

Robert D. Singletary
Office of General Counsel
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, Oklahoma 73101-1677

Notice or submission to the Northern Arapaho Tribe concerning the Riverton Facility:

Director
Wind River Environmental Quality Commission
P.O. Box 217
Fort Washakie, Wyoming 82514
Phone: (307) 332-6625

Notice or response to Defendant Chemtrade:

Susan M. Pare
Associate General Counsel
Chemtrade Logistics Inc.
111 Gordon Baker Road, Suite 301
Toronto, Ontario M2H 3R1
Canada

and

Chief Financial Officer
Chemtrade Logistics Inc.
111 Gordon Baker Road, Suite 301
Toronto, Ontario M2H 3R1
Canada

and

Joe Jayroe
Director, Chemtrade Manufacturing Refinery Services & Acid Products
P.O. Box 30
Beaumont, TX 77704-0030
For express mail: 1400 Olin Road, Beaumont, TX 77705

and

David Burroughs
Chemtrade Corporate Environmental Compliance Manager
10889 Hwy 1 South
P.O. Box 52147
Shreveport, LA 71135-2147

Including electronic copies to:

spare@chemtradelogistics.com
rbhardwa@chemtradelogistics.com
jjayroe@chemtradelogistics.com
dburroughs@chemtradelogistics.com

With a copy to each Applicable Covered Facility as follows:

As to the Beaumont Facility:

Nestor Gomez
Plant Manager
Chemtrade
P.O. Box 30
Beaumont, TX 77704-0030
For express mail: 1400 Olin Road, Beaumont, TX 77705

Including an electronic copy to:

ngomez@chemtradelogistics.com

As to the Shreveport Facility:

Chris Pogson
Plant Manager
Chemtrade
10889 Hwy 1 South
P.O. Box 52147
Shreveport, LA 71135-2147

Including an electronic copy to:

cpogson@chemtradelogistics.com

As to the Tulsa Facility:

Fred Boeheim
Plant Manager
Chemtrade
P.O. Box 1068
Glenpool, OK 74022
Express Mail: 5201 West 21st St.
Tulsa, OK 74107

Including an electronic copy to:

fboeheim@chemtradelogistics.com

As to the Riverton Facility:

David Luzmoor
Plant Manager
Chemtrade
140 Goes In Lodge Road
Riverton, WY 82501

Including an electronic copy to:

dluzmoor@chemtradelogistics.com

As to the Cairo Facility:

Tim Haniford
Plant Manager
Chemtrade
7680 Ottawa Road
P.O. Box 310
Cairo, OH 45820

Including an electronic copy to:

thaniford@chemtradelogistics.com

Notice or response to Defendant Marsulex:

Keith D. McLeod
Senior Vice President – Operations
Marsulex Inc.
111 Gordon Baker Road, Suite 300
Toronto, Ontario M2H 3R1
Canada

William Martin
Chief Financial Officer
111 Gordon Baker Road, Suite 300
Toronto, Ontario M2H 3R1
Canada

and

Charles A. Perry
Jones Day
1420 Peachtree St.
Atlanta, GA 30309

Including electronic copies to:

Kmcleod@marsulex.com
Wmartin@marsulex.com
statro@marsulex.com
caperry@jonesday.com

Any Party may, by written notice to the other Parties, change its designated notice recipient(s) or notice address(es) provided above. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XVI. EFFECTIVE DATE

118. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court.

XVII. RETENTION OF JURISDICTION

119. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree, entering orders modifying this Decree, or effectuating or enforcing compliance with the terms of this Decree.

XVIII. MODIFICATION

120. The terms of this Consent Decree may be modified only by a subsequent written agreement signed by the United States, the applicable Defendant(s), and the Applicable Co-Plaintiff or Plaintiff-Intervenor, if any. Where the modification constitutes a material change to any term of this Consent Decree, it shall be effective only upon approval by the Court. The CEMS Plans attached in Appendices A-G may be modified upon written agreement of the Parties without Court approval, unless any such modification effects a material change to the terms of this Consent Decree or materially affects the applicable Defendant's ability to meet the requirements or objectives of this Decree.

XIX. TERMINATION

121. Marsulex and Chemtrade may independently seek termination of this Consent Decree pursuant to Paragraphs 122 - 125 of this Decree.

122. Except with respect to the State of Ohio, after the applicable Defendant has maintained continuous satisfactory compliance with the requirements of the CAA and this Consent Decree for a period of one year after achieving compliance with all of the requirements

of this Consent Decree (including demonstrating one year of compliance with the Short-Term Limits, Long-Term Limits, and Mass Caps in Subsection V.A), has obtained all permits required by this Consent Decree, and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, the applicable Defendant may serve upon the United States, the Co-Plaintiffs, and Plaintiff-Intervenor a Request for Termination, together with all necessary supporting documentation, stating that the applicable Defendant has satisfied those requirements. With respect to the State of Ohio, all of the conditions set forth in this Paragraph for termination apply except that the applicable Defendant must maintain continuous "substantial" compliance (in lieu of "satisfactory" compliance) in order to serve upon Ohio a Request for Termination.

123. Partial Termination as to One Facility. If a Defendant has satisfied its obligations and requirements under this Consent Decree with respect to an individual Facility, and the Defendant can demonstrate satisfactory compliance with the requirements of the CAA and this Consent Decree for a period of one year after achieving compliance (including demonstrating one year of compliance with the Facility's applicable Short-Term Limits, Long-Term Limits, and/or Mass Caps in Subsection V.A), and can show that it has obtained all required permits for that Facility, and that there are no outstanding civil or stipulated penalties for any Facility, then the Defendant may serve upon the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor a Request for Partial Termination as to the applicable Facility, together with all necessary supporting documentation, stating that the applicable Defendant has satisfied those requirements at the applicable Facility.

124. Following receipt by the United States and the Applicable Co-Plaintiff or Plaintiff-Intervenor of Defendant's Request for Termination or Partial Termination, the

applicable Parties shall confer informally concerning the Request for Termination or Partial Termination and any disagreement that the applicable Parties may have as to whether the applicable Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor agrees that the Decree may be terminated as to the requesting Defendant for a particular Facility or all Defendant's Facilities, the applicable Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree with respect to the Defendant and Facility(ies) involved.

125. If the United States after consultation with the Applicable Co-Plaintiff or Plaintiff-Intervenor does not agree that the Decree may be terminated or partially terminated, or if, with respect to the Cairo and/or Oregon Facility, the State of Ohio does not agree that the applicable Defendant is in "substantial" compliance pursuant to Paragraph 122, then the applicable Defendant may move the Court for termination or partial termination. However, the applicable Defendant shall not file such a motion until 90 days after service of its Request for Termination or Partial Termination. On any such motion, the applicable Defendant shall bear the burden of proving that the conditions necessary for termination or partial termination of the Consent Decree have been satisfied.

XX. PUBLIC PARTICIPATION

126. This Consent Decree shall be lodged with the Court for a period of not less than 30 days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate,

improper, or inadequate. Defendants consent to entry of this Consent Decree without further notice.

127. The Parties agree and acknowledge that final approval by Co-Plaintiff the State of Louisiana, Department of Environmental Quality, and entry of this Consent Decree are subject to the requirements of La. R.S. 30:2050.7, which provides for public notice of this Consent Decree in newspapers of general circulation and the official journals of the parish in which the Shreveport Facility is located, an opportunity for public comment, consideration of any comments, and concurrence by the State Attorney General. The State of Louisiana reserves the right to withdraw or withhold consent if the comments regarding this Consent Decree disclose facts or considerations which indicate that this Consent Decree is inappropriate, improper or inadequate.

XXI. SIGNATORIES/SERVICE

128. Each undersigned representative of Defendants, each undersigned representative of the Co-Plaintiffs and the Plaintiff-Intervenor, and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice (or his or her designee) certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

129. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis.

130. Defendants agree not to oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendants in writing that it no longer supports entry of the Decree.

131. Defendants agree to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXII. INTEGRATION

132. This Consent Decree and its Appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Consent Decree and its Appendices and supersede all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. No other document, except for any plans or other deliverables that are submitted and approved pursuant to this Decree, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, and no such extrinsic document or statement of any kind shall be used in construing the terms of this Decree.

XXIII. FINAL JUDGMENT

133. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court in this action as to the United States, the

Co-Plaintiffs, the Plaintiff-Intervenor, and the Defendants. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

DATED this 2nd day of April, 2009.

s/ James G. Carr

UNITED STATES DISTRICT JUDGE
NORTHERN DISTRICT OF OHIO

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR THE UNITED STATES OF AMERICA

MICHAEL GUZMAN
Principal Deputy Assistant Attorney General
Environment and Natural Resources Division
United States Department of Justice

ANNETTE M. LANG
Environmental Enforcement Section
Environment and Natural Resources Division
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-4213
(202) 616-6584 (fax)
annette.lang@usdoj.gov

WILLIAM J. EDWARDS
Acting United States Attorney
Northern District of Ohio

By: s/ Steven J. Paffilas
STEVEN J. PAFFILAS
Assistant U.S. Attorney
Reg. No. 0037376
United States Courthouse
801 West Superior Ave.
Suite 400
Cleveland, OH 44113
(216) 622-3698
(216) 522-2404 (fax)
steven.paffilas@usdoj.gov

We hereby consent to the entry of the Consent Decree in the matter of United State et al. v. Chemtrade Logistics (US), Inc. et al., subject to public notice and comment.

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

GRANTA Y. NAKAYAMA
Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave, N.W.
Washington, D.C. 20460

ADAM M. KUSHNER
Division Director, Air Enforcement Division
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave, N.W.
Washington, D.C. 20460

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

PRELIMINARY APPROVAL BY CO-PLAINTIFF THE STATE OF LOUISIANA, THROUGH THE DEPARTMENT OF ENVIRONMENTAL QUALITY:

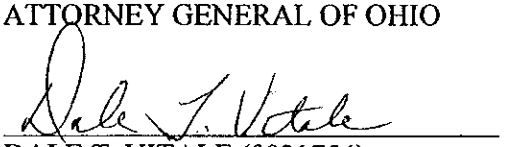
PEGGY M. HATCH
Assistant Secretary
Office of Environmental Compliance
Louisiana Department of Environmental Quality

CLAUDIA RUSH (LA. # 29408)
Attorney
Office of the Secretary
Legal Affairs Division
Louisiana Department of Environmental Quality
Post Office Box 4302
Baton Rouge, Louisiana 70821-4302

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR CO-PLAINTIFF THE STATE OF OHIO

NANCY H. ROGERS
ATTORNEY GENERAL OF OHIO



DALE T. VITALE (0021754)
Assistant Attorney General
Environmental Enforcement Section
Public Protection Division
30 East Broad Street, 25th Floor
Columbus, OH 43215-3414
(614) 466-2766
(614) 644-1926 (fax)
dvitale@ag.state.oh.us

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR CO-PLAINTIFF, OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

STEVEN A. THOMPSON
Executive Director
Oklahoma Department of Environmental Quality
P.O. Box 1677, 707 N. Robinson
Oklahoma City, Oklahoma 73101-1677

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al., subject to public notice and comment.

FOR PLAINTIFF-INTERVENOR
THE NORTHERN ARAPAHO TRIBE

ANTHONY A. ADDISON, SR.
Chairman
Northern Arapaho Tribe
P.O. Box 386
Ft. Washakie, WY 82514

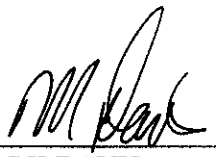
We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al.

FOR DEFENDANT
CHEMTRADE LOGISTICS (US), INC.

MARK DAVIS
President and Chief Executive Officer
155 Gordon Baker Road, Suite 300
Toronto ON M2H 3N5
Canada

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al.

FOR DEFENDANT
CHEMTRADE REFINERY SERVICES INC.



MARK DAVIS
President and Chief Executive Officer
155 Gordon Baker Road, Suite 300
Toronto ON M2H 3N5
Canada

We hereby consent to the entry of the Consent Decree in the matter of United States et al. v. Chemtrade Logistics (US), Inc., et al.

FOR DEFENDANT
MARSULEX, INC.

KEITH D. MCLEOD
Senior Vice President – Operations
Marsulex, Inc.
111 Gordon Baker Road, Suite 300
Toronto, Ontario M2H 3R1
Canada

APPENDIX A

APPENDIX A

BEAUMONT FACILITY

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Beaumont Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzer, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of

downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\,i} \cdot \left[\frac{A_i - B_i}{1 - 1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "i"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "i"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "i"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57 \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

M_{SO_2Day} = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 2.2 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission

rate(s) in excess of 2.2 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Beaumont Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 380.0 tons (760,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Chemtrade will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, Chemtrade will conduct quarterly cylinder gas audits (i.e., four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX B

APPENDIX B

SHREVEPORT FACILITY

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Shreveport Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058 \, {}^{lbs}/_{lb-mol} \cdot 2000 \, {}^{lbs}/_{ton}}{98.0734 \, {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet.

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. The terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i}{1 - 1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions ($M_{SO_2 Day}$) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2 Day} = \sum_{i=1}^{n} Q_{Stack\ i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$M_{SO_2 Day}$ = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 2.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 2.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during period of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Shreveport Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 215.0 tons (430,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Chemtrade will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, are not necessary. In lieu of this, Chemtrade will conduct quarterly cylinder gas audits (i.e., four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1. .

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX C

APPENDIX C

TULSA FACILITY

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfur Burning Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Tulsa Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure stack SO_2 concentration, one to measure stack O_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B) \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B)} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
Y	= Stack O_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$
$385.57\ \frac{SCF}{lb-mol}$	= Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of oxygen to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\,i} \cdot 0.843 \cdot [0.209 - Y_i - B_i]}$$

Where:

Y_i = Stack O_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57 \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

M_{SO_2Day} = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 1.7 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 1.7 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Tulsa Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 92.4 tons (184,800 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzer, O_2 analyzer, and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer will meet 40 C.F.R. Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and
- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX D

APPENDIX D

RIVERTON FACILITY: RIVERTON 1 SULFURIC ACID PLANT

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfur Burning Plant with Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Riverton 1 Sulfuric Acid Plant at the Riverton Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure stack SO_2 concentration, one to measure stack O_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B) \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot 0.843 \cdot (0.209 - Y - B)} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
Y	= Stack O_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$
$385.57\ \frac{SCF}{lb-mol}$	= Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of oxygen to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-rolling hour average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\,i} \cdot 0.843 \cdot [0.209 - Y_i - B_i]}$$

Where:

Y_i = Stack O_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day_ will be calculated using Equation 5.

Equation 5:

$$M_{SO_2Day} = \sum_{i=1}^{n} Q_{Stack\,i} \cdot B_i \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, standard cubic feet per minute (DSCFM) at measurement "*i*"

M_{SO_2Day} = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.,* a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 1.9 lbs of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 1.9 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup does not exceed the limits for the Riverton 1 Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 35.0 tons (70,000 lb) of SO_2 or less.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzer, O_2 analyzer, and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer will meet 40 C.F.R. Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX E

APPENDIX E

RIVERTON FACILITY: RIVERTON 2 SULFURIC ACID PLANT

CEMS Plan for SO_2 Emissions
Chemtrade Refinery Services
Single Absorption Sulfuric Acid Regeneration Plant with Air Injection and Scrubber

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Riverton 2 Sulfuric Acid Plant at the Riverton Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A - B \cdot (1+R)}{1+R-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A - B \cdot (1+R)}{1+R-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
R	= Ratio of the flow rate of gas fed into first bed of the converter to the flow rate of dilution air injected into lower beds
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058 \, {}^{lbs}/_{lb-mol} \cdot 2000 \, {}^{lbs}/_{ton}}{98.0734 \, {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate. Because the Riverton 2 Sulfuric Acid Plant injects air into the lower passes of its converter, the equations have been adjusted to account for this added air.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Chemtrade will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of any analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

- Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," Chemtrade may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i \cdot (1+R)}{1+R-1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "i"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "i"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "i"

R = Average of the three most recent measurements of the ratio of the flow of dilution air to the flow of process gas to the converter

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

Daily Mass SO_2 Emissions. The daily mass SO_2 emissions (M_{SO_2Day}) (which are based on a calendar day) will be calculated using Equation 5.

Equation 5:

$$M_{SO_2 Day} = \sum_{i=1}^{n} Q_{Stack\ i} \cdot B_i \cdot \frac{64.058\ ^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}} \cdot 5\,\text{min}$$

Where:

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$M_{SO_2 Day}$ = Mass emissions of SO_2 during a calendar day, lb

n = Number of measurements in a given calendar day

12-Month Rolling Sum Mass SO_2 Emissions. The 12-month rolling sum mass SO_2 emissions ($M_{SO_2 12Mo\ Sum}$) for the immediately preceding month will be calculated, by no later than the 15th day of each month, using Equation 6:

Equation 6:

$$M_{SO_2 12Mo\ Sum} = \sum_{j=1}^{d} M_{SO_2 Day\ j}$$

Where:

$M_{SO_2 Day\ j}$ = Mass emissions of SO_2 during calendar day "*j*", lb

d = Number days in the preceding 12 calendar months

$M_{SO_2 12Mo\ Sum}$ = 12-month rolling sum of SO_2 emitted into the atmosphere, lb

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$M_{SO_2 12Mo\ Sum}$: Rounded to the nearest tenth of a ton (*i.e.*, 200 lb).

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 2.1 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 2.1 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Chemtrade will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Chemtrade contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Chemtrade shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Startup SO_2 Emission Limits

Chemtrade will be in compliance with the SO_2 emission limits during Startup if E_{3hravg} during Startup oes not exceed the limits for the Riverton 2 Sulfuric Acid Plant set forth in Appendix H.

Mass Cap for SO_2

Chemtrade will be in compliance with the Mass Cap if the 12-month rolling sum ($M_{SO_2 12Mo\ Sum}$) is 38.0 tons (76,000 lb) of SO_2 or less during each 12-month period.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Chemtrade shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Chemtrade specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Chemtrade will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Chemtrade will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, are not necessary. In lieu of this, Chemtrade will conduct quarterly cylinder gas audits (i.e., four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Chemtrade also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Chemtrade will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Chemtrade will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX F

APPENDIX F

CAIRO FACILITY

CEMS Plan for SO_2 Emissions
Currently Owned by Chemtrade Logistics, Inc.
Single Absorption Sulfur Burning Plant with Scrubber and Front-End Liquid SO_2 Production Plant

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Cairo Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate both in terms of pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure stack SO_2 concentration, one to measure stack O_2 concentration, and one to measure stack volumetric flow rate. When the front-end liquid SO_2 plant (*i.e.*, the "B" Plant) at the Cairo Facility is in operation, the short-term production rate of liquid SO_2 also will be monitored using a coriolis flow meter. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = \frac{2}{3} \cdot \left[\frac{98.0734\ {}^{lbs}/_{lb-mol} \cdot Q_{Stack}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}} \right] \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y - B) - Y - B \right] - \frac{P_{LbsSO_2Plant}}{2000\ {}^{lbs}/_{ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \frac{2}{3} \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y - B) - Y - B \right] - \left[P_{LbsSO_2Plant} \cdot \frac{385.57}{64.058} \right]} \cdot 1306.33 \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
P_{LbsSO_2Plant}	= Mass production rate of front-end liquid SO_2 plant (B Plant), lb per unit of time
Y	= Stack O_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2

$$1306.33\ \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

$385.57\ \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process and the fact that the ratio of oxygen to nitrogen of the incoming air is fixed. The lb/ton equation (Equation 3) is the ratio of the mass SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

- Emissions monitoring will be done using an O_2 analyzer at the exit stack, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), monitoring will be conducted during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the stack O_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of the analyzers, the pre-calibration level will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - O_2 in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Periods Sampling will be conducted by Orsat test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- B Plant production will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

- In order to secure data on a "dry basis," the Facility may either:

  (i) directly measure the moisture content using a moisture analyzer; or

  (ii) assume the moisture content is the greater of 3% or the highest measured moisture content in any Relative Accuracy Test Audit ("RATA"); or

  (iii) for saturated gas streams only, measure the stack temperature using a stack temperature sensor at the time of each SO_2 measurement and determine the moisture content using a psychrometric chart or standard text water vapor pressure correlation.

Emissions Calculations

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\,i} \cdot B_i}{\sum_{i=1}^{36} \left\{ \left[Q_{Stack\,i} \cdot \frac{2}{3} \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y_i - B_i) - Y_i - B_i \right] \right] - \left(P_{LbsSO_2Plant\,i} \cdot \frac{385.57}{64.058} \right) \right\}}$$

Where:

Y_i = Stack O_2 concentration (dry basis), fraction at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\,i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$P_{LbsSO_2Plant\,i}$ = Production rate of front-end liquid SO_2 plant (B Plant), lb per minute at measurement "*i*"

$$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

365-Day Rolling Average.

For the purposes of calculating a 365-day rolling average, the system will maintain an array of all of the measurements of each of the three monitored parameters for 365 days. Every day, the system will add the readings from that day to the array and exclude the readings from the oldest day.

The 365-day rolling average lb/ton SO_2 emission rate ($E_{365-Day\ Avg}$) will be calculated using Equation 5:

$$E_{365-Day\ Avg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{n} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{n} \left\{ \left[Q_{Stack\ i} \cdot \frac{2}{3} \cdot \left[\frac{0.209}{0.791} \cdot (1 - Y_i - B_i) - Y_i - B_i \right] \right] - \left(P_{LbsSO_2 Plant\ i} \cdot \frac{385.57}{64.058} \right) \right\}}$$

Where:

Y_i = Stack O_2 concentration (dry basis), fraction at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$P_{LbsSO_2 Plant\ i}$ = Production rate of front-end liquid SO_2 plant (B Plant), lb per minute at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

n = the number of measurements taken at 5-minute intervals over the 365-day period

$E_{365-Day\ Avg}$ = 365-day rolling average lb SO_2 per ton 100% Sulfuric Acid Produced

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$E_{365-Day\ Avg}$: Rounded to the nearest hundredth.

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables B, Q_{Stack}, and Y

Rounding of the variables identified as B, Q_{Stack}, and Y in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limit

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, the Facility will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 3.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If the Facility contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 3.0 lb/ton after the period of the Malfunction(s) end(s), the Facility shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limit

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, the Facility will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If the Facility contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), the Facility shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Long-Term SO_2 Limits

The Long-Term Limit includes periods of Startup, Shutdown, and Malfunction. The Facility will be in compliance with the Long-Term SO_2 Limit if $E_{365-Day\ Avg}$ does not exceed 1.90 lb of SO_2 per ton of 100% Sulfuric Acid Produced.

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, the Facility shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, the Facility specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

The Facility will retain all data generated by its SO_2 analyzer, O_2 analyzer, coriolis meter and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of the Sulfuric Acid Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three stack analyzers will meet the following specifications:

Table 1

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
O_2, mole fraction, dry basis	Stack	Single range: 0 – 20.9 % O_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The stack O_2 analyzer will meet 40 C.F.R. Part 60 Appendix B, Performance Specification 3 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, the Facility also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, the Facility will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, the Facility will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX G

APPENDIX G

OREGON FACILITY

CEMS Plan for SO_2 Emissions
Marsulex, Inc.
Oregon A and B Double Absorption Sulfuric Acid Regeneration Plants

Principle

This CEMS Plan is the mechanism for determining compliance with all SO_2 emission limits in the Consent Decree for the Oregon A and B Sulfuric Acid Plants at the Oregon Facility. The methodology described in this CEMS Plan will provide a real-time indication of compliance with the emission limits established in the Consent Decree by determining the emission rate in terms of both pounds of SO_2 emitted per unit of time and pounds of SO_2 emitted per ton of 100% Sulfuric Acid Produced (lb/ton). The system will utilize at least three analyzers: one to measure the converter inlet SO_2 concentration, one to measure stack SO_2 concentration, and one to measure stack volumetric flow rate. From these data, the emission rate, expressed as both pounds per unit of time and lb/ton, will be directly calculated using Equations 1, 2, and 3 below.

Equation 1:

$$M_{SO_2Stack} = Q_{Stack} \cdot B \cdot \frac{64.058\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol}}$$

Equation 2:

$$P_{TonsH_2SO_4} = Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right] \cdot \frac{98.0734\ {}^{lbs}/_{lb-mol}}{385.57\ \frac{SCF}{lb-mol} \cdot 2000\ {}^{lbs}/_{Ton}}$$

Equation 3:

$$E_{lbs/ton} = \frac{M_{SO_2Stack}}{P_{TonsH_2SO_4}} = \frac{Q_{Stack} \cdot B}{Q_{Stack} \cdot \left[\frac{A-B}{1-(1.5 \cdot A)}\right]} \cdot 1306.33\ \frac{lbsSO_2}{TonAcid}$$

Where:

$P_{TonsH_2SO_4}$	= 100% Sulfuric Acid Production, tons per unit of time
M_{SO_2Stack}	= Mass SO_2 stack emission rate, lb per unit of time
Q_{Stack}	= Volumetric flow rate of stack gas, dry standard cubic feet (DSCF) per unit of time
A	= Converter inlet SO_2 concentration, fraction (dry basis)
B	= Stack SO_2 concentration, fraction (dry basis)
$E_{lbs/ton}$	= lb SO_2 per ton 100% Sulfuric Acid Produced
$98.0734\ {}^{lbs}/_{lb-mol}$	= Molecular weight of sulfuric acid
$64.058\ {}^{lbs}/_{lb-mol}$	= Molecular weight of SO_2
$1306.33\ \frac{lbsSO_2}{TonAcid}$	$= \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

$385.57 \frac{SCF}{lb-mol}$ = Volume of one lb-mole of gas at standard temperature and pressure (68°F and 14.696 psia), cubic feet

The mass emission rate equation (Equation 1) calculates the SO_2 mass emission rate by multiplying the total stack gas flow rate by the stack SO_2 concentration. The 100% Sulfuric Acid Production Rate equation (Equation 2) is based on a material balance of the contact process. The lb/ton equation (Equation 3) is the ratio of the SO_2 emission rate to the 100% Sulfuric Acid Production Rate.

The benefit of using this method is the ability to obtain information regarding the SO_2 mass emission rate, the fact that lb/ton measurements will be "weighted" based on the flow rate during each measurement, and the elimination of errors associated with measuring sulfuric acid flow and using converter inlet Reich testing.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. Terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein.

Emissions Monitoring

Marsulex will undertake the following monitoring procedures separately at both the Oregon A Plant and the Oregon B Plant:

- Emissions monitoring will be done using an SO_2 analyzer at the converter inlet, an SO_2 analyzer at the exit stack, and a stack flow rate analyzer. Except for any analyzer malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), Marsulex will conduct monitoring during all Operating Periods and during Shutdown.

- Once every five minutes, the analyzers will measure the stack SO_2 concentration (fraction, dry basis), the converter inlet SO_2 concentration (fraction, dry basis) and the volumetric flow rate (dry standard cubic feet per minute).

- During routine calibration checks and adjustments of the any analyzers, the pre-calibration will be used to fill in any analyzer data gaps that occur pending completion of the calibration checks and adjustments.

- If any one or more than one analyzer is/are not operating for a period of 24 hours or greater, data gaps in the array involving the non-operational analyzer(s) will be filled in as follows:

  - Exit stack gas will be sampled and analyzed for SO_2 at least once per hour, during all Operating Periods. Sampling will be conducted by Reich test or other established method (*e.g.*, portable analyzer). The most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise have been taken if the analyzer had been operating normally.

  - Converter inlet gas either will be sampled and analyzed for SO_2 using a Reich test or other established method, or the concentration will be estimated using engineering judgment, at least once every four hours during all Operating Periods. The most recent four-hour measurement/estimate will be substituted for the 48 five-minute readings that would otherwise have been taken if the system had been operating normally.

  - Stack volumetric flow rate will be estimated using engineering judgment.

- If any one or more than one analyzer is/are not operating for a period of less than 24 hours, one of the following must be done: (i) the requirements set forth for a 24-hour or greater period of downtime must be used to fill in the data gaps; or (ii) the data recorded for the five minute reading immediately preceding the affected analyzer's(s') stoppage must be used to fill in the data gap.

Emissions Calculations

Marsulex will make the following calculations separately at both the Oregon A Plant and the Oregon B Plant.

3-Hour Rolling Average.

For purposes of calculating a 3-hour rolling average, the system will maintain an array of the 36 most recent measurements of each of the three monitored parameters. Every five minutes, the system will add the most recent readings to the array and exclude the oldest readings.

The 3-hour rolling average lb/ton SO_2 emission rate (E_{3hravg}) will be calculated using Equation 4.

Equation 4:

$$E_{3hravg} = 1306.33 \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{i=1}^{36} Q_{Stack\ i} \cdot B_i}{\sum_{i=1}^{36} Q_{Stack\ i} \cdot \left[\frac{A_i - B_i}{1 - 1.5 \cdot A_i} \right]}$$

Where:

A_i = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "*i*"

B_i = Stack SO_2 concentration, fraction (dry basis) at measurement "*i*"

$Q_{Stack\ i}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "*i*"

$1306.33 \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

E_{3hravg} = 3-hour average lb SO_2 per ton 100% Sulfuric Acid Produced

365-Day Rolling Average.

For the purposes of calculating a 365-day rolling average, the system will maintain an array of all of the measurements of each of the three monitored parameters for 365 days. Every day, the system will add the readings from that day to the array and exclude the readings from the oldest day.

The 365-day rolling average lb/ton SO_2 emission rate ($E_{365-Day\ Avg}$) will be calculated using Equation 5.

Equation 5:

$$E_{365-Day\ Avg} = 1306.33\ \frac{lbsSO_2}{TonAcid} \cdot \frac{\sum_{j=1}^{n} Q_{Stack\ j} \cdot B_j}{\sum_{i=1}^{n} Q_{Stack\ j} \cdot \left[\frac{A_j - B_j}{1 - 1.5 \cdot A_j}\right]}$$

Where:

A_j = Converter inlet SO_2 concentration, fraction (dry basis) at measurement "j"

B_j = Stack SO_2 concentration, fraction (dry basis) at measurement "j"

$Q_{Stack\ j}$ = Stack volumetric flow rate, dry standard cubic feet per minute (DSCFM) at measurement "j"

$1306.33\ \frac{lbsSO_2}{TonAcid} = \frac{64.058\ {}^{lbs}/_{lb-mol} \cdot 2000\ {}^{lbs}/_{ton}}{98.0734\ {}^{lbs}/_{lb-mol}}$

n = the number of measurements taken at 5-minute intervals over the 365-day period

$E_{365-Day\ Avg}$ = 365-day rolling average lb SO_2 per ton 100% Sulfuric Acid Produced

Rounding of Numbers resulting from Calculations

Upon completion of the calculations, the final numbers shall be rounded as follows:

E_{3hravg}: Rounded to the nearest tenth.

$E_{365-Day\ Avg}$: Rounded to the nearest hundredth.

The number "5" shall be rounded up (*e.g.*, a short-term rate of 2.05011 shall be rounded to 2.1).

Rounding of Variables A, B, and Q_{Stack}

Rounding of the variables identified as A, B, and Q_{Stack} in the equations set forth in this CEMS Plan shall be done based on the accuracy of the measuring device as provided by the manufacturer of the device.

Compliance with Consent Decree SO_2 Limits

Short-Term SO_2 Limits

The Short-Term Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Marsulex will be in compliance with the Short-Term SO_2 Consent Decree Limit if E_{3hravg} does not exceed 3.5 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Marsulex contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 3.5 lb/ton after the period of the Malfunction(s) end(s), Marsulex shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

NSPS SO_2 Limits

The NSPS Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods, Marsulex will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 4.0 lb of SO_2 per ton of 100% Sulfuric Acid Produced. If Marsulex contends that emissions during a Malfunction(s) resulted in a calculated 3-hour rolling average emission rate(s) in excess of 4.0 lb/ton after the period of the Malfunction(s) end(s), Marsulex shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Malfunction(s).

Long-Term SO_2 Limits

The Long-Term Limits include periods of Startup, Shutdown, and Malfunction. Marsulex will be in compliance with the Long-Term SO_2 Limit if $E_{365-Day\ Avg}$ does not exceed the rates specified in Table 1 below:

Table 1

Plant	Limit (lb of SO_2 per ton of 100% sulfuric acid produced)
Oregon A	2.40
Oregon B	2.50

Recordkeeping and Reporting

In addition to any requirements in the Consent Decree, Marsulex shall maintain records of the date, time, and duration that any of the three analyzers required under this CEMS plan is not operating. In each semi-annual report required under Section IX of the Decree and in each excess emission report required by the NSPS, Marsulex specifically shall identify all periods of analyzer downtime during the reporting period and all data during the reporting period that is "substitute" data. "Substitute" data means data that is not generated contemporaneously by an analyzer at the same time as the gas flow stack (or duct) emissions are being measured, but rather, is substituted for contemporaneous analyzer measurements consistent with the provisions of the "Emissions Monitoring" section of this CEMS Plan when an analyzer is not operating.

Retention of All CEMS Data, including Data during Startup, Shutdown, and Malfunction

Marsulex will retain all data generated by its SO_2 analyzers and stack flow analyzer, including all data generated during Startup, Shutdown, and/or Malfunction ("SSM") of either the A Plant or the B Plant in accordance with the requirements of Section XIII of the Consent Decree.

Analyzer Specifications

The three analyzers will meet the following specifications:

Table 2

Parameter	Location	Range
SO_2, mole fraction, dry basis	Stack	Dual range: Normal: 0 – 500 ppm SO_2 SSM: 0 – 3,600 ppm SO_2
SO_2, mole fraction, dry basis	Converter Inlet	Single range: 0 – 15 % SO_2
Volumetric flow rate, DSCFM	Stack	0 to 125% of the maximum expected volumetric flow rate

The stack SO_2 analyzer will meet all applicable requirements of 40 C.F.R. §§ 60.11, 60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

The Converter Inlet SO_2 Analyzer likewise will meet all applicable requirements of 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and 40 C.F.R. Part 60, Appendix F, Procedure 1, except as follows:

- Marsulex will select the optimum location to obtain representative SO_2 readings. Turbulence near the blower exit and/or elevated temperatures at the converter inlet may require an analyzer measurement location that differs from the requirements of Performance Specification 2, Section 8.1.

- In lieu of annual Relative Accuracy Test Audits ("RATAs"), as described in Section 5.1.1 of Appendix F, Marsulex will conduct quarterly cylinder gas audits (*i.e.*, four per year) on the Converter Inlet SO_2 Analyzer.

The volumetric flow rate analyzer will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart H

In addition to the requirements in this CEMS Plan, Marsulex also will comply with all of the requirements of the NSPS relating to monitoring provided that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will be an approved alternative to the following provisions of 40 C.F.R. Part 60, Subpart H:

- The requirement at 40 C.F.R. § 60.84(a) that the stack SO_2 analyzer have a span value of 1000 ppm. In lieu of this, Marsulex will utilize the span values specified in Table 1; and

- The procedures specified at 40 C.F.R. § 60.84(b) for converting monitoring data into the units of the applicable standard. In lieu of this, Marsulex will utilize the procedures specified in this CEMS Plan for calculating compliance with the NSPS 3-hour average limit.

APPENDIX H

APPENDIX H

SHORT TERM EMISSION LIMITS DURING STARTUP

3-hour Time period (Hours after Startup commences)	Short-Term Sulfur Dioxide Emission Limit, lbs/ton, applicable to:				
	Beaumont	Shreveport	Riverton #1	Riverton #2	Tulsa
1st through the 3rd hour	15.00	15.00	15.00	15.00	15.00
2nd through the 4th hour	15.00	15.00	15.00	15.00	15.00
3rd through the 5th hour	15.00	15.00	15.00	15.00	15.00
4th through the 6th hour	15.00	15.00	15.00	15.00	15.00
5th through the 7th hour	15.00	15.00	15.00	15.00	15.00
6th through the 8th hour	15.00	15.00	15.00	15.00	15.00
7th through the 9th hour	15.00	15.00	15.00	15.00	15.00
8th through the 10th hour	15.00	15.00	15.00	15.00	15.00
9th through the 11th hour	15.00	15.00	15.00	15.00	15.00
10th through the 12th hour	15.00	15.00	15.00	15.00	15.00
11th through the 13th hour	15.00	15.00	15.00	15.00	15.00
12th through the 14th hour	15.00	15.00	15.00	15.00	15.00
13th through the 15th hour	12.00	12.00	12.00	12.00	12.00
14th through the 16th hour	9.00	9.00	9.00	9.00	9.00
15th through the 17th hour	6.00	6.00	6.00	6.00	6.00
16th through the 18th hour	6.00	6.00	6.00	6.00	6.00
17th through the 19th hour	6.00	6.00	6.00	6.00	6.00
18th through the 20th hour	6.00	6.00	6.00	6.00	6.00
19th through the 21st hour	6.00	6.00	6.00	6.00	6.00
20th through the 22nd hour	6.00	6.00	6.00	6.00	6.00
21st through the 23rd hour	6.00	6.00	6.00	6.00	6.00
22nd through the 24th hour	6.00	6.00	6.00	6.00	6.00
23rd through the 25th hour	4.73	4.67	4.63	4.70	4.57
24th through the 26th hour	3.47	3.33	3.27	3.40	3.13

Notes: Short-Term Limits for the 11 through 13 hour and 12 through 14 hour are weighted averages of 15.0 and 6.0 lbs/ton. Emission limits for the 23rd through 25th hour and 24th through 26th hour are weighted averages of 6.0 lbs/ton and the Short-Term Limit for each Sulfuric Acid Plant as specified in the Consent Decree. Beginning with the 3-hour period consisting of the 25th through 27th hour after Startup commences, the Short-Term Limits specified in the Consent Decree apply

APPENDIX I

APPENDIX I

Calculation of Stipulated Penalties for Violations of the Short-Term Limits, Limits During Start-up, and Long-Term Limits

I. Calculating Stipulated Penalties for Violations of the Short-Term Limits and Limits during Startup

A. Background on CEMS' Recording of SO2, 3-Hour Rolling Average Rates

The Short-Term SO2 Limits and the SO2 Limits during Startup required by the Consent Decree are based on 3-hour rolling averages. During normal operations, the analyzers required by the CEMS Plans in Appendices A-G will record readings every 5 minutes. To calculate the 3-hour rolling average SO2 rates, the system will maintain an array of 36 readings [(60 ÷ 5) x 3], and, at every five-minute interval, it will add the most recent reading to the calculation and discard the oldest reading. Thus, under normal operations, there will 36, 3-hour rolling average rates in a three hour period, and 288 3-hour rolling average rates in a 24 hour period. [1]

The example data on pages 3 – 4 illustrates how data generally will be recorded under the CEMS Plans.

B. Calculating Stipulated Penalties For Violations of the 3-Hour Rolling Average Limits

Stipulated penalties will accrue for any violation of the 3-hour rolling average limit in any non-overlapping three hour period based on how much the recorded rate is above the limit:

Percentage Over the Limit	Penalty per Violation
1 - 50%	$250
51 - 100%	$500
Over 100%	$750

Assume that the Short-Term SO2 Limit is 2.2. Using the data from pages 3- 4, stipulated penalties would accrue as follows:

(1) The first stipulated penalty that would accrue would occur at 14:00, when the 3-hour rolling average rate first exceeded the 2.2 limit. Because the recorded rate of 2.6 is between 1 - 50% above the limit, $250 would be the penalty.

(2) No stipulated penalties would accrue for the 3-hour rolling average rate exceedances that are recorded between 14:05 and 16:55 because one or more of the readings used to calculate the rolling averages in each of these five-minute intervals overlap with one or more of the readings used to calculate the rate at 14:00.

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[1] During system maintenance and/or analyzer malfunctions, there may be fewer than 36 readings in a three-hour period, but the CEMS Plans describe how to calculate the rolling, 3-hour averages under these circumstances. The use of a different method to fill in the data gaps when an analyzer is being maintained or has malfunctioned will not change the method of calculating stipulated penalties.

(3) The second stipulated penalty that would accrue would occur at 17:00 because this is the first time since 14:00 that no readings overlap with the readings that were used to calculate the rate the first time a stipulated penalty accrued at 14:00. Because the recorded rate of 3.4 is between 51 and 100% over the limit, $500 would be the appropriate penalty.

(4) No stipulated penalties would accrue for the 3-hour rolling average rates exceedances that are recorded between 17:05 and 17:15 because one or more of the readings used to calculate the rolling averages in each of these five-minute intervals overlap with one or more of the readings used to calculate the rate at 17:00.

(5) The final stipulated penalty would be $ 750 (*i.e.*, $250 + $500).

EXAMPLE DATA PURSUANT TO THE CEMS PLANS

Time	SO2 In	SO2 Stack	Stack Flow (SCFM)	SO2 Stack (SCFM)	SO3 Out Converter (SCFM)	3-Hr Rolling Average (lb/ton)	Mass (lb)
10:05	11.00%	0.0230%	40000	9.2	5258.4	--	8
10:10	11.20%	0.0230%	40000	9.2	5373.6	--	15
10:15	11.10%	0.0230%	40000	9.2	5315.9	--	23
10:20	11.20%	0.0230%	40000	9.2	5373.6	--	31
10:25	11.00%	0.0230%	40000	9.2	5258.4	--	38
10:30	11.00%	0.0230%	40000	9.2	5258.4	--	46
10:35	11.00%	0.0230%	40000	9.2	5258.4	--	53
10:40	11.00%	0.0230%	40000	9.2	5258.4	--	61
10:45	11.00%	0.0230%	40000	9.2	5258.4	--	69
10:50	11.00%	0.0230%	40000	9.2	5258.4	--	76
10:55	11.00%	0.0210%	40000	8.4	5259.4	--	83
11:00	11.00%	0.0190%	40000	7.6	5260.4	--	90
11:05	11.20%	0.0250%	35000	8.8	4701.0	--	97
11:10	11.20%	0.0250%	35000	8.8	4701.0	--	104
11:15	11.20%	0.0250%	35000	8.8	4701.0	--	112
11:20	11.20%	0.0250%	35000	8.8	4701.0	--	119
11:25	11.20%	0.0250%	35000	8.8	4701.0	--	126
11:30	11.20%	0.0250%	35000	8.8	4701.0	--	133
11:35	11.20%	0.0250%	35000	8.8	4701.0	--	141
11:40	11.20%	0.0250%	35000	8.8	4701.0	--	148
11:45	11.20%	0.0250%	35000	8.8	4701.0	--	155
11:50	11.10%	0.0250%	35000	8.8	4650.6	--	162
11:55	11.10%	0.0250%	38000	9.5	5049.2	--	170
12:00	11.10%	0.0250%	38000	9.5	5049.2	--	178
12:05	11.10%	0.0250%	38000	9.5	5049.2	--	186
12:10	11.10%	0.0250%	38000	9.5	5049.2	--	194
12:15	11.10%	0.0250%	38000	9.5	5049.2	--	202
12:20	11.10%	0.0190%	38000	7.2	5051.9	--	208
12:25	11.10%	0.0190%	38000	7.2	5051.9	--	214
12:30	11.10%	0.0190%	38000	7.2	5051.9	--	220
12:35	11.10%	0.0190%	38000	7.2	5051.9	--	226
12:40	11.10%	0.0190%	38000	7.2	5051.9	--	232
12:45	11.10%	0.0190%	38000	7.2	5051.9	--	238
12:50	11.10%	0.0190%	38000	7.2	5051.9	--	244
12:55	11.20%	0.0190%	38000	7.2	5106.7	--	250
13:00	11.20%	0.0190%	38000	7.2	5106.7	2.2	256
13:05	11.20%	0.0190%	38000	7.2	5106.7	2.2	262
13:10	11.20%	0.0190%	38000	7.2	5106.7	2.2	268
13:15	11.20%	0.0190%	41000	7.8	5509.9	2.2	274
13:20	11.20%	0.0190%	41000	7.8	5509.9	2.2	281
13:25	11.20%	0.0190%	41000	7.8	5509.9	2.2	287
13:30	11.20%	0.0190%	41000	7.8	5509.9	2.1	294
13:35	11.20%	0.0190%	41000	7.8	5509.9	2.1	300
13:40	11.20%	0.0190%	41000	7.8	5509.9	2.1	307
13:45	11.00%	0.0190%	40000	7.6	5260.4	2.1	313

13:50	11.20%	0.0190%	40000
13:55	11.10%	0.0190%	40000
14:00	11.00%	0.1800%	40000
14:05	11.00%	0.3000%	30000
14:10	11.00%	0.1000%	30000
14:15	11.00%	0.1000%	28000
14:20	11.00%	0.1000%	28000
14:25	11.00%	0.1000%	28000
14:30	11.00%	0.1000%	28000
14:35	11.00%	0.0190%	28000
14:40	11.00%	0.0190%	40000
14:45	11.20%	0.0190%	40000
14:50	11.20%	0.0190%	40000
14:55	11.20%	0.0190%	40000
15:00	11.20%	0.0190%	40000
15:05	11.20%	0.0190%	40000
15:10	11.20%	0.0190%	40000
15:15	11.20%	0.0190%	40000
15:20	11.20%	0.0190%	40000
15:25	11.20%	0.0190%	40000
15:30	11.10%	0.0190%	40000
15:35	11.10%	0.0250%	40000
15:40	11.10%	0.0250%	40000
15:45	11.10%	0.0250%	40000
15:50	11.10%	0.0190%	40000
15:55	11.10%	0.0190%	40000
16:00	11.10%	0.0190%	40000
16:05	11.10%	0.0190%	40000
16:10	11.10%	0.0190%	40000
16:15	11.10%	0.0190%	40000
16:20	11.10%	0.0190%	40000
16:25	11.10%	0.0190%	40000
16:30	11.10%	0.0190%	40000
16:35	11.20%	0.0190%	40000
16:40	11.20%	0.0190%	41000
16:45	11.20%	0.0190%	41000
16:50	11.20%	0.0190%	41000
16:55	11.20%	0.0190%	41000
17:00	11.20%	0.0200%	41000
17:05	11.20%	0.0200%	41000
17:10	11.20%	0.0200%	41000
17:15	11.20%	0.0200%	41000
17:20	11.20%	0.0200%	41000
17:25	11.20%	0.0200%	41000
17:30	11.20%	0.0200%	41000
17:35	11.00%	0.0200%	41000
17:40	11.00%	0.0200%	41000
17:45	11.00%	0.0200%	41000
17:50	11.00%	0.0200%	41000

7.6	5375.5
7.6	5317.8
72.0	5183.2
90.0	3844.3
30.0	3916.2
28.0	3655.1
28.0	3655.1
28.0	3655.1
28.0	3655.1
5.3	3682.3
7.6	5260.4
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5375.5
7.6	5317.8
10.0	5314.9
10.0	5314.9
10.0	5314.9
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5317.8
7.6	5375.5
7.8	5509.9
7.8	5509.9
7.8	5509.9
7.8	5509.9
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5509.4
8.2	5391.4
8.2	5391.4
8.2	5391.4
8.2	5391.4

2.1	319
2.1	326
2.6	385
3.1	460
3.3	485
3.5	508
3.6	532
3.8	555
4.0	578
4.0	583
3.9	589
3.9	595
3.9	601
3.9	608
3.9	614
3.8	620
3.8	627
3.8	633
3.8	639
3.8	646
3.8	652
3.8	660
3.8	669
3.8	677
3.8	683
3.8	690
3.8	696
3.8	702
3.8	708
3.8	715
3.8	721
3.8	727
3.8	734
3.8	740
3.8	747
3.8	753
3.8	759
3.8	766
3.4	773
2.7	780
2.6	786
2.4	793
2.2	800
2.1	807
1.9	814
1.9	820
1.9	827
1.9	834
1.9	841

II. Calculating Stipulated Penalties for Violations of the Long-Term Limits

The Long-Term SO2 Limits required by the Consent Decree are based on 365-day rolling averages. For each day, there will be only one 365-day rolling average.

The Consent Decree provides that for each violation, per day, of the Long-Term Limit, the following stipulated penalties will apply:

Period of Noncompliance	Penalty per day
1st - 14th day	$1000
15th - 30th day	$1500
31st day and each day thereafter	$2000

If the 365-day rolling average limit is exceeded on consecutive days, then the penalties are scaled up after the 14th day and after the 30th day. Thus, for example, a violation of the Long-Term Limit for 40 consecutive days will result in $58,000 in stipulated penalties (*i.e.*, (14 x 1000) + (16 x 1500) + (10 x 2000). When the violations are not consecutive or are not consecutive for more than 14 days, then the penalties do not scale up. Thus, for example, 10 days of consecutive or non-consecutive days of violations in January; 10 days of consecutive or non-consecutive violations in March; 10 days of consecutive or non-consecutive violations in May; and 10 days of consecutive or non-consecutive violations in July will result in $40,000 in stipulated penalties (*i.e.*, 40 x 1000).

Chemtrade Refinery Services - Riverton, Wyoming 82501