UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OCT 18

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data

FROM: John S. Seitz, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Regional Office Air Division Directors

The purpose of this memorandum is to provide guidance on redesignating sulfur dioxide (SO2) nonattainment areas to attainment, in cases where the areas' historic violations were caused by major point sources of sulfur oxide (SOx) emissions that are no longer in operation. States in some cases have, with our approval, removed SO2 monitors from these areas immediately following the shutdown of the SOx emissions sources. In these cases, states face the prospect of continued nonattainment designations for areas where there is no reasonable basis for assuming that SO2 violations persist.

This guidance provides an approach for redesignating these areas to attainment in the absence of monitoring data and for exempting these areas from the maintenance plan requirements for continued monitoring within the areas. In addition, this policy describes how attainment and continued maintenance should be demonstrated and how sources currently shut down should be treated if they resume operations. Therefore, this policy amends portions of previous redesignation policies, including "Procedures for Processing Requests to Redesignate Areas to Attainment," memo from John Calcagni, AQMD Director, dated 9/4/92; "Section 107 Designation Policy Summary," memo from Sheldon Meyers, OAQPS Director, dated 4/21/83, pertaining to ambient air quality data showing attainment and maintenance of the SO2 National Ambient Air Quality Standards (NAAQS); and "Attainment Determination Policy for Sulfur Dioxide Nonattainment Areas," memo from Sally L. Shaver, AQSSD Director, dated 1/26/95. All other provisions of the previous redesignation policies still apply, including provisions relating to contingency measures.

The Environmental Protection Agency's (EPA) historic redisignation policy for SO2 has called for 8 quarters of clean ambient air quality data for redesignation to attainment. Although EPA has allowed as few as 4 quarters of ambient data if an acceptable modeling analysis has been performed.[1] Areas that lack SO2 monitors cannot meet even the requirement for 4 quarters of clean data. However, EPA believes that it is not a reasonable use of limited monitoring resources to reestablish monitors in order to collect at least 4 quarters of data in areas where violations of the SO2 NAAQS were caused by sources that no longer operate.

Despite the absence of clean air quality data, EPA believes that it may approve a State's request to redesignate such SO2 nonattainment areas to attainment provided that the State submits a maintenance plan that addresses certain criteria.

First, the plan should include 3 emissions inventories:

(a) An inventory representing actual emissions during the period when there were violations of the SO2 NAAQS;

(b) An inventory representing current actual and allowable emissions (or potential emissions, if there is no allowable emissions level); and

(c) An inventory projecting allowable emissions (or potential emissions, if there is no allowable emissions level) to the 10th year after redesignation.

The inventories should display emissions from each point source of SOx, with explanations of significant emissions changes, including source shutdowns.[2] The inventories should include SOx emissions from all SOx point sources in, and within a 50 kilometer range of, the nonattainment area boundary. Again, if there is no allowable emissions level, potential emissions should be used.

Second, the maintenance plan should include a dispersion modeling analysis of all SOx point sources in, and within 50 kilometers of, the nonattainment area boundaries using the emissions inventories described above and the techniques and data prescribed in 40 CFR 51 Appendix W. The modeling analysis should show that:

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[1]See the Meyers memo referenced above. Both the Meyers and Calcagni memos recognize that for SO2 nonattainment areas monitoring data alone may not be sufficient for redesignating areas to attainment; dispersion modeling may be needed.

[2]The inventories should include other sources if they were included in the attainment demonstration.

(a) No SO2 NAAQS violations presently occur or can be projected to occur during the next 10 years anywhere within the nonattainment area; and,

(b) Point sources, which have since shut down, were the dominant sources contributing to high SO2 concentrations in the airshed.

Third, the maintenance plan should include evidence that if the SOx point source that caused the SO2 NAAQS violations in the past resumes operation, it would be considered a "new" source. Thus the maintenance plan should show that if this "new" SOx source would be a major source, it should obtain a permit conforming to applicable requirements of the Prevention of Significant Deterioration program before resuming operations; or if it would not be a major source, it should obtain a minor source permit under the State's SIP-approved minor source permitting rules in effect at the time it obtains a permit, before it may resume operation. The maintenance plan should provide that before such a permit is issued, the dispersion model should be re-run, using the same meteorological data base, to determine whether re-starting the source would interfere with maintenance, and should provide that the permit will not be issued if the model indicates that re-starting the source would interfere with maintenance.

Fourth, the maintenance plan should include commitments to resume ambient monitoring before any major source of SOx emissions commences operation.

This policy applies only to SO2 nonattainment areas because violations in such areas are generally dominated by relatively few point sources (such as copper smelters or power plants) and have insignificant area and mobile source emission contributions. As a result, there is a direct association between the point sources' emissions and ambient SO2 concentrations. Dispersion modeling will assure that SO2 NAAQS violations are no longer occurring and would not be expected to recur in the future.

This guidance memorandum does not impose binding, enforceable requirements on any party, and may not apply to a particular situation based upon the circumstances. The EPA retains the discretion to adopt approaches to addressing maintenance plan provisions that differ from this guidance where appropriate. Any final decisions by EPA regarding a particular SO2 maintenance plan will only be made in the context of a rulemaking action regarding that maintenance plan based upon the applicable statutory and regulatory provisions, which do contain legally binding requirements. Therefore, interested parties, including States, are free to raise questions and objections about the appropriateness of this guidance or the application of this guidance to a particular situation; EPA will consider whether or not the recommendations in the guidance are appropriate in that situation. The EPA welcomes public comments on this document at any time and will consider those comments in any future revision of this guidance document, which may occur without public notice.

I urge Regions to coordinate closely with OAQPS' Air Quality Standards and Strategies Division in determining whether SO2 redesignation requests may be subject to this policy and to ensure that states' submissions adequately address this and the previous policies' criteria for redesignating SO2 nonattainment areas to attainment.

cc: Lydia Wegman, AQSSD
David Mobley, EMAD
Joe Paisie, IPSG
Rich Ossias, OGC

SO2 Redesignation Policy Memo

Policy Purpose: To amend existing requirements for redesignating SO2 NAAs to attainment, in order to allow for redesignations where:

(1) past violations were due to emissions from a single source;
(2) the single source has shut down;
(3) all monitors have been removed.

Policy Approach: **Maintenance plan** must include:

(1) **emissions inventories** representing (a) actual emissions when violations occurred; (b) current emissions; and (c) emissions projected to the 10th year after redesignation.
(2) **dispersion modeling** showing (a) no NAAQS violations occur or can be projected for the next 10 years; and (b) the shutdown sources were the dominant cause of high concentrations in the past.
(3) evidence that if the shutdown sources resume operation they will be considered new sources and required to obtain a **PSD permit**
(4) **commitments to resume monitoring** before any major SOx source commences operation.

Policy Application: Restricted to SO2 NAAs because SO2 violations are frequently caused by a few point sources

Policy Benefits: Allows redesignation of several SO2 NAAs to attainment, without requiring collection of ambient data

From: Kurpius, Meredith
Sent: Friday, September 02, 2016 9:23 AM
To: Conchita Taitano <conchita.taitano@epa.guam.gov>; Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Lakin, Matt <Lakin.Matthew@epa.gov>; Lo, Doris <Lo.Doris@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Mann, Michael <Mann.Michael@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>
Subject: Tanguisson Redesignation Request, and SO2 modeling

Dear Ms. Taitano,

I am contacting you about two areas of Guam Environmental Protection Agency's (Guam EPA's) work on air quality with respect to sulfur dioxide (SO_2).

First, thank you for your submission of Guam EPA's redesignation request for the SO_2 nonattainment area around Tanguisson Power Plant in Dededo, Guam, dated May 13, 2016. We acknowledge that closure of the Tanguisson Power Plant directly affects present and future SO_2 emissions in the area. In accordance with Section 175A of the Clean Air Act, any request for redesignation must be accompanied by a revision of the applicable State implementation plan (SIP) to provide for the maintenance of the national primary ambient air quality standard in the area for at least ten years after the redesignation. The SIP should contain such additional measures, if any, as may be necessary to ensure such maintenance. Until U.S. EPA receives this maintenance plan, we are not able to act on Guam EPA's redesignation request.

Second, we appreciate Guam EPA's June 22, 2016 modeling protocol submission in accordance with U.S. EPA's SO_2 Data Requirements Rule for the 2010 1-Hour Primary Sulfur Dioxide National Ambient Air Quality Standard for the Piti-Cabras area. Per U.S. EPA guidance and the SO_2 Data Requirements Rule, we understand that Guam EPA has chosen to conduct modeling to characterize SO_2 emissions. Please be aware that, with this choice, Guam EPA no longer has the option to conduct ambient monitoring to meet the upcoming January 2017 air quality characterization deadline under the SO_2 Data Requirements Rule.

If you would like to discuss either of these topics further, please contact me at (415) 947-4534 or Doris Lo, manager of our Air Planning Office, at (415) 972-3959.

Regards,
Meredith

Acting Associate Director
EPA Region 9 Air Division

From: Mann, Michael
Sent: Tuesday, August 16, 2016 4:21 PM
To: Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Conchita San Nicolas Taitano <conchita.taitano@epa.guam.gov>
Subject: FW: Comment on Guam Protocol

Hafa Adai Roland,

Per our meeting with GPA during your visit, below are some additional comments from our Air Division on the GPA modeling protocol. Please review and forward to GPA if you concur. Let us know if you have any questions.

Thanks,
Michael

Michael Mann
Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505
Guam cell: (671) 929-1348
E-mail: mann.michael@epa.gov

From: Bohnenkamp, Carol
Sent: Tuesday, August 09, 2016 9:18 AM
To: Mann, Michael <Mann.Michael@epa.gov>
Subject: Comment on Guam Protocol

We have reviewed the protocol June 22, 2016 modeling protocol for the 1-hour SO2 NAAQS and have found that many of our concerns have been addressed. As discussed at our meeting with GEPA and GPA, there are still several issues where we need additional information to review the protocol. They are listed below.

1. Section 5: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

2. Section 7: We have reviewed Section 7: Background Concentrations and Appendix D. and we continue to have concerns about the supporting information that was provided in the protocol.

- Shipping emissions: As discussed in the protocol, the allowable sulfur content in fuel may not be reduced if fuels are not reasonable available. Therefore, the background concentration should account for the effect of shipping emissions.

- Ambient air monitoring: Although there may be are a number of hours with values of zero, the data in Appendix D. shows that there are high short term (3 hour) values that were measured at some of the monitoring site. Since the standard looks at 1-hour concentrations, specifically the 99th percentile of 1-hour daily maximum concentrations averaged over 3 years, the analysis should discuss the appropriate background for 1 hour maximum concentrations (99th percentile per year).

We would be available to discuss the information presented in Appendix D and other information to support an appropriate background concentration.

Carol Bohnenkamp
Gwen Yoshimura

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

To: Viswanathan, Krishna[Viswanathan.Krishna@epa.gov]
Cc: McKaughan, Colleen[McKaughan.Colleen@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Kurpius, Meredith[Kurpius.Meredith@epa.gov]; Wehling, Jefferson[Wehling.Jefferson@epa.gov]
From: Roland Gutierrez
Sent: Tue 9/13/2016 11:23:33 PM
Subject: Re: U.S. EPA - Updated Guidance on Round 3 Designations for the SO2 Data Requirements Rule
Excerpt (Background Air Quality Concentrations for Guam).pdf

Please advise if the response to these comments are sufficient.

1. Section 5: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

In response to item #1: We are not proposing to relocate receptors that, according to the EPA guidance, would not be practical locations for monitor placement. Those receptors will continue to be evaluated for potential site access, and if it is determined that safe and practical access to those locations cannot be achieved, we will add receptors to the nearest points where access is possible. all receptors in the modeling analyses that are judged to be non-representative for potential monitor locations will be clearly identified by UTM coordinates and on topographical maps, showing the original and relocated receptor position. The criteria relied upon to relocate each receptor will be documented in a memorandum and submitted to GEPA and USEPA for review and concurrence before the final modeling analyses and design concentration is determined.

2. Section 7: We have reviewed Section 7: Background Concentrations and Appendix D. and we continue to have concerns about the supporting information that was provided in the protocol.

- Shipping emissions: As discussed in the protocol, the allowable sulfur content in fuel may not be reduced if fuels are not reasonable available. Therefore, the background concentration should account for the effect of shipping emissions.

- Ambient air monitoring: Although there may be are a number of hours with values of zero, the data in Appendix D. shows that there are high short term (3 hour) values that were measured at some of the monitoring site. Since the standard looks at 1-hour concentrations, specifically the 99th percentile of 1-hour daily maximum concentrations averaged over 3 years, the analysis should discuss the appropriate background for 1 hour maximum concentrations (99th percentile per year).

In Response to item #2: Please see attached excerpt from a draft report on "Assessment of background air quality concentration on Guam". Section 2.0 elaborates in more detail sulfur dioxide Background Concentrations.

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531
epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Wed, Sep 14, 2016 at 4:55 AM, Viswanathan, Krishna <Viswanathan.Krishna@epa.gov> wrote:

Hi Roland,

You may have met with or are probably meeting with GPA as you receive this message. As I mentioned earlier, I am transitioning into the role as the main planning point of contact for SO2 SIPs for EPA Region 9 and as such for Guam also. Unfortunately, due to staff and management transitions some responses are taking more time than usual but this will improve. I hope these responses are helpful and timely but if you have questions please just call me.

In response to your queries.

1. We are meeting with GPA tomorrow and would like to know if the final submission to the USEPA comments for the DRR were sufficient to approve the modeling plan. We are

almost half way through December and want to start the modeling to meet the next submission deadline.

a. EPA sent you an email (Michael Mann dated August 16, 2016) that forwarded comments on the modeling protocol from Carol Bohnenkamp. Addressing those comments will advance your interest in seeing the modeling protocol approved and modeling started. See email attached.

2. Additionally, are the comments to our request for re-designation of Tanguisson approved or is there a way to get unofficial comments to us? We would like to discuss with GPA.

a. The email from Meredith Kurpius, September 2, 2016 communicated that EPA cannot act on Guam EPA's redesignation request until a maintenance plan is received. See email attached.

3. Lastly, I am requesting for a sample or samples of approved SIP maintenance plans we can model are submission after.

a. The general requirements for redesignations are described in the attached 1992 Calcagni memo and our policy regarding redesignation without monitoring for single-source SO2 NAAs are described in the attached 2000 Seitz memo.

b. There are a few of examples of previous R9 redesignations relying on the Seitz policy. I think this one for Douglas, AZ is the most recent and may be a good model: http://www.regulations.gov/#!documentDetail;D=EPA-R09-OAR-2005-AZ-0008-0002

c. Lastly, based on your situation the modeling GPA will perform for the Data Requirements Rule due in January will give you an idea of the modeled ambient values of SO2 in the area at present. This will be helpful for you as you develop the redesignation request and maintenance plan. Please check in with us to discuss the best and most efficient way to develop a maintenance plan.

Again, if you have questions, please call me at the number below.

Thanks and looking forward to working with you,

Krishna

Krishna Viswanathan

520.999.7880

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Sunday, September 11, 2016 9:34 PM
To: Nazmi, Niloufar <Nazmi.Niloufar@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>
Subject: Re: U.S. EPA - Updated Guidance on Round 3 Designations for the SO2 Data Requirements Rule

All,

We are meeting with GPA tomorrow and would like to now if the final submission to the USEPA comments for the DRR were sufficient to approve the modeling plan. We are almost half way through December and want to start the modeling to meet the next submission deadline.

Additionally, are the comments to our request fro re-designation of Tanguisson approved or is there a way to get unofficial comments to us? We would like to discuss with GPA.

Lastly, I am requesting for a sample or samples of approved SIP maintenance plans we can model are submission after.

Thank you,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Sat, Sep 10, 2016 at 7:17 AM, Nazmi, Niloufar <Nazmi.Niloufar@epa.gov> wrote:

Dear Colleagues,

As the next step in the implementation of the SO2 Data Requirements Rule (DRR), you chose to either model or monitor to characterize air quality in support of Round 3 designations for the 2010 SO2 NAAQS per the DRR. Your chosen pathway was published at the "SO2 Data Requirements Rule State Pathway Notifications" website at https://www.epa.gov/so2-pollution/so2-data-requirements-rule-state-pathway-notifications.

As you are aware, agencies that chose monitoring are required to have new monitors installed and operational by January 1, 2017. For air agencies that chose modeling to comply with the DRR, we have been working with you to support your submission of modeling analyses to the EPA by January 13, 2017.

The attached guidance provides more detail on the schedule and process for area designations for Round 3 of the 2010 SO2 NAAQS, which EPA will designate by December 31, 2017. It also clarifies that although Clean Air Act section 107(d) does not require states, tribes or territories to submit updated recommendations, we are inviting such air agencies to submit updated designation recommendations for the EPA to consider in Round 3 of designations. Air agencies that wish to update their recommendations should do so no later than January 13, 2017, and address them to Alexis Strauss, Acting Regional Administrator, EPA Region 9 with an electronic copy to Gwen Yoshimura (yoshimura.gwen@epa.gov) and Krishna Viswanathan (viswanathan.krishna@epa.gov).

Please contact Krishna Viswanathan (520-999-7880) or Gwen Yoshimura (415-947-4134) of our office if you have questions about this guidance.

Thank you,

Niloufar

Niloufar Nazmi

Air Division, EPA Region 9

Desk: 415-972-3684; **Cell:** 415-328-1143

1.0 INTRODUCTION

The air quality concentrations on Guam are dominated by emissions from on-island permitted sources as contributions from off-island sources are small. Guam is located at about 13 degrees north latitude in the western North Pacific tropical trade wind belt with prevailing northeast to east-southeast winds (see Figure 1). Winds from other directions occur infrequently and for short durations, generally during passing storms, and thus there is little if any influence from Asiatic emission sources (e.g. China, Japan, Philippines) on background concentrations. Upwind (eastward) from Guam the Pacific is sparsely populated for over 1,000 miles and thus background concentrations attributable to off-island sources are expected to be low.

There is little air quality monitoring data available on Guam or in the western Pacific within the trade wind belt. Nonetheless, some historical monitoring data on Guam are available and are included in this analysis. In addition, satellite remote sensing data are available for the region as well as ship-borne and aircraft observations of pollutant concentrations as reported in the technical literature. This report reviews the available information for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter less than or equal to 10 microns in diameter (PM_{10}) and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) and provides recommendations for background concentrations.

2.0 SULFUR DIOXIDE

2.1 Ocean Measurements

As noted above and shown in Figure 1, Guam lies in the easterly trade wind zone and there are no major stationary upwind SO_2 sources for hundreds of miles. Due to its isolated location, the background SO_2 concentrations are likely to be near the global SO_2 background concentration. The most significant source of SO_2 from the oceans is the oxidation of dimethylsulfide[1]. EPA has found that the Pacific Ocean SO_2 background concentrations may be on the order of 0.025 ppb, or 0.065 $\mu g/m^3$ [2], an insignificant contribution. Further, ships' emissions are subject to the International Maritime Organization's (IMO) Prevention of Pollution from ships (*MARPOL*) Annex VI, which reduces allowable sulfur in fuel content from 4.5% to 0.5% (if such fuels become reasonably available) in 2020. The EPA and Coast Guard have adopted MARPOL requirements

[1] Barnes, I (editor), Global Atmospheric Change and its Impact on Regional Air Quality, NATO Science Series, Kluwer Academic Publishers, 2002.
[2] EPA, Integrated Science Assessment for Sulfur Oxides-Health Criteria, EPA/600/R-08/047F, 2008.

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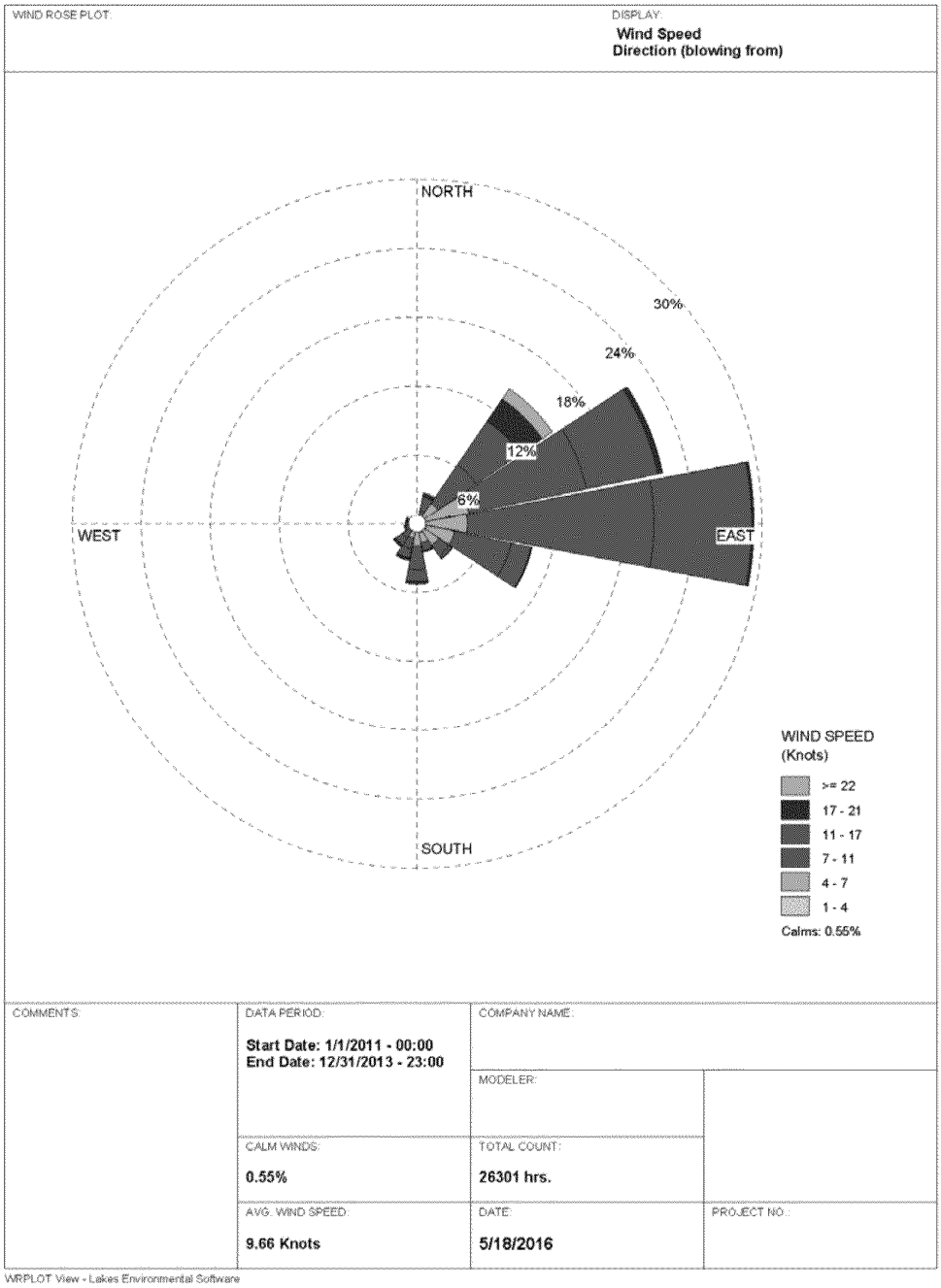
Figure 1 Windrose for 2011-2013 60 Meter Wind as Measured at the Piti/Cabras Meteorological Tower with GUM Airport Data Substituted for Missing Hours



in their regulations. Thus maritime sulfur dioxide emissions will be reduced prior to the adoption of an SO_2 SIP, further reducing current potential background concentration.

The Guam and CNMI Military Relocation (2012 Roadmap Adjustments) Supplemental Environmental Impact Statement (http://www.guambuildupeis.us/documents, see Appendix I Air Impact Study) prepared for the U.S. Department of the Navy assumed that the background concentration was zero for all pollutants for their air quality modeling.

2.2 Guam Measurements

Also, the most recent air quality monitoring on the island conducted in 1999-2000 by GPA (Otte Consulting, Ambient Air Quality Monitoring Network Annual Data Report for October 1999-September 2000) confirms the low concentration background with the monitors reporting "0" SO_2 concentrations for the vast majority of the hours (see Appendix A, reproduced from best copy available). A reported value of "0"indicates that the concentration is below the minimum detection limit for the Model 100A Advanced Pollution Instrumentation SO_2 monitors of 0.4 ppb (1.04 $\mu g/m^3$) (http://www.teledyne-api.com/manuals/02164h_100a.pdf).

2.3 Satellite Measurements

The earth observing system (EOS) Aura spacecraft has a downward pointing hyper-spectral imaging sensor (Ozone Monitoring Sensor, OMI) that records daily global measurements of earth-atmosphere back scattered radiances. These measurements are analyzed by the National Aeronautics and Space Administration (NASA) to retrieve column amount of SO_2 among other pollutants. The SO_2 data is accessible from NASA servers[3] with measurements available on a 0.1 x 0.1 degree grid and represent a near-instantaneous "snap-shot" of the tropospheric column. This data was downloaded and plotted in NASA's geospatial analysis tool, Panoply, to extract satellite measurements of column amount SO_2 over Guam. Four scans from each of the latest available four years, 2012 through 2015, selected from a month in each calendar quarter (March, June, September, and December), were sampled and evaluated (16 scans total). Since the values represent a density of SO_2 molecules over the visible 0.1x0.1 degree area, to determine a volume concentration (e.g., µg/m3) from the measured value requires assuming a well-mixed troposphere (a feasible assumption in the low latitude tropics), and a troposphere height. In the tropics, the

[3] http://avdc.gsfc.nasa.gov/pub/data/satellite/Aura/OMI/V03/L3/OMSO2m/OMSO2_0.1x0.1_daily/

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tropopause is lifted higher than in mid and upper latitudes due to heating and convergence typified in the Intertropical Convergence Zone (ITCZ). A reasonable height for the tropical tropopause was chosen to be 15 km[4]. Converting the column density to a volume concentration led to a range of 0.0 to 4.58 $\mu g/m^3$ of SO_2 at Guam with an overall average value of 1.49 $\mu g/m^3$ (see Table 1), in reasonable agreement with the concentrations noted above. Given the assumptions needed to convert tropospheric satellite observations to ground-level concentrations, satellite concentration estimates are less reliable than the direct observations reported for the other measurement approaches, but do provide supporting evidence of generally low SO_2 concentrations.

2.4 Aircraft Measurements

The NASA Transport and Chemical Evolution over the Pacific (TRACE-P) project comprised the third of three planned Pacific exploratory missions in the central and western regions of the Pacific Ocean basin. TRACE-P was conducted in March/April 2001 as part of NASA's Tropospheric Chemistry Program and had as one of its major objectives to determine the chemical composition of the Asian outflow over the western Pacific. The data is in the form of measurements taken from an aircraft: the P-3B mission landed and took off from Guam (Anderson Airforce Base) during its flight. The P-3B data had measurements of SO_2 included in its suite of observations. The data was accessed from NASA's servers[5] and plotted in GIS software (see Figure 2) to extract measured concentrations over Guam and at points nearby. It was found that within a 1,000 km radius of Guam, the maximum measured SO_2 concentration was 173.549 pptv (parts per trillion by volume). This equates to 0.5 $\mu g/m^3$ of SO_2.

2.5 Selected Background Concentration

Given the isolation of Guam from upwind anthropogenic SO_2 sources, the very low oceanic background contribution, and the variety of sources described above with a concurring range of values, it is proposed that modeling the nearby sources and adding a background of 1.0 $\mu g/m^3$ SO_2 for all averaging periods based on the results of the Guam air quality measurement program will yield representative predictions of SO_2 design values.

[4] An Introduction to Dynamic Meteorology, Holton, p402.

[5] http://www-gte.larc.nasa.gov/GTE2/missions/Aircraft_Based_Missions/Aircraft_Based_Missions.htm

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Table 1 Tropospheric SO_2 Concentration for Guam Based on Satellite Data

Aura/OMI PBL SO_2 Tropospheric Vertical Column Density Measurements

Year / Month	Measured Value, DU (1 DU = 2.69E16 molecules/cm^2)				SO_2 concentration (well mixed assumption) (µg/m^3)			
	March	June	September	December	March	June	September	December
2012	0	0.5	0.5	2.4	0.00	0.95	0.95	4.58
2013	0.1	0.2	1.5	1	0.19	0.38	2.86	1.91
2014	0.3	1.9	1.2	0.9	0.57	3.62	2.29	1.72
2015	0.7	0.5	0.4	0.4	1.34	0.95	0.76	0.76

MAX	4.58
MIN	0.00
AVG	1.49

Well-mixed Tropopause Assumption

Height of Tropopause at 13.5° N lat. 15 km

Development of a conversion factor from DU to µg/m^3 SO_2

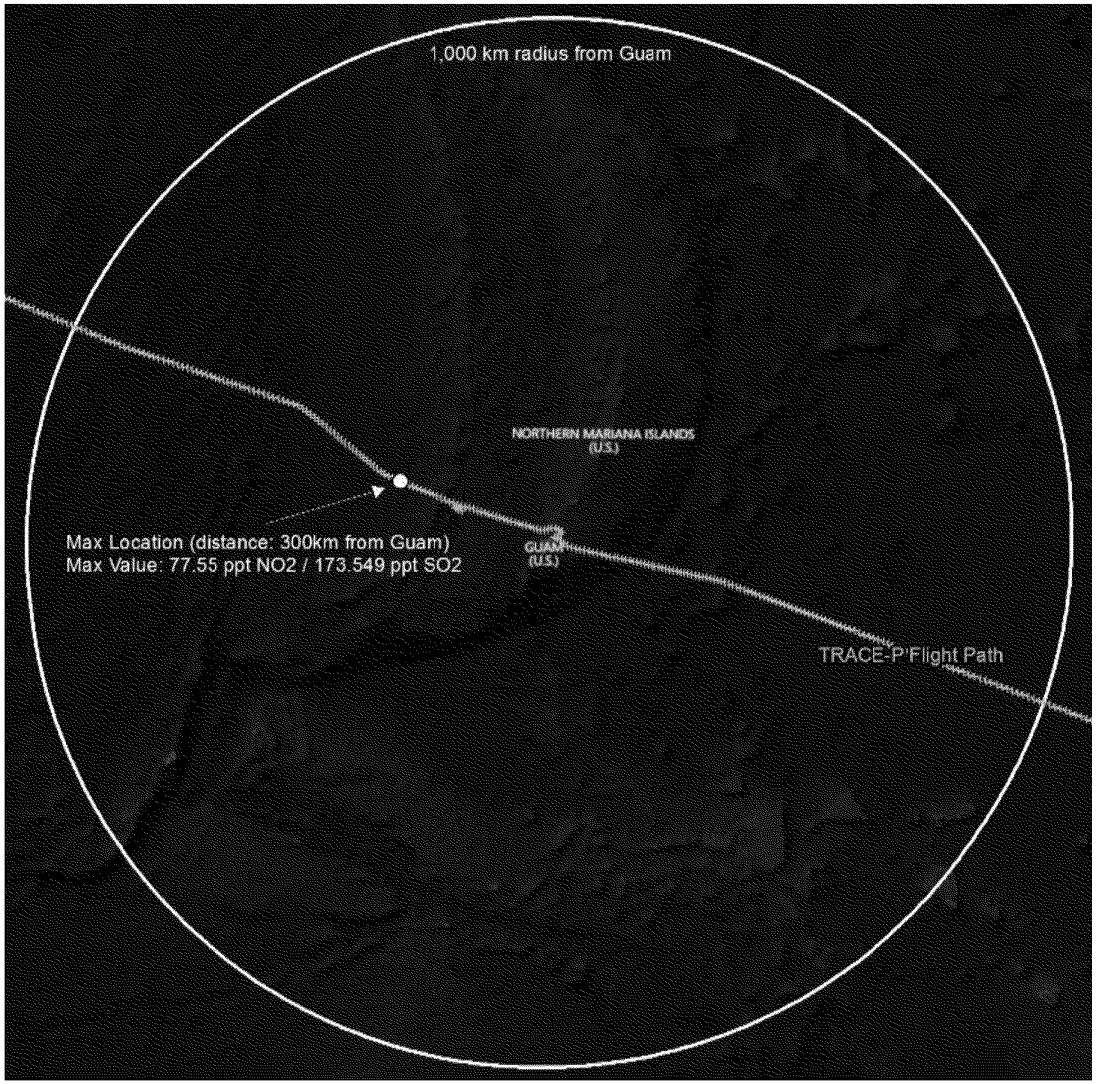
$$\frac{2.69E+16 \text{ molecules}}{\text{cm}^2} \times \frac{\text{height of column}}{\text{cm}} \times \frac{64.0638 \text{ g}}{\text{molecules } SO_2} \times \frac{1E+06 \ \mu\text{g}}{\text{g}} \times \frac{1E+06 \text{ cm}^3}{\text{m}^3} = \frac{1.91 \ \mu\text{g}}{\text{m}^3}$$

1.50E+06

6.02E+23

1 DU SO_2 = 1.9 µg/m^3 SO_2

Figure 2 Aircraft flight path for NASA TRACE-P Experiment within 1,000 kilometers of Guam



ED_001261_00072056

To: Roland Gutierrez[roland.gutierrez@epa.guam.gov]
Cc: McKaughan, Colleen[McKaughan.Colleen@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Kurpius, Meredith[Kurpius.Meredith@epa.gov]; Wehling, Jefferson[Wehling.Jefferson@epa.gov]
From: Viswanathan, Krishna
Sent: Tue 9/13/2016 6:55:54 PM
Subject: RE: U.S. EPA - Updated Guidance on Round 3 Designations for the SO2 Data Requirements Rule
2000-10-18 -Seitz Memo on SO2 Redesignation with No Monitored Data.pdf
1992-09-04 - Procedures for Processing Requests to Redesignate Areas to Attainment.pdf
EPA Emails.docx

Hi Roland,

You may have met with or are probably meeting with GPA as you receive this message. As I mentioned earlier, I am transitioning into the role as the main planning point of contact for SO2 SIPs for EPA Region 9 and as such for Guam also. Unfortunately, due to staff and management transitions some responses are taking more time than usual but this will improve. I hope these responses are helpful and timely but if you have questions please just call me.

In response to your queries.

1. We are meeting with GPA tomorrow and would like to know if the final submission to the USEPA comments for the DRR were sufficient to approve the modeling plan. We are almost half way through December and want to start the modeling to meet the next submission deadline.

a. EPA sent you an email (Michael Mann dated August 16, 2016) that forwarded comments on the modeling protocol from Carol Bohnenkamp. Addressing those comments will advance your interest in seeing the modeling protocol approved and modeling started. See email attached.

2. Additionally, are the comments to our request for re-designation of Tanguisson approved or is there a way to get unofficial comments to us? We would like to discuss with GPA.

a. The email from Meredith Kurpius, September 2, 2016 communicated that EPA cannot act on Guam EPA's redesignation request until a maintenance plan is received. See email attached.

3. Lastly, I am requesting for a sample or samples of approved SIP maintenance plans we can model are submission after.

a. The general requirements for redesignations are described in the attached 1992 Calcagni memo and our policy regarding redesignation without monitoring for single-source SO2 NAAs are described in the attached 2000 Seitz memo.

b. There are a few of examples of previous R9 redesignations relying on the Seitz policy. I think this one for Douglas, AZ is the most recent and may be a good model: http://www.regulations.gov/#!documentDetail;D=EPA-R09-OAR-2005-AZ-0008-0002

c. Lastly, based on your situation the modeling GPA will perform for the Data Requirements Rule due in January will give you an idea of the modeled ambient values of SO2 in the area at present. This will be helpful for you as you develop the redesignation request and maintenance plan. Please check in with us to discuss the best and most efficient way to develop a maintenance plan.

Again, if you have questions, please call me at the number below.

Thanks and looking forward to working with you,

Krishna

Krishna Viswanathan

520.999.7880

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Sunday, September 11, 2016 9:34 PM
To: Nazmi, Niloufar <Nazmi.Niloufar@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>
Subject: Re: U.S. EPA - Updated Guidance on Round 3 Designations for the SO2 Data Requirements Rule

All,

We are meeting with GPA tomorrow and would like to now if the final submission to the USEPA comments for the DRR were sufficient to approve the modeling plan. We are almost half way through December and want to start the modeling to meet the next submission deadline.

Additionally, are the comments to our request fro re-designation of Tanguisson approved or is there a way to get unofficial comments to us? We would like to discuss with GPA.

Lastly, I am requesting for a sample or samples of approved SIP maintenance plans we can model are submission after.

Thank you,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Sat, Sep 10, 2016 at 7:17 AM, Nazmi, Niloufar <Nazmi.Niloufar@epa.gov> wrote:

> Dear Colleagues,
>
> As the next step in the implementation of the SO2 Data Requirements Rule (DRR), you chose to either model or monitor to characterize air quality in support of Round 3 designations for the 2010 SO2 NAAQS per the DRR. Your chosen pathway was published at the "SO2 Data Requirements Rule State Pathway Notifications" website at https://www.epa.gov/so2-pollution/so2-data-requirements-rule-state-pathway-notifications.

As you are aware, agencies that chose monitoring are required to have new monitors installed and operational by January 1, 2017. For air agencies that chose modeling to comply with the DRR, we have been working with you to support your submission of modeling analyses to the EPA by January 13, 2017.

The attached guidance provides more detail on the schedule and process for area designations for Round 3 of the 2010 SO2 NAAQS, which EPA will designate by December 31, 2017. It also clarifies that although Clean Air Act section 107(d) does not require states, tribes or territories to submit updated recommendations, we are inviting such air agencies to submit updated designation recommendations for the EPA to consider in Round 3 of designations. Air agencies that wish to update their recommendations should do so no later than January 13, 2017, and address them to Alexis Strauss, Acting Regional Administrator, EPA Region 9 with an electronic copy to Gwen Yoshimura (yoshimura.gwen@epa.gov) and Krishna Viswanathan (viswanathan.krishna@epa.gov).

Please contact Krishna Viswanathan (520-999-7880) or Gwen Yoshimura (415-947-4134) of our office if you have questions about this guidance.

Thank you,

Niloufar

Niloufar Nazmi

Air Division, EPA Region 9

Desk: 415-972-3684; Cell: 415-328-1143

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

4 SEP 1992

AIR PROGRAMS BRANCH
RECEIVED
SEP 8 1992
EPA-REGION IV
ATLANTA, GA.

MEMORANDUM

SUBJECT: Procedures for Processing Requests to Redesignate Areas to Attainment

FROM: John Calcagni, Director
Air Quality Management Division (MD-15)

TO: Director, Air, Pesticides and Toxics Management Division, Regions I and IV
Director, Air and Waste Management Division, Region II
Director, Air, Radiation and Toxics Division, Region III
Director, Air and Radiation Division, Region V
Director, Air, Pesticides and Toxics Division, Region VI
Director, Air and Toxics Division, Regions VII, VIII, IX, and X

Purpose

The Office of Air Quality Planning and Standards (OAQPS) expects that a number of redesignation requests will be submitted in the near future. Thus, Regions will need to have guidance on the applicable procedures for handling these requests, including maintenance plan provisions. This memorandum, therefore, consolidates the Environmental Protection Agency's (EPA's) guidance regarding the processing of requests for redesignation of nonattainment areas to attainment for ozone (O_3), carbon monoxide (CO), particulate matter (PM-10), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). Regions should use this guidance as a general framework for drafting Federal Register notices pertaining to redesignation requests. Special concerns for areas seeking redesignation from unclassifiable to attainment will be addressed on a case-by-case basis.

Background

Section 107(d)(3)(E) of the Clean Air Act, as amended, states that an area can be redesignated to attainment if the following conditions are met:

1. The EPA has determined that the national ambient air quality standards (NAAQS) have been attained.

2. The applicable implementation plan has been fully approved by EPA under section 110(k).

3. The EPA has determined that the improvement in air quality is due to permanent and enforceable reductions in emissions.

4. The State has met all applicable requirements for the area under section 110 and Part D.

5. The EPA has fully approved a maintenance plan, including a contingency plan, for the area under section 175A.

Each of these criteria is discussed in more detail in the following paragraphs. Particular attention is given to maintenance plan provisions at the end of this document since maintenance plans constitute a new requirement under the amended Clean Air Act. Exceptions to the guidance will be considered on a case-by-case basis.

1. Attainment of the Standard

The State must show that the area is attaining the applicable NAAQS. There are two components involved in making this demonstration which should be considered interdependently. The first component relies upon ambient air quality data. The data that are used to demonstrate attainment should be the product of ambient monitoring that is representative of the area of highest concentration. These monitors should remain at the same location for the duration of the monitoring period required for demonstrating attainment. The data should be collected and quality-assured in accordance with 40 CFR 58 and recorded in the Aerometric Information Retrieval System (AIRS) in order for it to be available to the public for review. For purposes of redesignation, the Regional Office should verify that the integrity of the air quality monitoring network has been preserved.

For PM-10, an area may be considered attaining the NAAQS if the number of expected exceedances per year, according to 40 CFR 50.6, is less than or equal to 1.0. For O_3, the area must show that the average annual number of expected exceedances, according to 40 CFR 50.9, is less than or equal to 1.0 based on data from all monitoring sites in the area or its affected downwind environs. In making this showing, both PM-10 and O_3 must rely on 3 complete, consecutive calendar years of quality-assured air quality monitoring data, collected in accordance with 40 CFR 50, Appendices H and K. For CO, an area may be considered attaining the NAAQS if there are no violations, as determined in accordance

with 40 CFR 50.8, based on 2 complete, consecutive calendar years of quality-assured monitoring data. For SO_2, according to 40 CFR 50.4, an area must show no more than one exceedance annually and for Pb, according to section 50.12, an area may show no exceedances on a quarterly basis.

The second component relies upon supplemental EPA-approved air quality modeling. No such supplemental modeling is required for O_3 nonattainment areas seeking redesignation. Modeling may be necessary to determine the representativeness of the monitored data. For pollutants such as SO_2 and CO, a small number of monitors typically is not representative of areawide air quality or areas of highest concentration. When dealing with SO_2, Pb, PM-10 (except for a limited number of initial moderate nonattainment areas), and CO (except moderate areas with design values of 12.7 parts per million or lower at the time of passage of the Clean Air Act Amendments of 1990), dispersion modeling will generally be necessary to evaluate comprehensively sources' impacts and to determine the areas of expected high concentrations based upon current conditions. Areas which were designated nonattainment based on modeling will generally not be redesignated to attainment unless an acceptable modeling analysis indicates attainment. Regions should consult with OAQPS for further guidance addressing the need for modeling in specific circumstances.

2. State Implementation Plan (SIP) Approval

The SIP for the area must be fully approved under section 110(k),[1] and must satisfy all requirements that apply to the area. It should be noted that approval action on SIP elements and the redesignation request may occur simultaneously. An area cannot be redesignated if a required element of its plan is the subject of a disapproval; a finding of failure to submit or to implement the SIP; or partial, conditional, or limited approval. However, this does not mean that earlier issues with regard to the SIP will be reopened. Regions should not reconsider those things that have already been approved and for which the Clean Air Act Amendments did not alter what is required. In contrast, to the extent the Amendments add a requirement or alter an existing requirement so that it adds something more, Regions should consider those issues. In addition, requests from areas known to be affected by dispersion techniques which are inconsistent with EPA guidance will continue to be considered unapprovable under section 110 and will not qualify for redesignation.

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[1]Section 110(k) contains the requirements for EPA action on plan submissions. It addresses completeness, deadlines, full and partial approval, conditional approval, and disapproval.

3. Permanent and Enforceable Improvement in Air Quality

The State must be able to reasonably attribute the improvement in air quality to emission reductions which are permanent and enforceable.[2] Attainment resulting from temporary reductions in emission rates (e.g., reduced production or shutdown due to temporary adverse economic conditions) or unusually favorable meteorology would not qualify as an air quality improvement due to permanent and enforceable emission reductions.

In making this showing, the State should estimate the percent reduction (from the year that was used to determine the design value for designation and classification) achieved from Federal measures such as the Federal Motor Vehicle Control Program and fuel volatility rules as well as control measures that have been adopted and implemented by the State. This estimate should consider emission rates, production capacities, and other related information to clearly show that the air quality improvements are the result of implemented controls. The analysis should assume that sources are operating at permitted levels (or historic peak levels) unless evidence is presented that such an assumption is unrealistic.

4. Section 110 and Part D Requirements

For the purposes of redesignation, a State must meet all requirements of section 110 and Part D that were applicable prior to submittal of the complete redesignation request. When evaluating a redesignation request, Regions should not consider whether the State has met requirements that come due under the Act after submittal of a complete redesignation request.[3]

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[2]This is consistent with EPA's existing policy on redesignations as stated in an April 21, 1983 memorandum titled "Section 107 Designation Policy Summary." This memorandum states that in order for an area to be redesignated to attainment, the State must show that "actual enforceable emission reductions are responsible for the recent air quality improvement." This element of the policy retains its validity under the amended Act pursuant to section 193. [Note: other aspects of the April 21, 1983 memorandum have since been superseded by subsequent memorandums; interested parties should consult with OAQPS before relying on these aspects, e.g. those relating to required years of air quality data.]

[3]Under section 175A(c), however, the requirements of Part D remain in force and effect for the area until such time as it is redesignated. Upon redesignation to attainment, the requirements that became due under section 175A(c) after submittal of the complete redesignation request would no longer be applicable.

However, any requirements that came due prior to submittal of the redesignation request must be fully approved into the plan at or before the time EPA redesignates the area.

To avoid confusion concerning what requirements will be applicable for purposes of redesignation, Regions should encourage States to work closely with the appropriate Regional Office early in the process. This will help to ensure that a redesignation request submitted by the State has a high likelihood of being approved by EPA. Regions should advise States of the practical planning consequences if EPA disapproves the redesignation request or if the request is invalidated because of violations recorded during EPA's review. Under such circumstances, EPA does not have the discretion to adjust schedules for implementing SIP requirements. As a result, an area may risk sanctions and/or Federal implementation plan implementation that could result from failure to meet SIP submittal or implementation requirements.

a. Section 110 Requirements

Section 110(a)(2) contains general requirements for nonattainment plans. Most of the provisions of this section are the same as those contained in the pre-amended Act. We will provide guidance on these requirements as needed.[4]

b. Part D Requirements

Part D consists of general requirements applicable to all areas which are designated nonattainment based on a violation of the NAAQS. The general requirements are followed by a series of subparts specific to each pollutant. The general requirements appear in subpart 1. The requirements relating to O_3, CO, PM-10, SO_2, NO_2, and Pb appear in subparts 2 through 5. In those instances where an area is subject to both the general nonattainment provisions in subpart 1 as well as one of the pollutant-specific subparts, the general provisions may be subsumed within, or superseded by, the more specific requirements of subparts 2 through 5.

If an area was not classified under section 181 for O_3, or section 186 for CO, then that area is only subject to the provisions of subpart 1, "Nonattainment Areas in General." In addition to relevant provisions in subpart 1, an O_3 and CO area, which is classified, must meet all applicable requirements in subpart 2, "Additional Provisions for Ozone Nonattainment Areas," and subpart 3, "Additional Provisions for Carbon Monoxide

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[4]General guidance regarding the requirements for SIP's may be found in the "General Preamble to Title I of the 1990 Clean Air Act Amendments," 57 FR 13498 (April 16, 1992).

Nonattainment Areas," respectively, before the area may be redesignated to attainment. All PM-10 nonattainment areas (whether classified as moderate or serious) must similarly meet the applicable general provisions of subpart 1 and the specific PM-10 provisions in subpart 4, "Additional Provisions for Particulate Matter Nonattainment Areas." Likewise, SO_2, NO_2, and Pb nonattainment areas are subject to the applicable general nonattainment provisions in subpart 1 as well as the more specific requirements in subpart 5, "Additional Provisions for Areas Designated Nonattainment for Sulfur Oxides, Nitrogen Dioxide, and Lead."

i. Section 172(c) Requirements

This section contains general requirements for nonattainment plans. A thorough discussion of these requirements may be found in the General Preamble to Title I [57 FR 13498 (April 16, 1992)]. The EPA anticipates that areas will already have met most or all of these requirements to the extent that they are not superseded by more specific Part D requirements. The requirements for reasonable further progress, identification of certain emissions increases, and other measures needed for attainment will not apply for redesignations because they only have meaning for areas not attaining the standard. The requirements for an emission inventory will be satisfied by the inventory requirements of the maintenance plan. The requirements of the Part D new source review program will be replaced by the prevention of significant deterioration (PSD) program once the area has been redesignated. However, in order to ensure that the PSD program will become fully effective immediately upon redesignation, either the State must be delegated the Federal PSD program or the State must make any needed modifications to its rules to have the approved PSD program apply to the affected area upon redesignation.

ii. Conformity

The State must work with EPA to show that its SIP provisions are consistent with section 176(c)(4) conformity requirements. The redesignation request should include conformity procedures, if the State already has these procedures in place. Additionally, we currently interpret the conformity requirement to apply to attainment areas. However, EPA has not yet issued its conformity regulations specifying what areas are subject to the conformity requirement. Therefore, if a State does not have conformity procedures in place at the time that it submits a redesignation request, the State must commit to follow EPA's conformity regulation upon issuance, as applicable. If the State submits the redesignation request subsequent to EPA's issuance of the conformity regulations, and the conformity requirement became applicable to the area prior to submission,

the State must adopt the applicable conformity requirements before EPA can redesignate the area.

5. Maintenance Plans

Section 107(d)(3)(E) of the amended Act stipulates that for an area to be redesignated, EPA must fully approve a maintenance plan which meets the requirements of section 175A. A State may submit both the redesignation request and the maintenance plan at the same time and rulemaking on both may proceed on a parallel track. Maintenance plans may, of course, be submitted and approved by EPA before a redesignation is requested. However, according to section 175A(c), pending approval of the maintenance plan and redesignation request, all applicable nonattainment area requirements shall remain in place.

Section 175A defines the general framework of a maintenance plan. The maintenance plan will constitute a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation. Section 175A further states that the plan shall contain such additional measures, if any, as may be necessary to ensure such maintenance. Because the Act requires a demonstration of maintenance for 10 years after an area is redesignated (not 10 years after submittal of a redesignation request), the State should plan for some lead time for EPA action on the request. In other words, the maintenance demonstration should project maintenance for 10 years, beginning from a date which factors in the time necessary for EPA review and approval action on the redesignation request. In determining the amount of lead time to allow, States should consider that section 107(d)(3)(D) grants the Administrator up to 18 months from receipt of a complete submittal to process a redesignation request. The statute also requires the State to submit a revision of the SIP 8 years after the original redesignation request is approved to provide for maintenance of the NAAQS for an additional 10 years following the first 10-year period [see section 175A(b)].

In addition, the maintenance plan shall contain such contingency measures as the Administrator deems necessary to ensure prompt correction of any violation of the NAAQS [see section 175A(d)]. The Act provides that, at a minimum, the contingency measures must include a requirement that the State will implement all measures contained in the nonattainment SIP prior to redesignation. Failure to maintain the NAAQS and triggering of the contingency plan will not necessitate a revision of the SIP unless required by the Administrator, as stated in section 175A(d).

The following is a list of core provisions that we anticipate will be necessary to ensure maintenance of the relevant NAAQS in an area seeking redesignation from

nonattainment to attainment. We therefore recommend that States seeking redesignation of a nonattainment area consider these provisions. However, any final EPA determination regarding the adequacy of a maintenance plan will be made following review of the plan submittal in light of the particular circumstances facing the area proposed for redesignation and based on all relevant information available at the time.

a. Attainment Inventory

The State should develop an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS.[5] This inventory should be consistent with EPA's most recent guidance on emission inventories for nonattainment areas available at the time and should include the emissions during the time period associated with the monitoring data showing attainment.[6]

Source size thresholds are 100 tons/year for SO_2, NO_2, and PM-10 areas, and 5 tons/year for Pb based upon 40 CFR 51.100(k) and 51.322, as well as established practice for AIRS data. The source size threshold for serious PM-10 areas is 70 tons/year

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[5]Where the State has made an adequate demonstration that air quality has improved as a result of the SIP (as discussed previously), the attainment inventory will generally be the actual inventory at the time the area attained the standard.

[6]The EPA's current guidance on the preparation of emission inventories for O_3 and CO nonattainment areas is contained in the following documents: "Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone: Volume I" (EPA-450/4-91-016), "Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone: Volume II" (EPA-450/4-91-014), "Emission Inventory Requirements for Ozone State Implementation Plans" (EPA-450/4-91-010), "Emission Inventory Requirements for Carbon Monoxide Implementation Plans" (EPA-450/4-91-011), "Guideline for Regulatory Application of the Urban Airshed Model" (EPA-450/4-91-013), "Procedures for Emission Inventory Preparation: Volume IV, Mobile Sources" (EPA-450/4-81-026d), and "Procedures for Preparing Emission Inventory Projections" (EPA-450/4-91-019). The EPA does not currently have specific guidance on attainment emissions inventories for SO_2. In lieu thereof, States are referred to the guidance on emissions data to be used as input to modeling demonstrations, contained in Table 9.1 of EPA's "Guideline on Air Quality Models (Revised)" (EPA-450/2-78-027R), July 1987, which is generally applicable to all criteria pollutants. Emission inventory procedures and requirements documents are currently being prepared by OAQPS for PM-10 and Pb; these documents are due for release by summer 1992.

according to Clean Air Act section 189(b)(3). However, the inventory should include sources below these size thresholds if these smaller sources were included in the SIP attainment demonstration. Where sources below the 100, 70, and 5 tons/year-size thresholds (e.g., areas with smaller source size definitions) are subject to a State's minor source permit program, these sources need only be addressed in the aggregate to the extent that they result in areawide growth.

For O_3 nonattainment areas, the inventory should be based on actual "typical summer day" emissions of O_3 precursors (volatile organic compounds and nitrogen oxides) during the attainment year. This will generally correspond to one of the periodic inventories required for nonattainment areas to reconcile milestones. For CO nonattainment areas, the inventory should be based on actual "typical CO season day" emissions for the attainment year. This will generally correspond to one of the periodic inventories required for nonattainment areas.

b. Maintenance Demonstration

A State may generally demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory, or by modeling to show that the future mix of sources and emission rates will not cause a violation of the NAAQS. Under the Clean Air Act, many areas are required to submit modeled attainment demonstrations to show that proposed reductions in emissions will be sufficient to attain the applicable NAAQS. For these areas, the maintenance demonstration should be based upon the same level of modeling. In areas where no such modeling was required, the State should be able to rely on the attainment inventory approach. In both instances, the demonstration should be for a period of 10 years following the redesignation.

Where modeling is relied upon to demonstrate maintenance, each plan should contain a summary of the air quality concentrations expected to result from application of the control strategy. In the process, the plan should identify and describe the dispersion model or other air quality model used to project ambient concentrations (see 40 CFR 51.46).

In either case, to satisfy the demonstration requirement the State should project emissions for the 10-year period following redesignation, either for the purpose of showing that emissions will not increase over the attainment inventory or for conducting modeling.[7] The projected inventory should consider future growth, including population and industry, should be consistent

[7]Guidance for projecting emissions may be found in the emissions inventory guidance cited in footnote 6.

with the attainment inventory, and should document data inputs and assumptions. All elements of the demonstration (e.g., emission projections, new source growth, and modeling) should be consistent with current EPA modeling guidance.[8] For O_3 and CO, the projected emissions should reflect the expected actual emissions based on enforceable emission rates and typical production rates.

For CO, a State should address the areawide component of the maintenance demonstration either by showing that future CO emissions will not increase or by conducting areawide modeling. Preferably, the State should carry out hot-spot modeling that is consistent with the Guideline on Air Quality Models (Revised), in order to demonstrate maintenance of the NAAQS. In particular, if the nonattainment problem is related to a pattern of hot-spots then hot-spot modeling should generally be conducted. However, hot-spot modeling is not automatically required. For example, if the nonattainment problem was related solely to stationary point sources, or if highway improvements have been implemented and the associated emission reductions and travel characteristics can be qualitatively documented, then hot-spot modeling is not required. In such cases, adequate documentation as well as the concurrence of Headquarters is needed.

Any assumptions concerning emission rates must reflect permanent, enforceable measures. In other words, a State generally cannot take credit in the maintenance demonstration for reductions unless there are regulations in place requiring those reductions or the reductions are otherwise shown to be permanent. Therefore, the State will be expected to maintain its implemented control strategy despite redesignation to attainment, unless such measures are shown to be unnecessary for maintenance or are replaced with measures that achieve equivalent reductions (see additional discussion under "Contingency Plan"). Emission reductions from source shutdowns can be considered permanent and enforceable to the extent that those shutdowns have been reflected in the SIP and all applicable permits have been modified accordingly.

Modeling used to demonstrate attainment may be relied upon in the maintenance demonstration where the modeling conforms to current EPA guidance and where the State has projected no significant changes in the modeling inputs during the intervening time. Where the original attainment demonstration may no longer be relied upon, States will be expected to remodel using current

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[8]The EPA-approved modeling guidance may be found in the following documents: "Guideline on Air Quality Models (Revised)," OAQPS, RTP, NC (EPA-450/2-78-027R), July 1986; and "PM-10 SIP Development Guideline," OAQPS, RTP, NC (EPA-450/2-86-001), June 1987.

EPA referenced techniques.[9] This may be necessary where, for example, there has been a change in emissions or a change in the siting of new sources or modifications such that air quality may no longer be accurately represented by the existing modeling.

c. Monitoring Network

Once an area has been redesignated, the State should continue to operate an appropriate air quality monitoring network, in accordance with 40 CFR Part 58, to verify the attainment status of the area. The maintenance plan should contain provisions for continued operation of air quality monitors that will provide such verification. In cases where measured mobile source parameters (e.g., vehicle miles traveled congestion) have changed over time, the State may also need to perform a saturation monitoring study to determine the need for, and location of, additional permanent monitors.

d. Verification of Continued Attainment

Each State should ensure that it has the legal authority to implement and enforce all measures necessary to attain and to maintain the NAAQS. Sections 110(a)(2)(B) and (F) of the Clean Air Act, as amended, and regulations promulgated at 40 CFR 51.110(k), suggest that one such measure is the acquisition of ambient and source emission data to demonstrate attainment and maintenance.

Regardless of whether the maintenance demonstration is based on a showing that future emission inventories will not exceed the attainment inventory or on modeling, the State submittal should indicate how the State will track the progress of the maintenance plan. This is necessary due to the fact that the emission projections made for the maintenance demonstration depend on assumptions of point and area source growth.

One option for tracking the progress of the maintenance demonstration, provided here as an example, would be for the State to periodically update the emissions inventory. In this case, the maintenance plan should specify the frequency of any planned inventory updates. Such an update could be based, in part, on the annual AIRS update and could indicate new source growth and other changes from the attainment inventory (e.g., changes in vehicle miles travelled or in traffic patterns). As an alternative to a complete update of the inventory, the State may choose to do a comprehensive review of the factors that were used in developing the attainment inventory to show no significant change. If this review does show a significant change, the State should then perform an update of the inventory.

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[9]See references for modeling guidance cited in footnote 8.

Where the demonstration is based on modeling, an option for tracking progress would be for the State to periodically (typically every 3 years) reevaluate the modeling assumptions and input data. In any event, the State should monitor the indicators for triggering contingency measures (as discussed below).

e. Contingency Plan

Section 175A of the Act also requires that a maintenance plan include contingency provisions, as necessary, to promptly correct any violation of the NAAQS that occurs after redesignation of the area. These contingency measures are distinguished from those generally required for nonattainment areas under section 172(c)(9) and those specifically required for O_3 and CO nonattainment areas under sections 182(c)(9) and 187(a)(3), respectively. For the purposes of section 175A, a State is not required to have fully adopted contingency measures that will take effect without further action by the State in order for the maintenance plan to be approved. However, the contingency plan is considered to be an enforceable part of the SIP and should ensure that the contingency measures are adopted expediently once they are triggered. The plan should clearly identify the measures to be adopted, a schedule and procedure for adoption and implementation, and a specific time limit for action by the State. As a necessary part of the plan, the State should also identify specific indicators, or triggers, which will be used to determine when the contingency measures need to be implemented.

Where the maintenance demonstration is based on the inventory, the State may, for example, identify an "action level" of emissions as the indicator. If later inventory updates show that the inventory has exceeded the action level, the State would take the necessary steps to implement the contingency measures. The indicators would allow a State to take early action to address potential violations of the NAAQS before they occur. By taking early action, States may be able to prevent any actual violations of the NAAQS and, therefore, eliminate the need on the part of EPA to redesignate an area to nonattainment.

Other indicators to consider include monitored or modeled violations of the NAAQS (due to the inadequacy of monitoring data in some situations). It is important to note that air quality data in excess of the NAAQS will not automatically necessitate a revision of the SIP where implementation of contingency measures is adequate to address the cause of the violation. The need for a SIP revision is subject to the Administrator's discretion.

The EPA will review what constitutes a contingency plan on a case-by-case basis. At a minimum, it must require that the State will implement all measures contained in the Part D nonattainment

plan for the area prior to redesignation [see section 175A(d)]. This language suggests that a State may submit a SIP revision at the time of its redesignation request to remove or reduce the stringency of control measures. Such a revision can be approved by EPA if it provides for compensating equivalent reductions. A demonstration that measures are equivalent would have to include appropriate modeling or an adequate justification. Alternatively, a State might be able to demonstrate (through EPA-approved modeling) that the measures are not necessary for maintenance of the standard. In either case, the contingency plan would have to provide for implementation of any measures that were reduced or removed after redesignation of the area.

Summary

As stated previously, this memorandum consolidates EPA's redesignation and maintenance plan guidance and Regions should rely upon it as a general framework in drafting Federal Register notices. It is strongly suggested that the Regional Offices share this document with the appropriate States. This should give the States a better understanding of what is expected from a redesignation request and maintenance plan under existing policy. Any necessary changes to existing Agency policy will be made through our action on specific redesignation requests and the review of section 175A maintenance plans for these particular areas, both of which are subject to notice and comment rulemaking procedures. Thus, in applying this memorandum to specific circumstances in a rulemaking, Regions should consider the applicability of the underlying policies to the particular facts and to comments submitted by any person. If your staff members have questions which require clarification, they may contact Sharon Reinders at (919) 541-5284 for O_3- and CO-related issues, and Eric Ginsburg at (919) 541-0877 for SO_2-, PM-10-, and Pb-related issues.

cc: Chief, Air Branch, Regions I-X
John Cabaniss, OMS
Denise Devoe, OAQPS
Bill Laxton, TSD
Rich Ossias, OGC
John Rasnic, SSCD
John Seitz, OAQPS
Mike Shapiro, OAR
Lydia Wegman, OAQPS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OCT 18

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data

FROM: John S. Seitz, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Regional Office Air Division Directors

The purpose of this memorandum is to provide guidance on redesignating sulfur dioxide (SO2) nonattainment areas to attainment, in cases where the areas' historic violations were caused by major point sources of sulfur oxide (SOx) emissions that are no longer in operation. States in some cases have, with our approval, removed SO2 monitors from these areas immediately following the shutdown of the SOx emissions sources. In these cases, states face the prospect of continued nonattainment designations for areas where there is no reasonable basis for assuming that SO2 violations persist.

This guidance provides an approach for redesignating these areas to attainment in the absence of monitoring data and for exempting these areas from the maintenance plan requirements for continued monitoring within the areas. In addition, this policy describes how attainment and continued maintenance should be demonstrated and how sources currently shut down should be treated if they resume operations. Therefore, this policy amends portions of previous redesignation policies, including "Procedures for Processing Requests to Redesignate Areas to Attainment," memo from John Calcagni, AQMD Director, dated 9/4/92; "Section 107 Designation Policy Summary," memo from Sheldon Meyers, OAQPS Director, dated 4/21/83, pertaining to ambient air quality data showing attainment and maintenance of the SO2 National Ambient Air Quality Standards (NAAQS); and "Attainment Determination Policy for Sulfur Dioxide Nonattainment Areas," memo from Sally L. Shaver, AQSSD Director, dated 1/26/95. All other provisions of the previous redesignation policies still apply, including provisions relating to contingency measures.

The Environmental Protection Agency's (EPA) historic redisignation policy for SO2 has called for 8 quarters of clean ambient air quality data for redesignation to attainment. Although EPA has allowed as few as 4 quarters of ambient data if an acceptable modeling analysis has been performed.[1] Areas that lack SO2 monitors cannot meet even the requirement for 4 quarters of clean data. However, EPA believes that it is not a reasonable use of limited monitoring resources to reestablish monitors in order to collect at least 4 quarters of data in areas where violations of the SO2 NAAQS were caused by sources that no longer operate.

Despite the absence of clean air quality data, EPA believes that it may approve a State's request to redesignate such SO2 nonattainment areas to attainment provided that the State submits a maintenance plan that addresses certain criteria.

First, the plan should include 3 emissions inventories:

(a) An inventory representing actual emissions during the period when there were violations of the SO2 NAAQS;

(b) An inventory representing current actual and allowable emissions (or potential emissions, if there is no allowable emissions level); and

(c) An inventory projecting allowable emissions (or potential emissions, if there is no allowable emissions level) to the 10th year after redesignation.

The inventories should display emissions from each point source of SOx, with explanations of significant emissions changes, including source shutdowns.[2] The inventories should include SOx emissions from all SOx point sources in, and within a 50 kilometer range of, the nonattainment area boundary. Again, if there is no allowable emissions level, potential emissions should be used.

Second, the maintenance plan should include a dispersion modeling analysis of all SOx point sources in, and within 50 kilometers of, the nonattainment area boundaries using the emissions inventories described above and the techniques and data prescribed in 40 CFR 51 Appendix W. The modeling analysis should show that:

---

[1]See the Meyers memo referenced above. Both the Meyers and Calcagni memos recognize that for SO2 nonattainment areas monitoring data alone may not be sufficient for redesignating areas to attainment; dispersion modeling may be needed.

[2]The inventories should include other sources if they were included in the attainment demonstration.

(a) No SO2 NAAQS violations presently occur or can be projected to occur during the next 10 years anywhere within the nonattainment area; and,

(b) Point sources, which have since shut down, were the dominant sources contributing to high SO2 concentrations in the airshed.

Third, the maintenance plan should include evidence that if the SOx point source that caused the SO2 NAAQS violations in the past resumes operation, it would be considered a "new" source. Thus the maintenance plan should show that if this "new" SOx source would be a major source, it should obtain a permit conforming to applicable requirements of the Prevention of Significant Deterioration program before resuming operations; or if it would not be a major source, it should obtain a minor source permit under the State's SIP-approved minor source permitting rules in effect at the time it obtains a permit, before it may resume operation. The maintenance plan should provide that before such a permit is issued, the dispersion model should be re-run, using the same meteorological data base, to determine whether re-starting the source would interfere with maintenance, and should provide that the permit will not be issued if the model indicates that re-starting the source would interfere with maintenance.

Fourth, the maintenance plan should include commitments to resume ambient monitoring before any major source of SOx emissions commences operation.

This policy applies only to SO2 nonattainment areas because violations in such areas are generally dominated by relatively few point sources (such as copper smelters or power plants) and have insignificant area and mobile source emission contributions. As a result, there is a direct association between the point sources' emissions and ambient SO2 concentrations. Dispersion modeling will assure that SO2 NAAQS violations are no longer occurring and would not be expected to recur in the future.

This guidance memorandum does not impose binding, enforceable requirements on any party, and may not apply to a particular situation based upon the circumstances. The EPA retains the discretion to adopt approaches to addressing maintenance plan provisions that differ from this guidance where appropriate. Any final decisions by EPA regarding a particular SO2 maintenance plan will only be made in the context of a rulemaking action regarding that maintenance plan based upon the applicable statutory and regulatory provisions, which do contain legally binding requirements. Therefore, interested parties, including States, are free to raise questions and objections about the appropriateness of this guidance or the application of this guidance to a particular situation; EPA will consider whether or not the recommendations in the guidance are appropriate in that situation. The EPA welcomes public comments on this document at any time and will consider those comments in any future revision of this guidance document, which may occur without public notice.

I urge Regions to coordinate closely with OAQPS' Air Quality Standards and Strategies Division in determining whether SO2 redesignation requests may be subject to this policy and to ensure that states' submissions adequately address this and the previous policies' criteria for redesignating SO2 nonattainment areas to attainment.

cc: Lydia Wegman, AQSSD
David Mobley, EMAD
Joe Paisie, IPSG
Rich Ossias, OGC

SO2 Redesignation Policy Memo

Policy Purpose: To amend existing requirements for redesignating SO2 NAAs to attainment, in order to allow for redesignations where:

(1) past violations were due to emissions from a single source;
(2) the single source has shut down;
(3) all monitors have been removed.

Policy Approach: **Maintenance plan** must include:

(1) **emissions inventories** representing (a) actual emissions when violations occurred; (b) current emissions; and (c) emissions projected to the 10th year after redesignation.
(2) **dispersion modeling** showing (a) no NAAQS violations occur or can be projected for the next 10 years; and (b) the shutdown sources were the dominant cause of high concentrations in the past.
(3) evidence that if the shutdown sources resume operation they will be considered new sources and required to obtain a **PSD permit**
(4) **commitments to resume monitoring** before any major SOx source commences operation.

Policy Application: Restricted to SO2 NAAs because SO2 violations are frequently caused by a few point sources

Policy Benefits: Allows redesignation of several SO2 NAAs to attainment, without requiring collection of ambient data

From: Kurpius, Meredith
Sent: Friday, September 02, 2016 9:23 AM
To: Conchita Taitano <conchita.taitano@epa.guam.gov>; Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Lakin, Matt <Lakin.Matthew@epa.gov>; Lo, Doris <Lo.Doris@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Mann, Michael <Mann.Michael@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>
Subject: Tanguisson Redesignation Request, and SO2 modeling

Dear Ms. Taitano,

I am contacting you about two areas of Guam Environmental Protection Agency's (Guam EPA's) work on air quality with respect to sulfur dioxide (SO_2).

First, thank you for your submission of Guam EPA's redesignation request for the SO_2 nonattainment area around Tanguisson Power Plant in Dededo, Guam, dated May 13, 2016. We acknowledge that closure of the Tanguisson Power Plant directly affects present and future SO_2 emissions in the area. In accordance with Section 175A of the Clean Air Act, any request for redesignation must be accompanied by a revision of the applicable State implementation plan (SIP) to provide for the maintenance of the national primary ambient air quality standard in the area for at least ten years after the redesignation. The SIP should contain such additional measures, if any, as may be necessary to ensure such maintenance. Until U.S. EPA receives this maintenance plan, we are not able to act on Guam EPA's redesignation request.

Second, we appreciate Guam EPA's June 22, 2016 modeling protocol submission in accordance with U.S. EPA's SO_2 Data Requirements Rule for the 2010 1-Hour Primary Sulfur Dioxide National Ambient Air Quality Standard for the Piti-Cabras area. Per U.S. EPA guidance and the SO_2 Data Requirements Rule, we understand that Guam EPA has chosen to conduct modeling to characterize SO_2 emissions. Please be aware that, with this choice, Guam EPA no longer has the option to conduct ambient monitoring to meet the upcoming January 2017 air quality characterization deadline under the SO_2 Data Requirements Rule.

If you would like to discuss either of these topics further, please contact me at (415) 947-4534 or Doris Lo, manager of our Air Planning Office, at (415) 972-3959.

Regards,
Meredith

Acting Associate Director
EPA Region 9 Air Division

From: Mann, Michael
Sent: Tuesday, August 16, 2016 4:21 PM
To: Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Conchita San Nicolas Taitano <conchita.taitano@epa.guam.gov>
Subject: FW: Comment on Guam Protocol

Hafa Adai Roland,

Per our meeting with GPA during your visit, below are some additional comments from our Air Division on the GPA modeling protocol. Please review and forward to GPA if you concur. Let us know if you have any questions.

Thanks,
Michael

Michael Mann
Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505
Guam cell: (671) 929-1348
E-mail: mann.michael@epa.gov

From: Bohnenkamp, Carol
Sent: Tuesday, August 09, 2016 9:18 AM
To: Mann, Michael <Mann.Michael@epa.gov>
Subject: Comment on Guam Protocol

We have reviewed the protocol June 22, 2016 modeling protocol for the 1-hour SO2 NAAQS and have found that many of our concerns have been addressed. As discussed at our meeting with GEPA and GPA, there are still several issues where we need additional information to review the protocol. They are listed below.

1. Section 5: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

2. Section 7: We have reviewed Section 7: Background Concentrations and Appendix D. and we continue to have concerns about the supporting information that was provided in the protocol.

- Shipping emissions: As discussed in the protocol, the allowable sulfur content in fuel may not be reduced if fuels are not reasonable available. Therefore, the background concentration should account for the effect of shipping emissions.

- Ambient air monitoring: Although there may be are a number of hours with values of zero, the data in Appendix D. shows that there are high short term (3 hour) values that were measured at some of the monitoring site. Since the standard looks at 1-hour concentrations, specifically the 99th percentile of 1-hour daily maximum concentrations averaged over 3 years, the analysis should discuss the appropriate background for 1 hour maximum concentrations (99th percentile per year).

We would be available to discuss the information presented in Appendix D and other information to support an appropriate background concentration.

Carol Bohnenkamp
Gwen Yoshimura

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

To: estevenson@baaqmd.gov[estevenson@baaqmd.gov]
Cc: Kurpius, Meredith[Kurpius.Meredith@epa.gov]
From: YOSHIMURA, GWEN
Sent: Fri 4/15/2016 12:41:45 AM
Subject: RE: SO2 Martinez sources - modeling / monitoring / emissions limit?

Hi,

I should not have picked up the phone after 4pm today given how slowly my brain is going.

As I attempted to communicate to Kate on the phone, I think you can provide general language about how you are moving forward in your ANP. EPA will likely need to follow up with you, and likely ask for further information about your existing (or new) monitoring locations, per the SO2 monitoring TAD. If the information you provide at that time supports your existing monitoring locations, those existing monitors will then be sufficient to meet the DRR requirements and no further action will be needed. If the information provided indicates that other, logistically feasible monitoring locations represent the maximum concentrations, then new monitoring would be required. And, as we previously discussed, that outcome would likely put you into the Dec 2017 designation bin as getting those up by Jan 1st won't be possible.

What I need to clarify is whether such additional information provided post-2016 ANP, needs to go through public comment. Our typical ANP process would simply require you to include the information in your 2017 ANP. However, given the attention this rule is getting, some might prefer it go through public comment before January 1, 2017. I will look into this question and let you know.

During our previous conversations, you had mentioned a possibility of taking an emissions limit at the largest of the three sources. It sounded like that emissions limit would be tied to being able to bring in a different fuel type (and getting approval for bringing that via railroad), and was therefore a bit complicated. My previous email was an attempt to see if you were still considering this, or if you were going with monitoring. It sounds like you are going with monitoring, so thank you for that clarification.

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9

Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Eric Stevenson [mailto:EStevenson@baaqmd.gov]
Sent: Thursday, April 14, 2016 5:19 PM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Cc: Kurpius, Meredith <Kurpius.Meredith@epa.gov>
Subject: RE: SO2 Martinez sources - modeling / monitoring / emissions limit?

Gwen –

Kate was able to discuss this issue with me. I thought we were certainly clear regarding the difficulties of providing realistic documentation in our network plan that would have identified monitoring areas that related to Cmax. It would have been helpful to better outline this fact during our conversations and I am disappointed that you didn't share this expectation during our conversations. It doesn't serve anyone well if analysis is rushed and not of value (which in this case, even a rushed analysis of very questionable value would have been difficult).

Our network plan must be completed by the end of April to enable review, posting and response to any comments within the regulatory timelines and it is unrealistic to expect that we can describe our plans for this monitoring effort in the detail necessary for an adequate plan. That being said, we will do our utmost to provide you with our analysis by the 4th quarter of this year and sincerely hope that you stress that we were included in the requirements for this regulation just weeks ago when discussing our case with headquarters. Perhaps that may help them better understand our need for extra time.

Thanks for your consideration.

Eric

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Thursday, April 14, 2016 4:08 PM
To: Katherine Hoag <khoag@baaqmd.gov>; Eric Stevenson <EStevenson@baaqmd.gov>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>
Subject: SO2 Martinez sources - modeling / monitoring / emissions limit?

Hello!

Kate, I have some emails from you in my queue to answer. I wanted to make sure I didn't forget to ask though – have you all thought more about your potential approach to the three Martinez sources we listed as subject to the SO2 Data Requirements Rule? We're trying to get status updates from each of our affected agencies.

Thanks!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
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75 Hawthorne Street
San Francisco, CA 94105

To: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]
Cc: Kurpius, Meredith[Kurpius.Meredith@epa.gov]
From: Eric Stevenson
Sent: Fri 4/15/2016 12:18:53 AM
Subject: RE: SO2 Martinez sources - modeling / monitoring / emissions limit?

Gwen –

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Eric

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Thursday, April 14, 2016 4:08 PM
To: Katherine Hoag <khoag@baaqmd.gov>; Eric Stevenson <EStevenson@baaqmd.gov>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>
Subject: SO2 Martinez sources - modeling / monitoring / emissions limit?

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Thanks!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Lee, Anita
Location: R9SF-Room-18420-4-Round Valley
Importance: Normal
Subject: SO2 DRR Update Call - Navajo Nation EPA and Region 9
Start Date/Time: Thur 3/30/2017 9:00:00 PM
End Date/Time: Thur 3/30/2017 10:00:00 PM

Call in number: **Ex. 6 - Personal Privacy**

Conference Code: **Ex. 6 - Personal Privacy**

Draft Agenda

1. Update on designations schedule
2. Recap of 2011 Tribal Designations policy
3. Modeling received
4. Discussion of potential designations and boundaries

To: Charles.Spell@aps.com[Charles.Spell@aps.com]; rbisht@navajo-nsn.gov[rbisht@navajo-nsn.gov]; mzking@navajo-nsn.gov[mzking@navajo-nsn.gov]
Cc: Eric.Massey@aps.com[Eric.Massey@aps.com]; Lee, Anita[Lee.Anita@epa.gov]
From: Bohning, Scott
Sent: Thur 2/9/2017 10:20:58 PM
Subject: RE: FCPP SO2 emissions - call week of 2/13?

Raju & Chas -

Thanks for the replies... I'd like to at least get this conversation started, since we are face a Consent Decree-ordered deadline for the SO_2 designations.

Let's plan on Wed. 2/15 at 3 pm MST. I will send out a call-in number.

- Scott B.

From: Charles.Spell@aps.com [mailto:Charles.Spell@aps.com]
Sent: Thursday, February 09, 2017 11:37 AM
To: rbisht@navajo-nsn.gov; Bohning, Scott <Bohning.Scott@epa.gov>; mzking@navajo-nsn.gov
Cc: Eric.Massey@aps.com; Lee, Anita <Lee.Anita@epa.gov>
Subject: RE: FCPP SO2 emissions - call week of 2/13?

Hello Scott. I'm not available on Tuesday but I can be available on Wednesday at 3:00 p.m.

Chas

From: Raju Bisht [mailto:rbisht@navajo-nsn.gov]
Sent: Thursday, February 09, 2017 11:03 AM
To: Bohning, Scott; Spell, Charles M; Michael Z. King
Cc: Massey, Eric; Lee, Anita
Subject: RE: FCPP SO2 emissions - call week of 2/13?

USE CAUTION - EXTERNAL SENDER:(rbisht@navajo-nsn.gov)

Do not click on links or open attachments that are not expected.

For questions or concerns, please email the APS Cyber Defense Center team at ACDC@apsc.com
or contact the APS Helpdesk.

Hi Scott,

I am available on both Tues and Wed at 3pm next week. Mike is on travel this week and I am not aware of his schedule next week.

Raju

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Wednesday, February 8, 2017 4:39 PM
To: Charles.Spell@aps.com; Michael Z. King <mzking@navajo-nsn.gov>; Raju Bisht <rbisht@navajo-nsn.gov>
Cc: Eric.Massey@aps.com; Lee, Anita <Lee.Anita@epa.gov>
Subject: FCPP SO2 emissions - call week of 2/13?

Chas, Michael, & Raju -

As you will recall, there was some concern over the hourly SO_2 emissions that APS provided to AECOM for modeling under the SO_2 Data Requirements Rule (DRR). APS was the recalculating hourly emissions, and I would like to discuss how that would affect the modeling, updated if needed for the SO_2 designations process. Also would like to understand better what data was provided to AECOM originally.

Are there times next week (Mon. 2/13 - Fri. 2/17) when you could be available to discuss hourly SO_2 emissions? Please let me know.

I suggest Tues 2/14 or Wed 2/15 at 3 pm MST (2 pm PST).

I have too many meetings next week, but am currently free:

Mon. 2/13 all day

Tues. 2/14 9, 10 am, 12, 3, 4 pm MST (8, 9, 11 am, 2, 3 pm PST)

Wed. 2/15 9 am, 3 pm MST (8 am, 2 pm PST)

Thu. 2/16 9 am, 2 pm MST (8 am, 1 pm PST)

Fri. 2/17 all day

- Scott B.

--

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=

"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

--- NOTICE ---

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the use of this e-mail or attachments, or for any delay or errors or omissions in the contents which result from e-mail transmission.

To: Lee, Anita[Lee.Anita@epa.gov]
Cc: Tennille B. Begay[tbbegay@navajo-nsn.gov]; Michael Z. King[mzking@navajo-nsn.gov]; Prashanth Subburam[psubburam@navajo-nsn.gov]
From: Raju Bisht
Sent: Fri 3/31/2017 9:12:40 PM
Subject: RE: 2011 Guidance Document about Designating Separate Areas of Indian country

Hi Anita,

Just got back from the meeting with Eugenia. So yes, we would like Navajo Nation to be designated separately from the surrounding area. Based on the modeling submitted for NGS, NNEPA understands that there may be two separate different designations for the FCPP area and Page area. We understand that for all practical purposes, there is no real difference between a Unclassifiable/Attainment and Unclassifiable status. After all, the Navajo is unclassifiable for all the other pollutants anyway. When the notice comes out in August and if the President's office or the Council has concerns, NNEPA will try and clarify matters to them. If there are still concerns, we will submit comments and request to hold making designation for the NGS area until we are able to submit new modeling reports using the actual emission data. I also told her about a small area in southeastern Navajo which might be unclassifiable because of the emissions from Escalante. We are fine as long as there are no Non-Attainment areas on the Nation!

Let me know if I missed something that I need to get back to you with. Again, thanks for all your help.

Raju

From: Lee, Anita [mailto:Lee.Anita@epa.gov]
Sent: Friday, March 31, 2017 1:11 PM
To: Raju Bisht <rbisht@navajo-nsn.gov>
Subject: RE: 2011 Guidance Document about Designating Separate Areas of Indian country

Thanks for the update Raju! Have a great weekend!

Anita

From: Raju Bisht [mailto:rbisht@navajo-nsn.gov]
Sent: Friday, March 31, 2017 10:52 AM
To: Lee, Anita <Lee.Anita@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>
Subject: RE: 2011 Guidance Document about Designating Separate Areas of Indian country

Thank you Anita. Eugenia is not in and I am not sure if she will be in this afternoon. I will update her as soon as I get a chance and let you know what she thinks about what we discussed on the call yesterday.

Thanks again for giving us a heads up about these issues. Have a great weekend!

Raju

From: Lee, Anita [mailto:Lee.Anita@epa.gov]
Sent: Friday, March 31, 2017 11:26 AM
To: Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>
Subject: 2011 Guidance Document about Designating Separate Areas of Indian country

Hi Raju, Mike, Tennille, and Prashanth,

Attached is the 2011 guidance document from EPA that I summarized during our call yesterday. Thanks again for your availability to talk, and for the good discussion! We look forward to continuing the dialogue on SO2 designations.

Thanks very much, and happy Friday,

Anita

Anita Lee, PhD

Environmental Scientist

US EPA | Region 9 | Air Planning Office | 75 Hawthorne Street (Air-2) | San Francisco, CA 94105

(415) 972-3958

To: Michael Z. King[mzking@navajo-nsn.gov]
Cc: Raju Bisht[rbisht@navajo-nsn.gov]; Prashanth Subburam[psubburam@navajo-nsn.gov]; Lee, Anita[Lee.Anita@epa.gov]
From: Bohning, Scott
Sent: Thur 2/23/2017 5:30:27 PM
Subject: RE: FYI, NGS receptor description
NGS_receptors_all.png
NGS_receptors_10km.png
fences.png
NGS_SO2_DRR_receptors_170223.xls

Mike -

Attached is spreadsheet I used to attempt to get original receptor grid specifications from list of the discrete receptors used in the actual AERMOD modeling. I added some brief notes this morning, but we could also discuss on phone if you wish.

My understanding is that the model front ends, e.g. from Lakes or Bee-line, start with a grid definitions with various receptor spacings, but then convert them to discrete receptors so you get holes in the grids. E.g. 4 km-wide square hole in the 20 km-wide square receptor grid, since the inner square is already covered by the more finely spaced 4 km-wide square receptor grid.

Basically, receptors for a given grid are all together, so the distances (horizontal, vertical, radial) between adjacent ones repeat a bunch of times and you can tell they are part of the same subset of receptors. Or, for polar grid, check distance from overall midpoint, to get the groupings into 30, 40 km, etc. circles. Really need to have a spatial plot to guide the process. Maybe there is be a better way to figure out the separate grids are; this was pretty labor-intensive, especially dealing with the fence line receptors. I sometimes used to do a simpler procedure back when I was reviewing new source permits. But I kind of got carried away this time -- main goal was just to check the squares and their spacing... this is what I do for fun on my days off. (sometimes!) I guess if you have the software front-end that was used, it can tell all this from its own input files...

I also attached two plots I made of the resulting receptors using Golden Software's Surfer, and an initial one when I was trying to work out the fence lines (starting points of f1, f2, etc. segments identified in spreadsheet). I could send you the corners of the rectangles if you wish, but I have them on my computer at home.

- Scott B.

From: Michael Z. King [mailto:mzking@navajo-nsn.gov]
Sent: Thursday, February 23, 2017 7:46 AM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Raju Bisht <rbisht@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>; Lee, Anita <Lee.Anita@epa.gov>
Subject: RE: FYI, NGS receptor description

Hello Scott,

This is very helpful. I will update our summary report with the information you provided. Can you provide the receptor list spreadsheet that you used to determine distance between each receptor? I appreciate all your assistance.

Thank you,

Mike

From: Bohning, Scott <Bohning.Scott@epa.gov>
Sent: Wednesday, February 22, 2017 9:10 AM
To: Michael Z. King
Cc: Raju Bisht; Prashanth Subburam; Lee, Anita
Subject: FYI, NGS receptor description

Michael -

I finally got around to checking NGS receptor placement in the modeling files vs. in the text

description. Here is what I found:

100 m spacing to 2 km

200 m spacing to 10 km (not 5 km)

500 m spacing to 20 km (not 10 km)

1 degree angular spacing on rings at 30, 40, 50, and 80 km

FYI, I determined this by eyeballing at a plot of receptors, also by putting receptor list into spreadsheet and using formulas to show distance between each receptor and the one next to it in the list, and also distance from NGS (x-distance, y-distance, and actual distance).

As for FCPP, I don't think this issue affects the adequacy of the modeling submittal, just the text description of the receptors.

- Scott B.

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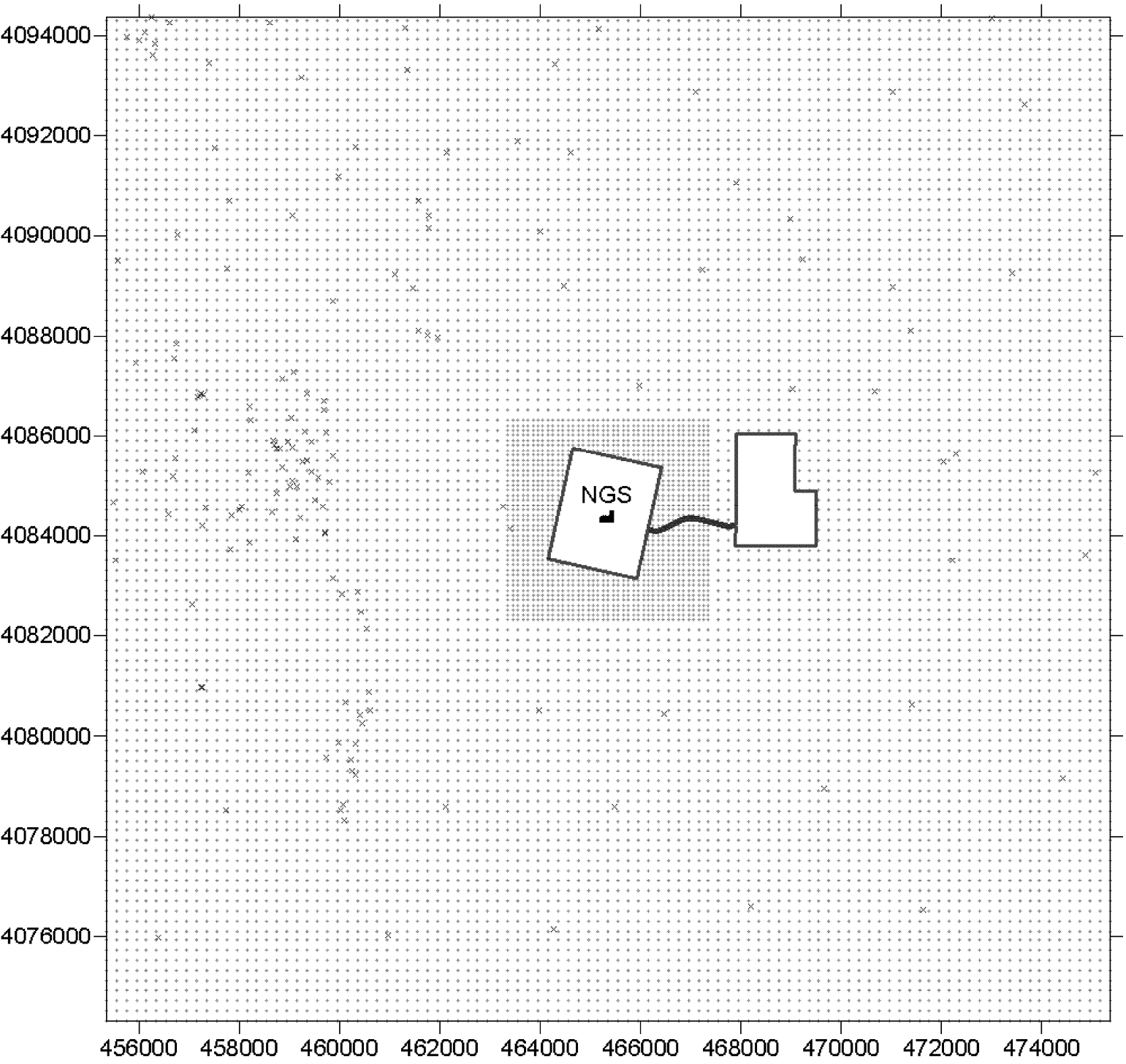
"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

NGS SO_2 Receptors within 10 km

EIS and NNEPA DRR modeling

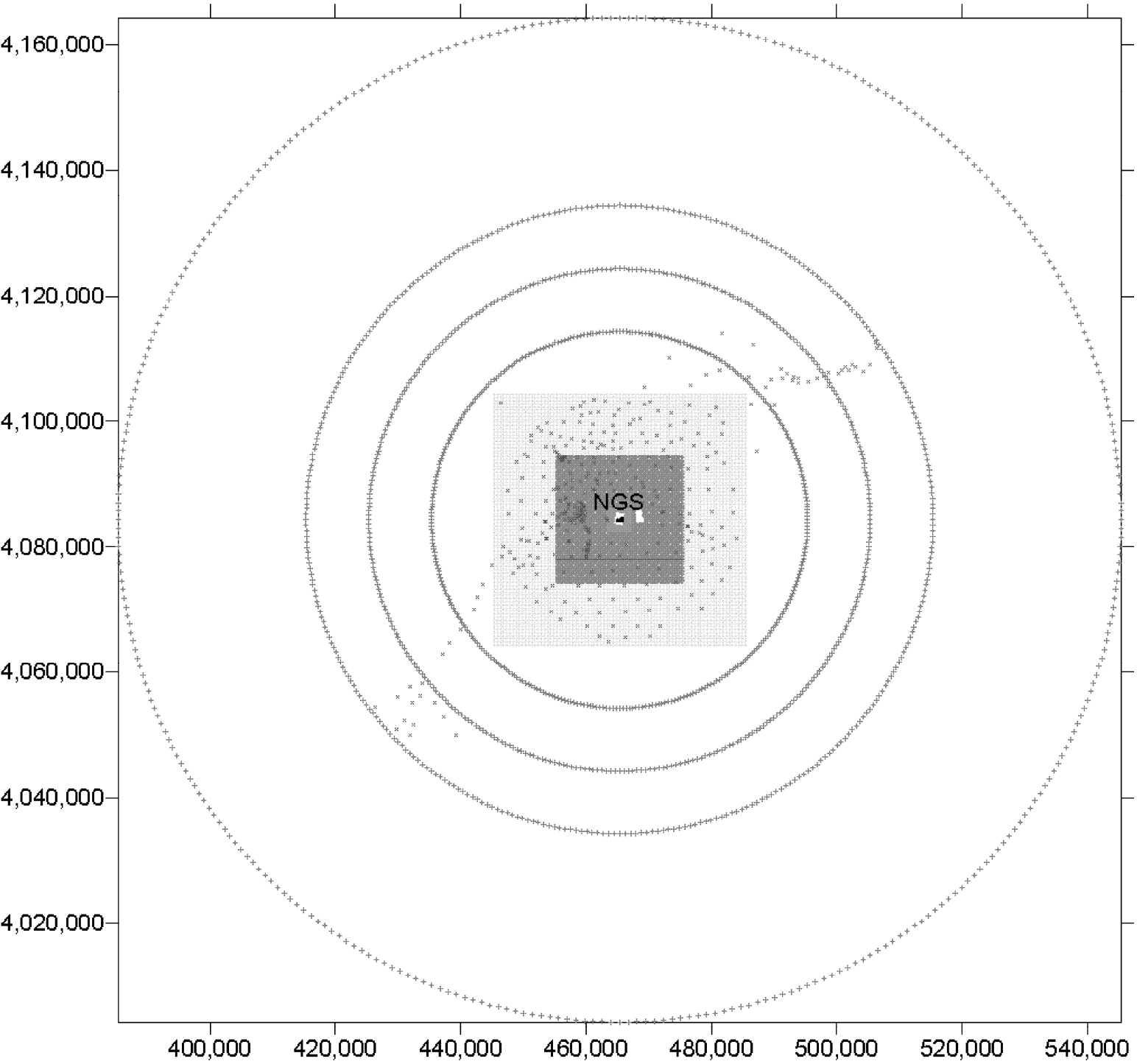


squares w/100 m spacing out to 2 km, 200 m spacing out to 10 km
plus fenceline receptors, incl. along road
UTM zone 12, NAD83
SW corner 385355, 4004315
NE corner 545355, 4164315

NGS_receptors_10km.srf sjb 2017-02-22

NGS SO_2 Receptors - All

EIS and NNEPA DRR modeling



19629 receptors, 160 km x 160 km
squares out to 2, 10, 20 km (100, 200, 500 m spacing)
rings at 30, 40, 50, and 80 km; 1 degree angular spacing
plus 369 discrete receptors (fenceline receptors not shown)
UTM zone 12, NAD83
SW corner 385355, 4004315
NE corner 545355, 4164315

NGS_receptors_all.srf sjb 2017-02-20

To: Bohning, Scott[Bohning.Scott@epa.gov]
Cc: Heckel Kyle C[Kyle.Heckel@srpnet.com]; Viswanathan, Krishna[Viswanathan.Krishna@epa.gov]; Lee, Anita[Lee.Anita@epa.gov]; Michael Z. King[mzking@navajo-nsn.gov]; Prashanth Subburam[psubburam@navajo-nsn.gov]; eugeniaquintana@navajo-nsn.gov[eugeniaquintana@navajo-nsn.gov]
From: Raju Bisht
Sent: Tue 10/25/2016 10:48:47 PM
Subject: Re: NGS_SO2_DRR_Modeling

Scott,
I am out on inspections. Thanks a lot for all your help clarifying this. I will continue to coordinate with Kyle regarding this and move things forward.
Raju

Sent from my Verizon Wireless 4G LTE DROID

"Bohning, Scott" <Bohning.Scott@epa.gov> wrote:

Raju -

Thanks for your email, sounds like we are on the same page for the most part.

FYI, I mainly sent AECOM FCPP information as an example of information that it would be good to have so we can better document our action for the SO2 DRR (& also enable us to re-run it if needed)... did not intend it to be directions to anyone on how modeling needs to be done for NGS. I think relying as much as possible on the existing EIS work for NGS is still the way to go, and we are not asking SRP to do any new modeling.

Per previous discussions here in R9, we are OK with using the existing modeled meteorology years per the EIS, rather than redoing to the most recent years. There is flexibility under the SO2 modeling Technical Assistance Document ("TAD") on that, and also additional flexibility given that this is a tribal area. We don't see much benefit to redoing all the meteorological data processing. As for emission rate, one can use actual or allowable emissions, and since here the EIS modeling used the allowable 0.1 lb/MMbtu SO2 emission limit, that is OK, too.

The only problem I see at this point is that the EIS modeling used the AERMOD "ADJ_U*" beta option. That may get approved very soon in our final revisions to "Appendix W" (Guideline on Air Quality Models, 40 CFR 51 App. W), but is not guaranteed. So, the fall-back

options are 1) get case-by-case approval via official Model Clearinghouse memo & documentation to EPA OAQPS, or 2) remodel with default, non-beta model options. I will pursue #1, but would like to be able to pursue #2 if needed -- that might actually be easier than #1 if I have the files used in the EIS modeling.

Kyle left me a voice message yesterday, and I spoke with him this morning (Tues. 10/25). I passed along some of the above to him, and he said he would speak with SRP's consultant about putting some modeling files and documentation together for all of us.

Sorry if I have not been clear on our thinking as things unfold... but it looks like we're actually in pretty good shape for both FCPP and NGS.

- Scott B.

P.S. FYI, I will be on leave mostly out of town starting Thurs. 10/27 - Fri. 11/4 (returning Mon 11/7)

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"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Raju Bisht [mailto:rbisht@navajo-nsn.gov]
Sent: Monday, October 24, 2016 3:17 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Heckel Kyle C <Kyle.Heckel@srpnet.com>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Michael Z. King

<mzking@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov
Subject: RE: NGS_SO2_DRR_Modeling

Hi Scott,

I have cc'd Kyle on this email so that SRP is also clear as to what you are requiring them to do at this time. I was informed that for the NGS EIS modeling, the MET data used was for the years 2008 to 2012 I believe. The emissions used was the max permitted lb/MMBTU limits. So, if you believe that these data would be comparable to what would be required for the SO2 DRR requirements, they could probably work on providing you with what you are requesting for but would differ from what AECOM did for FCCP since the actual hourly emissions for the recent years was not used. I believe they are requesting clarification on if anything needs to be done differently for SO2 DRR than what has been done for the EIS study.

Please feel free to request any more information from Kyle. Kyle, please feel free to correct me if I have not interpreted what we talked about correctly.

Thank you. Raju

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Thursday, October 20, 2016 9:51 AM
To: Raju Bisht <rbisht@navajo-nsn.gov>
Cc: Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>; Eugenia Quintana <eugeniaquintana@navajo-nsn.gov>
Subject: RE: NGS_SO2_DRR_Modeling

Raju -

Thanks for looking into this!

- Scott B.

From: Raju Bisht [mailto:rbisht@navajo-nsn.gov]
Sent: Thursday, October 20, 2016 7:50 AM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov
Subject: RE: NGS_SO2_DRR_Modeling

Scott,

The person coordinating these modeling studies at SRP will only be back at work on Monday. We won't know till next week what they have to say.

Thanks.

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Wednesday, October 19, 2016 5:32 PM
To: Raju Bisht <rbisht@navajo-nsn.gov>
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- Scott B.

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Subject: RE: NGS_SO2_DRR_Modeling

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Thanks. Raju

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By the way, the attachment "2008-2012_aermet.zip" was removed... - our e-mail system strips all incoming and outgoing ".zip" and ".jpg" files on the dubious grounds that they may contain a virus. I'd appreciate if you'd resend that, but with renamed to have a different extension, like ".zi".

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From: Raju Bisht
Sent: Thur 10/20/2016 2:49:54 PM
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Scott,

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I'd like to be able to at least rerun the model if needed, for which I would need KPGA.2008.SFC and KPGA.2008.PFL in addition to the ones I already have. But also would like to check how the meteorological data processing was done, and also check various things against the description in the EIS modeling report.

But I think it would be best for our records to just request all the input files.

- Scott B.

From: Raju Bisht [mailto:rbisht@navajo-nsn.gov]
Sent: Wednesday, October 19, 2016 12:20 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov
Subject: NGS_SO2_DRR_Modeling

Hi Scott,

Did you have any particular additional input files in mind that you want from SRP or should we just generally reach out and request them for all the input files used in their modeling? I have also attached all the files that were forwarded to you so far.

Thanks. Raju

Modeling Archive Files for Four Corners Power Plant (Units 4&5) 1-hour SO_2 AERMOD Modeling
July 2016

AERMET

The 10-meter surface meteorological data from Navajo Met Tower 1, Farmington airport (used for cloud cover) and upper air data from Albuquerque were processed with AERMET.

AERSURFACE

Contains files used to process the land use data around the site Met Tower 1 for input into Stage3. AERSURFACE was run for all three surface moisture conditions – average, wet, and dry.

- AERSURFACE.bat : Batch file when executed run AERSUFACE
- aersurface.exe : AERSURFACE executable (Version 13016)
- *.DAT : AERSURFACE input file
- *.out : AERSURFACE output file
- *.log : AERSURFACE output – log file
- *.xlsx : AERSURFACE climatology worksheet for Stage 3 inputs

ISH_Farmington

- *.ISH : Integrated Surface Hourly (ISH) format of the surface data

FSL_Albuquerque

- *.FSL : Twice-daily upper air soundings

Run default

AERMET processing input and output files with the default option.

"Navajo Met 1 2012-2014 data filled with Met 2.xlsx" spreadsheet with the onsite data. The Met Tower 1 data was filled here with the Met Tower 2 data.

- *.exe : AERMET executable
- *.dat : Onsite data
- *.INP : AERMET input files for Stage 1, 2 and 3
- *.QA : AERMET upper air and surface quality assessment files
- *.RPT1 : AERMET report file for Stage 1
- *.RPT2 : AERMET report file for Stage 2
- *.RPT3 : AERMET report file for Stage 3
- *.MSG1 : AERMET message file for Stage 1
- *.MSG2 : AERMET message file for Stage 2

ED_001261_00074091

- *.MSG3 : AERMET message file for Stage 3
- *.MRG : AERMET Stage 2 merged file
- *.bat : Batch file to run AERMET
- .PFL : Upper Air data file for AERMOD
- .SFC : Surface data file for AERMOD

AERMAP

This folder contains AERMAP (version 11103) files used to process terrain data to produce the receptor elevations and critical hill heights for use in AERMOD.

- *.ast : AERMAP output file for the Cartesian grid receptors
- *.api : AERMAP input file for the Cartesian grid receptors
- *.ROU : AERMAP file containing Cartesian grid receptor elevations and Critical hill heights (input to AERMOD)

Note that the raw terrain data files are not provided because of their large size. It is downloaded automatically by Lakes AERMAP program in USGS NED GeoTIFF format.

GEP

This folder contains BPIP input and output files. BPIP Version 04274 was used.

- *.bpi : BPIP input file
- *.pro : BPIP output file
- *.sup : BPIP summary file

Emissions and Stack Data

- "Unit 45_2012_2013_2014.xlsx" AERMOD hourly emissions, temperature and velocity file for Unit 4 and 5. Weighted temperature and velocity were calculated here for the combined units. The data from this spreadsheet was used to produce the *.prn file for AERMOD.

Ambient Data

- "Shiprock Substation Season Hour-of-Day.xlsx" Excel spreadsheet provides calculation of the season and hour-of-day SO_2 monitoring data for input to AERMOD.

AERMOD

This folder contains AERMOD files with the default option.

- *.inp : AERMOD input file
- *.out : AERMOD output file
- *.prn : AERMOD hourly emissions/temp/velocity file
- *.ROU : AERMAP receptor file

- *.PLT : AERMOD plot file for making isopleths
- RUN.BAT : Batch file to execute AERMOD

FCPP 1-hr SO2 Modeling Archive July 2016.zip

FCPP Modeling Archive Readme.doc

AERMAP\
- FCPP_with_Hogback_Ridge.api
- FCPP_with_Hogback_Ridge.ast
- FCPP_with_Hogback_Ridge.ROU

AERMET\
- AERSURFACE\
  - aersurface.exe
  - albedo_bowen_domain.txt
  - ave.DAT
  - ave.log
  - ave.out
  - dry.DAT
  - dry.log
  - dry.out
  - Navajo_Met1_AERSURFACE_r1.xlsx
  - roughness_domain.txt
  - run.bat
  - Thumbs.db
  - tiff_debug.txt
  - wet.DAT
  - wet.log
  - wet.out
- FSL_Albuquerque\
  - ABQ_2012-2014.FSL
- ISH_Farmington\
  - 723658-23090-2012-2015.ish
- run default\
  - aermet.exe
  - Discarded_ISHD_Records.dat
  - MET.MRG
  - METI_12-14.PFL
  - METI_12-14.SFC
  - METI_12.PFL
  - METI_12.SFC
  - METI_13.PFL
  - METI_13.SFC
  - METI_14.PFL
  - METI_14.SFC
  - Navajo Met 1 2012-2014 data filled with Met 2.xlsx
  - Onsite_Navajo_Met1.dat
  - OS.QA
  - run_AERMET.bat
  - SF.EXT
  - SF.QA
  - STAGE1.ERR
  - STAGE1.inp
  - STAGE1.REP
  - STAGE2.ERR

STAGE2.inp
STAGE2.REP
STAGE3_12.ERR
STAGE3_12.inp
STAGE3_12.REP
STAGE3_13.ERR
STAGE3_13.inp
STAGE3_13.REP
STAGE3_14.ERR
STAGE3_14.inp
STAGE3_14.REP
UA.EXT
UA.QA

AERMOD\
FCPP_Stack4&5_2012-2014.prn
FCPP_with_Hogback_Ridge.ROU
Stack4&5 Only\
Default\
aermod.exe
FCPP_1hr_SO2_Default.inp
FCPP_1hr_SO2_Default.out
FCPP_1hr_SO2_Default.PLT
run.bat

Ambient Data\
Shiprock Substation Season Hour-of-Day.xlsx

Emissions and Stack Data\
Unit 45_2012_2013_2014.xlsx

GEP\
FCPP.bpi
FCPP.pro
FCPP.SOU

To: Bohning, Scott[Bohning.Scott@epa.gov]
Cc: Viswanathan, Krishna[Viswanathan.Krishna@epa.gov]; Lee, Anita[Lee.Anita@epa.gov]; Michael Z. King[mzking@navajo-nsn.gov]; Prashanth Subburam[psubburam@navajo-nsn.gov]; eugeniaquintana@navajo-nsn.gov[eugeniaquintana@navajo-nsn.gov]
From: Raju Bisht
Sent: Wed 10/19/2016 7:52:16 PM
Subject: RE: NGS_SO2_DRR_Modeling
KPGA.2008.PFL
KPGA.2008.SFC
KPGA.2009.PFL
KPGA.2009.SFC
KPGA.2010.PFL
KPGA.2010.SFC
KPGA.2011.PFL
KPGA.2011.SFC
KPGA.2012.PFL
KPGA.2012.SFC

Hi Scott,

Please see if this works for you and let me know if there are any more specific files that you require. I will wait for your reply before I reach out to SRP.

Thanks. Raju

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Wednesday, October 19, 2016 1:33 PM
To: Raju Bisht <rbisht@navajo-nsn.gov>
Cc: Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Prashanth Subburam <psubburam@navajo-nsn.gov>; Eugenia Quintana <eugeniaquintana@navajo-nsn.gov>
Subject: RE: NGS_SO2_DRR_Modeling

Raju -

I guess Anita called you about the additional modeling files.... Thanks for these, and actually I think I just had the ".recs" and ".in" files.

By the way, the attachment "2008-2012_aermet.zip" was removed... - our e-mail system strips all incoming and outgoing ".zip" and ".jpg" files on the dubious grounds that they may contain a

virus. I'd appreciate if you'd resend that, but with renamed to have a different extension, like ".zi".

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Did you have any particular additional input files in mind that you want from SRP or should we just generally reach out and request them for all the input files used in their modeling? I have also attached all the files that were forwarded to you so far.

Thanks. Raju

To: Meredith Kurpius[Kurpius.Meredith@epa.gov]; McKaughan, Colleen[mckaughan.colleen@epa.gov]; Withey, Charlotte[Withey.Charlotte@epa.gov]
From: Lee, Anita
Sent: Thur 4/27/2017 4:28:15 PM
Subject: Update on Guam SO2 DRR/Designations Modeling
Re: New Methodology

Hi Meredith, Colleen, and Charlotte,

We received the following draft report from Guam with the results from the new modeling (using AERMOD v. 16216r and estimated actual emissions) (attached). Carol, Gwen, and I discussed briefly, and here are our recommendations for responding to Guam. We wanted to run it by you all, and see if you are fine with Carol sending this email out, or Meredith, if you prefer to do that. Please also let us know if you want to chat before we respond to Guam.

[EMAIL TO ROLAND]

Dear Roland,

Thank you for providing the draft revised modeling report based on the use of AERMOD version 16216r and estimated actual emissions. From our preliminary review,

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

If it would be helpful to discuss by phone, please let me know and we can work to set up a call.

Thank you,

[End of email to Roland]

Ex. 5 - Deliberative Process

Thanks!!

Anita

Anita Lee, PhD

Environmental Scientist

US EPA | Region 9 | Air Planning Office | 75 Hawthorne Street (Air-2) | San Francisco, CA 94105

(415) 972-3958

To: Bohnenkamp, Carol[Bohnenkamp.Carol@epa.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Conchita Taitano[conchita.taitano@epa.guam.gov]; Lee, Anita[Lee.Anita@epa.gov]
From: Roland Gutierrez
Sent: Wed 4/26/2017 12:24:22 AM
Subject: Re: New Methodology
Modeling report revision DRAFT 04 24 2017.pdf

All,
Attached is the revised modeling report for the DRR. Please review and provide comments.

Thank you,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531
epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Thu, Apr 6, 2017 at 12:42 AM, Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov> wrote:

Roland,

Thank you for your timely responses. Based on the clarifications you provided, we believe the revised procedures "Proposed Hourly Varying Emissions for Guam Power Authority Data Requirements Rule SO_2 NAAQS Designation Modeling; Revised March 3, 2017," which you provided to use on March 19, 2017, are appropriate and represent your determination for the most appropriate method for estimating sulfur content of fuel burned. Our understanding is that you will be using this version as the final protocol, but please send us the final version if anything further has changed.

Carol Bohnenkamp

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Thursday, March 30, 2017 6:12 PM
To: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Conchita Taitano <conchita.taitano@epa.guam.gov>; Lee, Anita <Lee.Anita@epa.gov>
Subject: Re: New Methodology

Carol,

Here is the response in blue:

1. To simplify the calculation when LSFO is used, the standard sulfur content for LSFO (0.0015) can be used for periods when LSFO is burned.

GPA: This is actually ULSD, not LSFO as it is referring to the TEMES #7 CT which burns ULSD exclusively. We will use 0.0015 in the calculations

2. Regarding the HSFO calculations, in lieu of the one-month offset you suggested in your revised methodology, we are considering a couple of alternative options.

a. How much does the sulfur content of HSFO vary? Do you have a known range for the HSFO? If the sulfur content doesn't vary much, then we would recommend just using the highest value of the range. Otherwise, we would recommend figuring out some method for determining the average sulfur content. (See 2.b. below for a clarifying question, and one method that might provide a representative estimate of the sulfur content of the bulk storage tanks.)

GPA: Our sulfur content varies a lot. See attached monthly analysis. We receive LSFO less often, so you will see LSFO remain constant for a few months at a time.

b. We understand that you are trying to determine the sulfur content of the fuel when it is burned, based on records of the sulfur content of the fuel when it is added to the bulk storage tanks.

i. We are curious how often the Residual Fuel Oil Receiving Reports are received?

GPA: We normally receive RFO shipments on a monthly basis. Analysis is performed every time a new shipment arrives. The sample is taken from the bulk storage tanks after fuel has been transferred from the ship.

ii. Would an average of sulfur content over the 30 day time period (or another time period, maybe based on the residence time of fuel in the tank?) more accurately reflect the sulfur content of the fuel being burned, if you are assuming that fuel oil in the tank gets well-mixed?

GPA: Annual average based on monthly analysis. See attached sulfur content summary.

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Tue, Mar 28, 2017 at 8:32 AM, Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov> wrote:

Roland,

Thank you for providing the additional information and clarifications – it looks good! We have a just few questions/suggestions related to 4.c.

1. To simplify the calculation when LSFO is used, the standard sulfur content for LSFO (0.0015) can be used for periods when LSFO is burned.

2. Regarding the HSFO calculations, in lieu of the one-month offset you suggested in your revised methodology, we are considering a couple of alternative options.

a. How much does the sulfur content of HSFO vary? Do you have a known range for the HSFO? If the sulfur content doesn't vary much, then we would recommend just using the highest value of the range. Otherwise, we would recommend figuring out some method for determining the average sulfur content. (See 2.b. below for a clarifying question, and one method that might provide a representative estimate of the sulfur content of the bulk storage tanks.)

b. We understand that you are trying to determine the sulfur content of the fuel when it is burned, based on records of the sulfur content of the fuel when it is added to the bulk storage tanks.

i. We are curious how often the Residual Fuel Oil Receiving Reports are received?

ii. Would an average of sulfur content over the 30 day time period (or another time period, maybe based on the residence time of fuel in the tank?) more accurately reflect the sulfur content of the fuel being burned, if you are assuming that fuel oil in the tank gets well-mixed?

Carol Bohnenkamp

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Sunday, March 26, 2017 6:22 PM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Conchita Taitano <conchita.taitano@epa.guam.gov>
Cc: Lee, Anita <Lee.Anita@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>
Subject: Re: New Methodology

Hi Gwen,

Just following up on the responses we sent. We wanted to see if we have approval to begin the updated modeling with the revised modeling methodology. Please advise soonest.

Thank you,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Tue, Mar 21, 2017 at 12:30 AM, YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov> wrote:

> Thank you Roland. We'll take a look and get back to you.
>
> -Gwen

Gwen M. Yoshimura

Acting Manager, Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Sunday, March 19, 2017 5:02 PM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>
Subject: New Methodology

Gwen/Anita

Here is the response. Sorry it took a while.

∀ On page 3. Please clarify what [0.0015 (Sulfur % wt)] / [1000 gallons] means in the equation:

We had erroneously used AP42 Table 1.3-1 which is for External Combustion Sources. The correct AP42 Factor to use is Table 3.1-2a Stationary Gas Turbines

The Correct formula is

SO2 Emissions (lbs/hr) = [Fuel Use (1000 gallons/hour)] * [139 MMBtu/gallons]*[1.01 * 0.0015 lb/MMBtu]

= [Fuel Use (1000 gallons/hour)] * [0.211 (lb/1000 gallon)]

∀ Page 5, Item 3.C "date received".

This is now item 4.C. A step was added that improves data accuracy

Here is the situation for Cabras. Fuel is transferred from the ship to the bulk storage tank (1934 & 1935). After transfer, a sample is taken from the bulk storage tank for analysis. This analysis now gives us the current sulfur concentration of the fuel. We normally have daily deliveries of fuel from the Bulk Storage to the Day Tanks at the power plant. So whatever is in the Bulk Storage Tanks will start to fill into the Day Tanks at the plant and completely replace the old fuel within 3 - 4 days.

We may also have to consider that it may take a while for the fuel in the Bulk Storage to be fully mixed. Using the sulfur analysis for the following month. So we may want to delay using the new sulfur analysis by one month.

Attached is the revised Procedures.

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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SO_2 NAAQS DESIGNATIONS MODELING ANALYSES, RESULTS AND DOCUMENTATION FOR THE GUAM POWER AUTHORITY PITI AND CABRAS POWER STATIONS

Prepared for

Guam Power Authority

Prepared by

TRC

TRC Project No. 261003.0000.00020

Revised April 2017

TRC
21 Griffin Road North
Windsor, Connecticut 06095
Telephone 860-298-9692
Facsimile 860-298-6399

DRAFT

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APPENDICIES

A BPIPPRM Output

B-1 AERMINUTE Input File

B-2 AERMET Input File

B-3 AERMAP Input File

B-4 AERMOD Input File

C Quality Control and Quality Assurance Manual for the Cabras Power Plant Meteorological Monitoring Program

D Ambient Air Quality Monitoring Network Annual Data Report for October 1999-September 2000

E Hourly Emission Protocol (Data Included In Digital Modeling Files)

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1.0 INTRODUCTION

In accordance with the "Data Requirements for Characterizing Air Quality for the Primary SO_2 NAAQS[1]" (Data Requirements Rule - DRR) the Piti and Cabras Guam Power Authority (GPA) electrical generating stations are "applicable sources" and thus subject to an air quality review either by dispersion modeling or air quality monitoring. The purpose of the air quality review is to support the U.S. Environmental Protection Agency (EPA) and the Guam EPA (GEPA) in establishing the sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) attainment status for the areas on the Territory of Guam that may be significantly impacted by SO_2 emissions from these applicable sources. GPA was advised by GEPA that the preferred path to complying with the DRR is through a dispersion modeling analysis. EPA has also established a schedule for the modeling demonstration which required submittal of a modeling protocol to EPA no later than July 1, 2016 and modeling results analyses no later than January 13, 2017. GPA asked TRC Environmental Corporation (TRC) to assist with preparation of the required modeling protocol, subsequent performance of the modeling analyses and preparation of this modeling analyses report in compliance with the applicable DRR requirements. A timely modeling protocol was submitted by GPA in June 2016. It was reviewed and commented on by GEPA and EPA. Comments were considered and concurrence on a final modeling protocol was achieved as documented in an Addendum to the modeling protocol dated October 2016.

A timely modeling report and analysis was submitted by GPA in January 2017. It was reviewed and commented on by GEPA and EPA. Meetings between GPA and GEPA led to a request that the new version of AERMOD (version 16216r) and new version of AERMET (version 16216 with friction velocity adjustments) be used and that actual hourly emission rates for GPA sources be developed and used in a revised modeling analysis. Subsequently, a procedure for development of hourly emission rates was submitted by GPA in April 2017. That hourly emission rate calculation protocol was accepted by GPA and EPA and it is included as Appendix E of this report with associated data included in the digital modeling file package provided with this report.

This document provides a summary of the revised modeling analyses performed per the comments received on the January 2017 modeling report, the results of the revised analyses and related supporting modeling files.

[1] 40 CFR 51.1200.

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On March 24, 2011 EPA issued "Modeling Guidance for SO_2 NAAQS Designations" as part of the "Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards" (Modeling Guidance) and subsequently issued the DRAFT SO_2 NAAQS Designations Modeling Technical Assistance Document (TAD, December 2013, February 2016 and August 2016), Data Requirements Rule for the 1-Hour Sulfur Dioxide (SO_2) Primary NAAQS (Proposed Rule May 13, 2014; Final Rule August 21, 2015), and Updated Guidance for Area Designations for the 2010 Primary Sulfur Dioxide NAAQS (March 20, 2015). The modeling protocol and January 2017 modeling report followed the above guidance and established the methodology used and data applied to model the impacts from the applicable sources. The modeling analyses performed and presented herein are in conformance with the agreed upon modeling protocol and the comments received on the January 2017 report and considered the following influencing factors:

- Emission inventory: in addition to the sources considered "applicable sources" at the Piti and Cabras power plants, at the request of EPA nearby vessels at the Port of Guam and the Naval Base Guam that may contribute to ambient air SO_2 concentrations were also included.
- Hourly emissions: hourly estimates of actual emissions were developed for each applicable source, following GEPA and GPA discussion of the January 2017 report.
- The modeling domain included the entire Island of Guam.
- The recommended air dispersion modeling system, AERMOD, and related modeling processors and implementation guidance were used and applied as discussed in the modeling protocol and the protocol addendum. The latest versions of AERMOD (16216r) and AERMET (16216) with adjusted surface friction velocity (ADJ_U*) were used following GEPA and GPA discussion of the January 2017 report.
- The entire Island of Guam was overlaid with model receptors as appropriate and recommended in the EPA TAD.
- Three contiguous years of on-site meteorological data were used for the modeling analyses.
- Appropriate background concentration value was developed and applied to the modeled design values to determine total ambient concentrations at each receptor.
- Modeling results are presented in tabular form and illustrated in figures presented herein. Modeling input and output files are provided in digital media attached to this report.

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The modeling analyses results, based on actual hourly emission rates and conservative modeling assumptions, indicate modeled violations of the one-hour SO_2 NAAQS. Details of the above modeling factors and modeling results are provided in the following sections of this report.

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2.0 EMISSION INVENTORY AND SOURCE DATA

GPA owns a number of power generation facilities on Guam, including the plants associated with the 1971 SO_2 NAAQS non-attainment area and subject to the DRR: two (2) Cabras Power Plants as well as six (6) other power plants on the island, Dededo, Macheche, Manenggon, Talofofo, Tenjo, and Yigo. Energy Conversion Agreements between GPA and Independent Power Producers are in place for two other power plants that are also located in the 1971 SO_2 NAAQS non-attainment area and subject to the DRR: MEC and TEMES plants, both located at Piti. On Guam, virtually all of the SO_2 emissions are produced by fuel oil combustion. The bulk of those emissions are produced by stationary sources, the largest of which are power generating facilities. Additional sources of SO_2 emissions include fuel combustion in transportation vessels calling on the Port of Guam and the Naval Base Guam and motor vehicles. There are only a few industrial facilities with fuel burning sources of SO_2 emissions. Most of these sources use ultra-low sulfur (15 ppm) diesel oil (ULSD). The two largest sources of SO_2 emissions on Guam are the Cabras and Piti power generating facilities which are located in close proximity to each other on the west side of the island. The largest emission units at those facilities are permitted to fire residual oil. ULSD is fired in the TEMES #7 Unit at Piti and at all other relatively small power generating units at other locations on Guam.

Hourly actual SO_2 emissions were developed for the DRR applicable sources following the approved procedure presented in Appendix E. Table 1 summarizes the stationary emission source inventory included in this modeling analysis.

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Table 1: Modeled Stack Parameters

GPA Point Sources

Facility	Source Name	Model ID	Easting Zone 55 (m)	Northing Zone 55 (m)	Elevation [2] (m)	Stack Height (ft)	Stack Height (m)	Diameter or Equivalent (ft)	Diameter or Equivalent (m)	Flow Rate (ACFM)	Exit Velocity (fps)	Exit Velocity (m/s)	Temperature (F)	Temperature (K)	Emission Rates [1] (g/s)
	Cabras #1	CAB_B1	249455	1489682	0.7	200.1	61.0	8.5	2.6	175268	51.5	15.7	300	422.0	Hourly
	Cabras #2	CAB_B2	249479	1489697	0.6	200.1	61.0	8.5	2.6	175268	51.5	15.7	300	422.0	Hourly
Cabras	DEG-3 and DEG-4	CAB_E3_4	249395	1489669	1.1	202.0	61.6	8.0	2.4	211115	70.0	21.3	343	445.7	Hourly
MEC	#8 and #9	MEC_E8_9	249840	1489439	2.8	203.1	61.9	17.5	5.3	341846	23.8	7.3	1003	812.6	Hourly
TEMES	Piti #7	TEMES_7	249839	1489522	2.4	69.6	21.2	13.4	4.1	773186	86.4	26.3	1038	831.8	Hourly

[1] Actual hourly rates used per Appendix E.

[2] Values revised from protocol using AERMAP output. Values in Table 1 of the protocol were a typo and not reflective of evaluated source elevations presented in the protocol appendicies.

Marine Volume Sources

Source Description	Model ID	Easting Zone 55 (m)	Northing Zone 55 (m)	Elevation (m)	Release Height (ft)	Release Height (m)	Initial Horizontal Dimension (ft)	Initial Horizontal Dimension (m)	Initial Vertical Dimension (ft)	Initial Vertical Dimension (m)	Emission Rates (g/s)
Commercial port hoteling vessel	HOTELC1	246877	1489122	0.0	82.0	25.0	45.8	14.0	38.1	11.6	2.2
Navy port hoteling vessel	HOTELN2	246778	1486660	0.0	82.0	25.0	45.8	14.0	38.1	11.6	2.2
Navy port hoteling vessel	HOTELN3	247504	1486606	0.0	82.0	25.0	45.8	14.0	38.1	11.6	2.2

Note:
Dimensions based on a 120m x 30m vessel in these harbors. Init. Horizontal dimension = sqrt(120x30)/4.3 = 60/4.3 = 14.0. Release height estimated at 25m. Init. Vertical dimension = 25/2.15.

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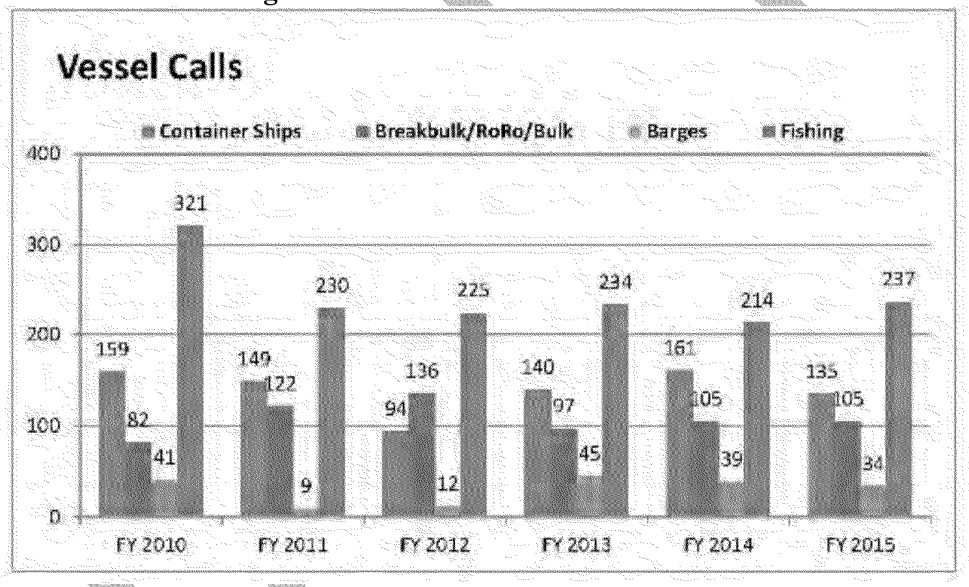
Marine Emission Inventory and Source Data

The Port of Guam handles the bulk of the commercial maritime traffic for the Territory of Guam and neighbors the Piti-Cabras and MEC power plants. The Port of Guam reports vessel calls on an annual basis (http://portguam.com/about-us/financial-information-and-statistics/cargo-statistics-and-graphs) and for the most recent year available, 2015, tallied 511 vessel calls, see Figure 1. These can be roughly divided between large vessels (container ships, breakbulk, roll-on/roll-off and bulk carriers) and fishing vessels, reporting 274 large vessels and 237 smaller fishing vessels (likely purse seiners). The large vessels are generally in the range of 100 meters (m) to 225 m in length, and over 10,000 dead weight tons (dwt). Purse seiners are generally less than 30 m in length. The Port of Guam, on average, handles approximately one large vessel call and one fishing vessel call per day.

Figure 1: Port of Guam Vessel Calls



In addition to the Port of Guam, the Naval Base Guam receives port calls from military vessels. Vessel calls for both Port of Guam and Naval Base Guam are recorded by Marine Traffic's Automated Information System tracking data (http://www.marinetraffic.com/en/ais/details/ports/20289). The site shows approximately two weeks of vessel arrival and departure data, and based on information available at the time of the vessel emission estimate, there were 4 military vessels in port during the period:

- Charles Drew, cargo vessel, 42,785 dwt, 210 m, in port 3 days
- USNS PFC Dewayne T. Williams, military operations vessel, 44,543 dwt, 205 m, in port at time of writing

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- USNS 1st Lt. Jack Lummus, cargo vessel, 26,949 dwt, 205 m, in port 8 days
- Luta, off-shore cargo supply vessel, 450 dwt, 48 m, in port 3 days

The Charles Drew, USNS 1st Lt. Jack Lummus and Luta were in port at the same time. This is likely representative of typical activity at the Navy base. Vessel activities in port can be divided into two operating scenarios:

- "Maneuvering" during which a vessel is moving within the port using its prime mover engine and auxiliary power supplied by smaller onboard generators and boilers. For safety reasons, vessels within the port operate at low speeds for maneuvering purposes.
- "Hoteling" during which a vessel is secured at its berth and only the auxiliary units are online.

The combined commercial and military ports support a moderate number of vessel calls. On an annual basis an estimated 500 large vessels call on both facilities combined, which is a conservative estimate that assumes a substantial amount of traffic at the military port in addition to the 274 commercial vessels reported in 2015 at the commercial port. Worst-case vessel emissions for onshore receptors occur when the vessels are hoteling and thus are stationary and in their closest proximity to the onshore receptors. Hoteling emissions are estimated for three large vessels hoteling at each facility. EPA reported that auxiliary power requirements for all large vessels while hoteling are 1000 kW. Auxiliary power is assumed to be evenly divided between steam boilers (external combustion) and diesel engines (e.g. diesel electric generators). The reported 237 fishing vessel calls on the commercial port are representative of typical usage. There are no hoteling emissions from small fishing vessels. The prime mover engines are not used while any of the vessels are hoteling.

Various fuels are used in the Oceana marine trade. Current fuels sold in the area include:

- Intermediate Fuel Oil (IFO), 3.5% sulfur content
- Marine Diesel Oil (MDO), 2% sulfur content
- Marine Gas Oil (MGO), 1.5% sulfur content

It is assumed all large vessels use IFO for the prime mover engines and MDO for auxiliary power (generators and smaller boilers). Fishing vessels are assumed to use MDO.

Table 2 presents the calculated emissions for the vessels considered for this modeling analysis. For the purposes of this modeling analysis, the stationary marine sources are modeled conservatively assuming that three large vessels are hoteling at the docks.

Other than the identified sources, Guam is very isolated and natural background SO_2 concentrations are negligible. It is expected that the identified emission sources comprise the SO_2

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sources. Figure 2 depicts the locations of the GPA power generation facilities, the Port of Guam and Naval Base Guam marine source representations, 1971 SO_2 non-attainment areas, and meteorological data sources considered in the modeling analyses.

The modeling analyses were performed assuming conservatively calculated actual emission rates for the Piti and Cabras SO_2 emission sources for the most recent three contiguous years of available meteorological data, e.g., 2011, 2012 and 2013. Figure 3 presents a windrose, or the wind direction and wind speed frequency distribution of the meteorological observations for the three year period modeled. Note that, as expected, the prevailing easterly trade winds dominate the local wind flow, and that the winds from the west, flow that can advect plumes inland and toward the elevated terrain are extremely infrequent.

TRC has compiled stack parameters for the applicable sources and typical source parameters for the hoteling marine vessel sources that are included in the modeling analyses and these are summarized in Table 2. Short term emission rates for the stationary or hoteling sources modeled are also provided in Table 2. The in-transit or maneuvering emissions were not considered in the modeling analyses.

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Table 2: Maritime Sulfur Dioxide Emissions

Maritime Sulfur Dioxide Emissions
Port of Guam and Naval Base Guam

Conversionfactors

1	kW	=	3412	Btu/hr
1	hp	=	2544.4	Btu/hr
Sulfur	MW	=	32	
SO2	MW	=	64	
Density fuel oil		=	7.05	lb/gal
Heat value fuel oil		=	140,000	Btu/gal
S% IFO		=	3.5	%
S% MDO		=	2.0	%
In-port engine % large vessels		=	20.0	%
In-port engine % small vessels		=	40.0	%
Aux / Hoteling engine efficiency		=	40.0	%

Find: **Hourly SO2 emissions**

Large Vessel Hoteling
SO2 lb/hr = power (kW) * BTU/hr/KW * (1/fuel oil heat value (btu/gal)* fuel density (lb/gal) * (1/engine efficiency) * %S MDO* (MW SO2 / MW S)
SO2 lb/hr = 17.18

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Figure 2: Guam Power Authority GPA Plants, Marine Hoteling Sources, and 1971 SO_2 Non-attainment Areas

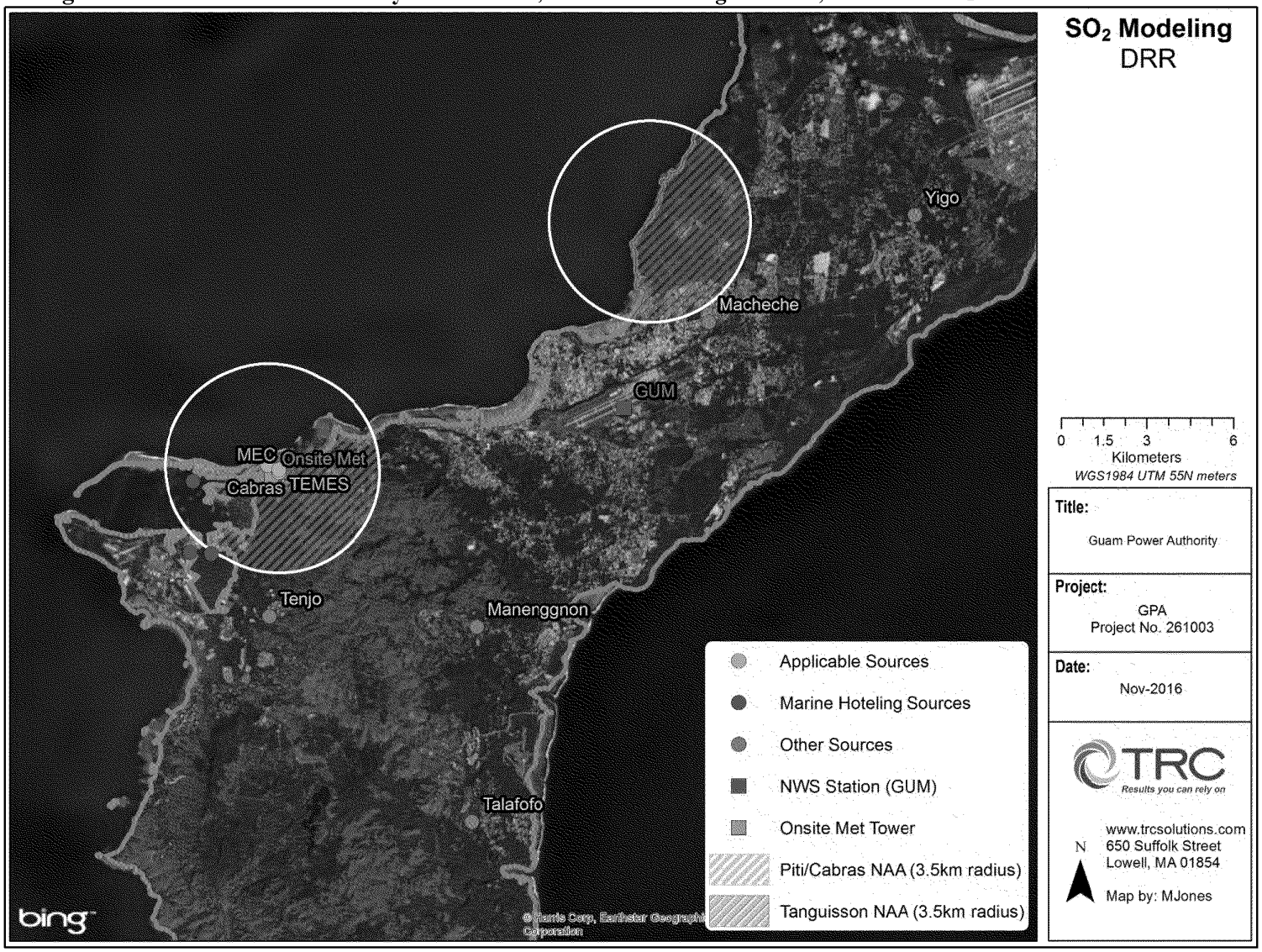

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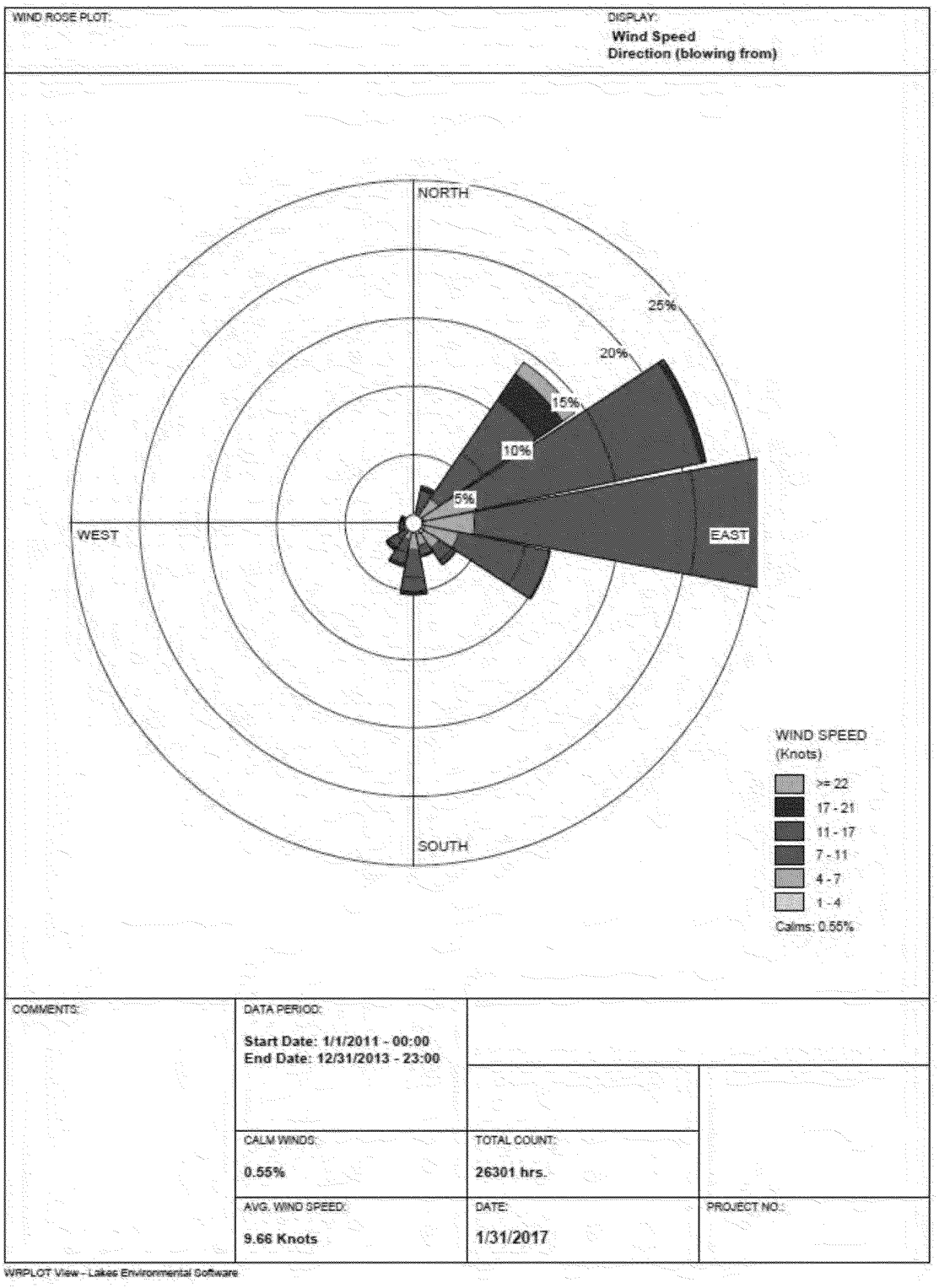
Figure 3: Windrose for 2011-2013 AERMET 16216 Processed Onsite and GUM ASOS Data



3.0 MODELING DOMAIN

The modeling domain covers the Territory of Guam, however following the guidance contained in the modeling TAD, modeling for the purpose of area designation is a surrogate for monitoring. Model receptors are placed only in areas where it is feasible to place a monitoring station, i.e., publicly accessible locations and areas that are not water bodies or otherwise impractical for monitoring, e.g. a cliff or otherwise inaccessible terrain. Thus the land area of Guam, but not the surrounding waters or areas within the fence lines of the GPA facilities have modeling receptors. A discussion of the proposed model receptors and illustration of the modeling domain are provided in Section 5 below.

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4.0 MODEL SELECTION

The Modeling TAD cites the "Guideline on Air Quality Models" (40 CFR 51, Appendix W) for model selection. The Guideline, as well as the TAD, recommend the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) as the preferred model for near-field (generally considered as distance less than or equal to 50 km from the source) dispersion modeling. The most recent version of AERMOD (version number 16216r), issued by EPA, together with its various pre-processor programs were used for the modeling analysis, including the following additional support programs:

- BPIPPRM Dated 04274 (Sample output file included in Appendix A)
- AERMINUTE version 14337 (sample input file included in Appendix B-1)
- AERSURFACE (methodology and input values described below)
- AERMET version 16216 with regulatory default ADJ_U* option (sample input file included in Appendix B-2)
- AERMAP version 11103 (sample input file included in Appendix B-3)
- AERMOD version 16216r (sample input file included in Appendix B-4)

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5.0 RECEPTOR ARRAY

The proposed modeling domain is designed to capture the maximum daily one-hour average SO_2 impacts from the modeled emission sources. The guidance memorandum specifies a relatively dense receptor array as follows:

- 50 meter spacing within 1 km of the source
- 100 meter spacing between 1 and 2 km from the source
- 250 meter spacing between 2 and 10 km from the source
- 500 meter spacing beyond 10 km from the source

The distances were measured from each applicable source and a single receptor network was developed and presented in the modeling protocol. No receptors were placed within the GPA facility fence lines or over water. The receptor locations were processed through the current version of the AERMAP pre-processor (11103). Figures 4 and 5 show the initial near-field and far-field receptor arrays around Piti and Cabras.

Figure 6 shows the 100 meter spaced receptors that were added to further define the maximum design concentration over the terrain to the southeast of the applicable sources. Finally, discreet receptors were added to assess the design value at previously proposed monitor locations (see Figure 6).

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Figure 4: Far Field Receptors

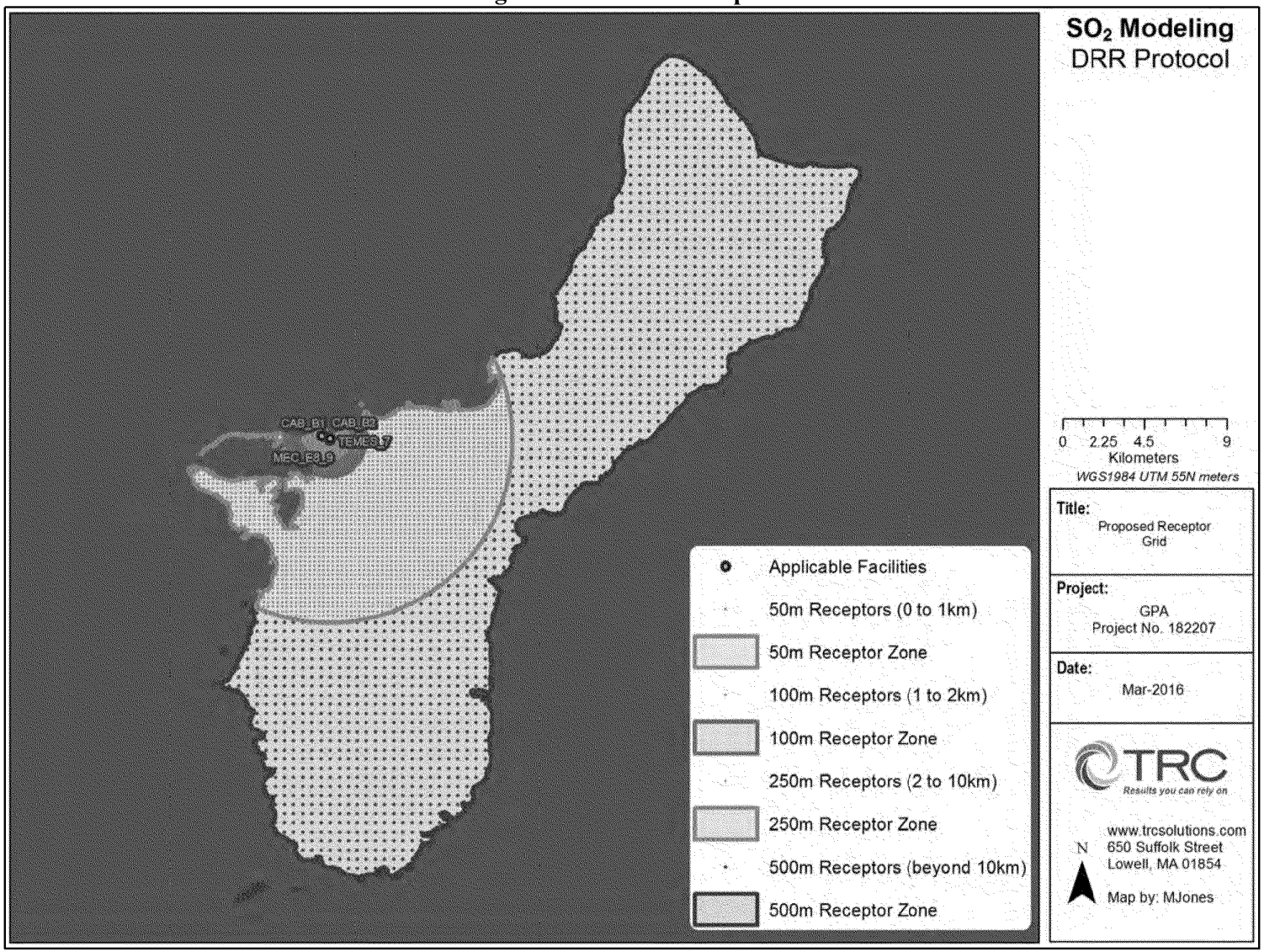

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Figure 5: Near Field Receptors

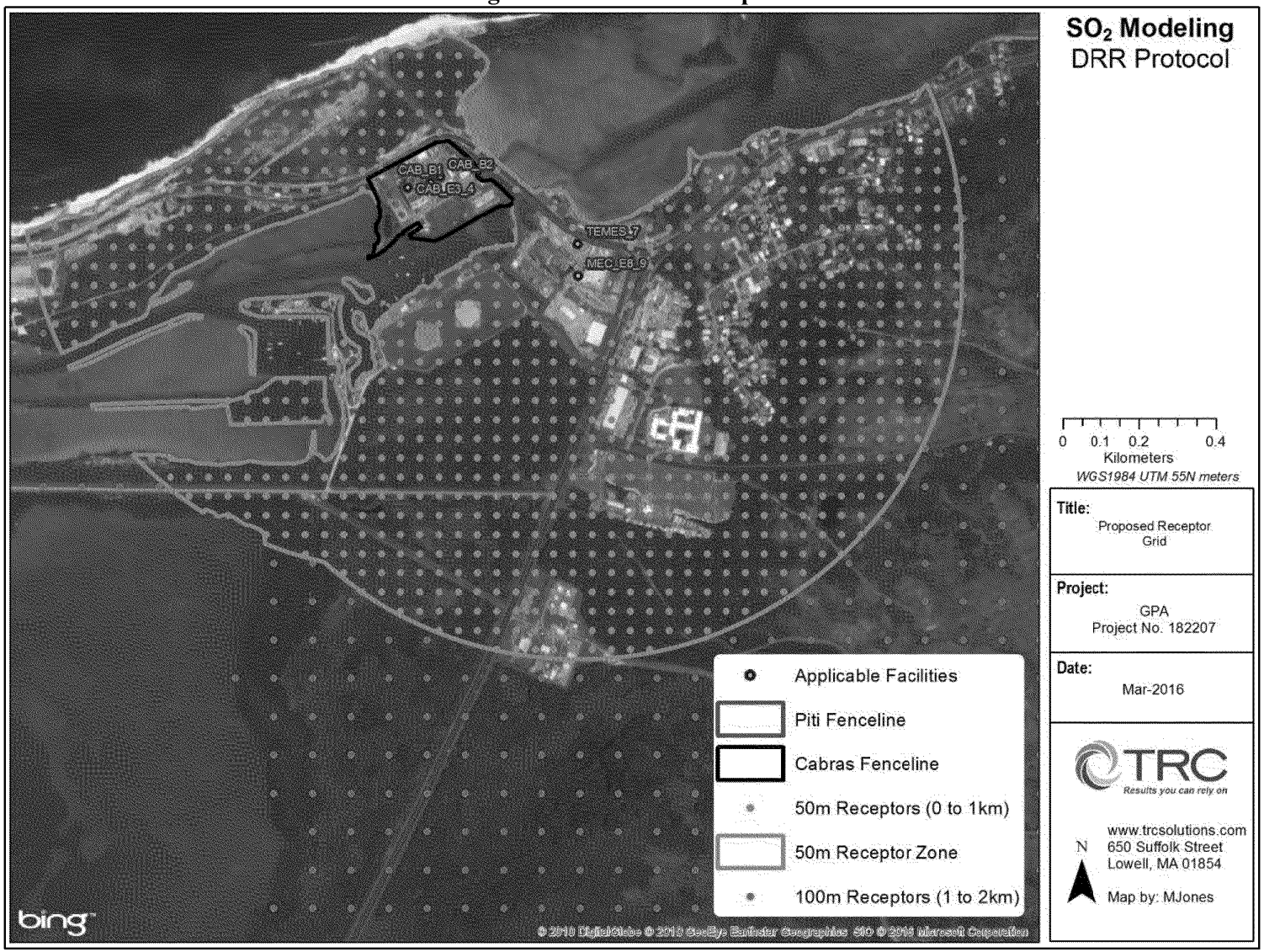

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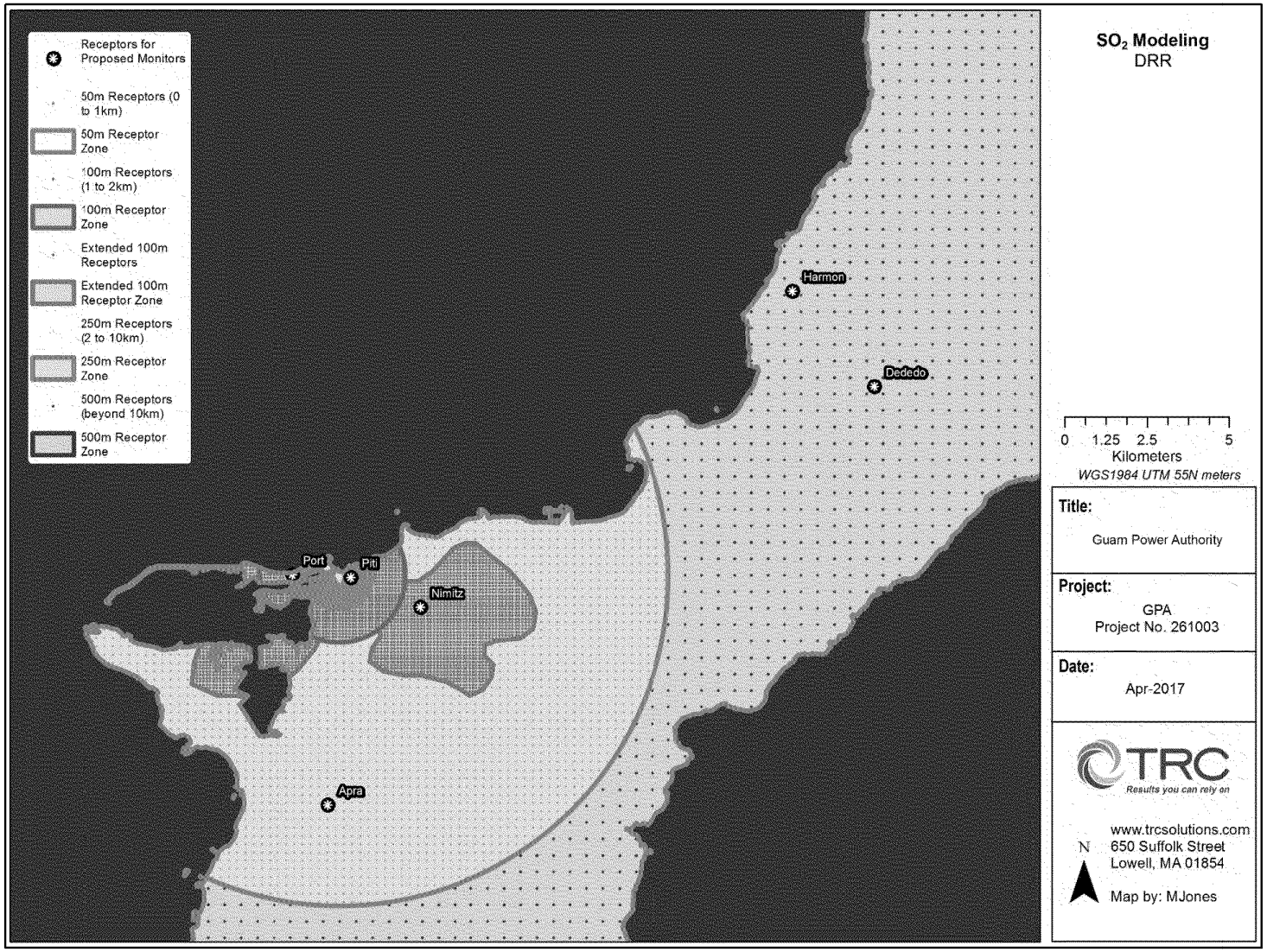
Figure 6: Additional Receptors – 100m Receptors over Maximum Design Value Regions (blue) **and Discreet Receptors Placed at Proposed Monitor Locations** (white)



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6.0 METEOROLOGICAL DATA

The AERMOD dispersion model requires a vertical "profile" and a "surface" meteorological data file as inputs which are created by the AERMET meteorological preprocessor. AERMET requires surface and upper air meteorological data files, together with micrometeorological characteristics to create the files for AERMOD input. Meteorological data collected on-site is generally preferred and considered most representative of wind flow conditions affecting emission sources. However representative meteorological data from off-site or other monitoring stations, such as National Weather Service station at the Guam airport (GUM) are also acceptable. For this modeling analyses, the available meteorological data from the Piti site were used as the primary surface observation data for wind and temperature and the GUM data for all other variables were used consistent with the modeling protocol. While there are other meteorological observing stations on the island of Guam, i.e., Andersen Air Force Base, the Piti on-site 60 meter level wind data and the surface temperature data combined with the GUM data are the most representative data available for this analysis. Figure 2 illustrates the locations of the onsite meteorological tower and the NWS Station.

TRC obtained surface data in Integrated Surface Hourly Data (ISHD) format and upper air data in FSL format for GUM from 2011 through 2015 for analysis. Review of the data indicated that observations of cloud cover and other stability-type data necessary to run AERMOD were missing for a significant portion of the year 2014 and this year did not meet minimum data collection requirements. Thus the three-year consecutive data period of 2011 through 2013 was used in this analysis, as approved in the protocol.

The three years of data have been processed with the AERMET processor (with the EPA regulatory option "ADJ_U*" used) for input to the AERMOD modeling system. Also included in the NWS data processing were the 1-minute Automated Station Observing System (ASOS) data. The 1-minute ASOS data is used to supplement the hourly NWS data when the wind is calm or variable. The AERMINUTE pre-processor was used to process these 1-minute data for input into AERMET.

The onsite meteorological data of wind speed and direction from the 60 meter tower level located at the Piti Plant was used as the primary source of surface wind data for the analysis. The onsite data observations are available for the same data period of 2011 through 2013 as 15-minute average data. These data were subjected to data validity and capture requirements to ascertain that these are good quality and valid data to be used in dispersion modeling analyses. The Quality

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Control & Quality Assurance Manual for the Cabras Power Plant Meteorological Monitoring Program applied to the collection of the data was provided with the modeling protocol, cover page of the report is provided here as Appendix C. Routine semiannual instrument performance audits were conducted on the meteorological monitoring system and the Quality Assurance Audit Reports indicate that the instruments were in compliance and collected good quality data for the period of interest.

The onsite 15-minute average data were processed to create 1-hr average values. These onsite data were used as the primary data for the AERMET meteorological data processing, with substitution from the GUM surface observations for any missing hourly periods.

Micrometeorological Characteristics

Micrometeorological surface characteristics of albedo, Bowen ratio, and surface roughness are input into the AERMET preprocessor to create meteorological input files that can be read by AERMOD. For areas that are covered by the National Land Cover Dataset (NLCD) 1992, those characteristics are typically determined by the AERSURFACE preprocessor. NLCD 1992 data are not available for Guam; therefore the Coastal Change Analysis Program (C-CAP) data for the territory of Guam from 2005 (http://www.data.gov/geodata/g621716) were used to determine the surface micrometeorological characteristics. These data were developed via a remote sensing project by the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Coastal Services Center (CSC). The C-CAP data cannot directly be processed by the AERSURFACE processor. Therefore TRC developed a process to extract the necessary micrometeorological characteristics from the C-CAP data. The output from that process was used as input in the AERMET meteorological preprocessor. The methodology and process applied to derive the needed micrometeorological parameters were discussed in detail in the modeling protocol. The final micrometeorological parameters input to AERMET are found in Table 3 and Table 4 for the primary station average and wet year, respectively and in Table 5 and Table 6 for the secondary station average and wet year, respectively.

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Table 3: Micrometeorological Parameter Input, Onsite Primary Station, and Average Moisture Condition

Surface Characteristics for Onsite, Average Moisture Condition- Input for AERMET

Sector	Deg1	Deg2	Season	Albedo	Bowen Ratio (Average Moisture)	Roughness Length (m)
1	0	45	3	0.127	0.226	0.004
2	45	90	3	0.127	0.226	0.054
3	90	135	3	0.127	0.226	0.184
4	135	180	3	0.127	0.226	0.343
5	180	225	3	0.127	0.226	0.373
6	225	270	3	0.127	0.226	0.019
7	270	315	3	0.127	0.226	0.013
8	315	360	3	0.127	0.226	0.018

Table 4: Micrometeorological Parameter Input, Onsite Primary Station, and Wet Moisture Condition

Surface Characteristics for Onsite, Wet Moisture Condition - Input for AERMET

Sector	Deg1	Deg2	Season	Albedo	Bowen Ratio Wet Moisture)	Roughness Length (m)
1	0	45	3	0.127	0.179	0.004
2	45	90	3	0.127	0.179	0.054
3	90	135	3	0.127	0.179	0.184
4	135	180	3	0.127	0.179	0.343
5	180	225	3	0.127	0.179	0.373
6	225	270	3	0.127	0.179	0.019
7	270	315	3	0.127	0.179	0.013
8	315	360	3	0.127	0.179	0.018

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Table 5: Micrometeorological Parameter Input, GUM Secondary Station, and Average Moisture Condition

Surface Characteristics for GUM, Average Moisture Condition- Input for AERMET

Sector	Deg1	Deg2	Season	Albedo	Bowen Ratio (Average Moisture)	Roughness Length (m)
1	0	45	3	0.137	0.371	0.064
2	45	90	3	0.137	0.371	0.076
3	90	135	3	0.137	0.371	0.142
4	135	180	3	0.137	0.371	0.178
5	180	225	3	0.137	0.371	0.156
6	225	270	3	0.137	0.371	0.116
7	270	315	3	0.137	0.371	0.068
8	315	360	3	0.137	0.371	0.061

Table 6: Micrometeorological Parameter Input, GUM Secondary Station, and Wet Moisture Condition

Surface Characteristics for GUM, Wet Moisture Condition - Input for AERMET

Sector	Deg1	Deg2	Season	Albedo	Bowen Ratio (Wet Moisture)	Roughness Length (m)
1	0	45	3	0.137	0.269	0.064
2	45	90	3	0.137	0.269	0.076
3	90	135	3	0.137	0.269	0.142
4	135	180	3	0.137	0.269	0.178
5	180	225	3	0.137	0.269	0.156
6	225	270	3	0.137	0.269	0.116
7	270	315	3	0.137	0.269	0.068
8	315	360	3	0.137	0.269	0.061

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7.0 BACKGROUND CONCENTRATIONS

As noted above and shown in the windrose in Figure 3, Guam lies in the easterly trade wind zone and there are no major stationary upwind SO_2 sources for hundreds or thousands of miles. Due to its isolated location, the background SO_2 concentrations are likely to be near the global SO_2 background concentration. The most significant source of SO_2 from the oceans is the oxidation of dimethyl sulfide[2]. EPA has found that the Pacific Ocean SO_2 background concentrations may be on the order of 0.025 ppb, or 0.065 $\mu g/m^3$ [3], an insignificant contribution. It is also expected that the one-hour critical design concentrations from the Piti/Cabras sources will be near or on the elevated terrain to the east of the plants, During these flow events, there are virtually no sources of emissions upwind of Guam and the background contribution is expected to be insignificant.

The Guam and CNMI Military Relocation (2012 Roadmap Adjustments) Supplemental Environmental Impact Statement (http://www.guambuildupeis.us/documents, see Appendix I Air Impact Study) prepared for the U.S. Department of the Navy assumed that the SO_2 background concentration was zero for their air quality modeling.

Also, the most recent air quality monitoring on the island conducted in 1999-2000 by GPA. (Otte Consulting, Ambient Air Quality Monitoring Network Annual Data Report for October 1999-September 2000) confirms the low concentration background with the monitors reporting "0" SO_2 concentrations for the vast majority of the hours (Appendix D illustrates the cover page of the referenced report, the full report was provided with the modeling protocol and is provided here with the digital files). A value of "0" in the data reported indicates that the concentration is below the minimum detection limit for the Model 100A Advanced Pollution Instrumentation SO_2 monitors of 0.4 ppb (1.04 $\mu g/m^3$) (http://www.teledyne-api.com/manuals/02164h_100a.pdf).

The raw 99th percentile concentrations reported by these monitors likely represents periods of direct plume impacts from permitted sources, rather than true background concentrations. Use of monitoring data representing direct plume impacts would result in "double counting" the concentrations predicted in the dispersion modeling (i.e. adding the monitored plume impact to the modeled plume impact from the same source). EPA recognizes this possibility and in the "Guideline on Air Quality Models" Section 8.2.2 (2005) recommends using data at monitors not in the area of impact by the modeled sources. To accomplish this, EPA recommends identifying

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[2] Barnes, I (editor), Global Atmospheric Change and its Impact on Regional Air Quality, NATO Science Series, Kluwer Academic Publishers, 2002.
[3] EPA, Integrated Science Assessment for Sulfur Oxides-Health Criteria, EPA/600/R-08/047F, 2008.

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periods when the monitor is inside a 90° downwind sector from sources and eliminating those periods from the background assessment. As described in the addendum to the modeling protocol, GUM hourly and special observations were used to characterize the transport wind direction for emissions from the applicable sources. The Nimitz Hill monitoring site was identified as the location experiencing plume impacts from the Piti generating units and the monitoring data were processed to eliminate periods with potential plume impacts following the Guideline procedure. The resulting Nimitz Hill concentration data set was processed to determine the 99th percentile of the daily maximum one-hour observed concentrations. This resulted in a conservative 99th percentile background concentration of 29 $\mu g/m^3$, which is added to the predicted 99th percentile AERMOD predicted concentration to determine the design value 99th percentile one hour daily maximum concentration for comparison to the NAAQS.

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8.0 MODELING RESULTS

GPA Applicable Sources

The applicable GPA sources described in Table 1 were modeled over the period 2011-2013 and the three year average of the 99th percentile (highest fourth high concentration or H4H) of the daily maximum one-hour average SO_2 concentrations was determined to be 556 μg/m^3 plus 29 μg/m^3 background concentration, for a total impact of 585 μg/m^3. A culpability analysis was performed on this result to determine the contribution of this maximum design value from the modeled applicable sources. Table 7 presents the three-year average H4H and the contribution from the GPA modeled sources.

Table 7: Culpability Analysis of GPA Applicable Sources' Modeled H4H Result; No Background Added

	H4H (2011-2013)								Compliance Comparison			
Source	2011		2012		2013		3yr Avg		Modeled + Background (29 ug/m3)		NAAQS	
	μg/m^3	ppb	μg/m^3	ppb	μg/m^3	ppb	μg/m^3	ppb	μg/m^3	ppb	μg/m^3	ppb
GPA	478	182	571	218	619	236	**556**	**212**	**585**	**223**	**196**	**75**
CAB_B1	164	63	321	122	298	114	261	100				
CAB_B2	162	62	204	78	180	69	182	70				
CAB_E3_4	132	50	37	14	81	31	83	32				
MEC_E8_9	20	8	9	3	60	23	29	11				
TEMES_7	0	0	0	0	0	0	0	0				

The predicted H4H design value occurs on the lower terrain west of the GPA modeled sources as can be noted in Figures 7A-E. Concentrations are highest along the port northwest of the modeled sources and on the elevated terrain of Nimitz Hill to the southeast.

It should be noted that available monitored values, albeit from the 1999-2000 period, observed for the Nimitz Hill area are not consistent with modeled values and modeled results are likely highly conservative. Actual monitored one-hour average SO_2 concentration at multiple locations across the island for the year October 1999 through September 2000, reference the report provided in the modeling protocol, indicated maximum H4H value measured at Nimitz Hill during that period at 17 ppb (45 μg/m^3). The location of the historical Nimitz Hill monitor is noted in Figure 7A and is in an area of high modeled concentration. Thus, the measured value is directly comparable to the 400-500 μg/m^3 modeled in that area under the hourly emissions and stack conditions described in Appendix E and Table 1. It is therefore apparent that the modeled results are significantly conservative by a factor of 10.

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Other Sources

The other (Marine) sources described in Table 1 were modeled over the three year period 2011-2013 and the H4H averaged over three years was determined to be 432 μg/m^3 plus 29 μg/m^3 background concentration for a total impact of 461 μg/m^3. Figure 8A-B presents the distribution of the modeled maximum H4H results and as is evident, the maximum impacts from the other modeled sources are confined to the region near the marine harbors and hoteling locations. It is also apparent from the design value maxima distribution that the maritime sources do not contribute to GPA applicable source maximum design values and further, that GPA applicable sources do not contribute to the maritime modeled source design value maxima. It should finally be noted that the representation of the marine sources is likely quite conservative, given the assumed emission rates, volume source depiction and methodology employed to characterize these sources.

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Figure 7A: Entire Island; GPA Applicable Source Modeling Results; Modeled + Background

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Figure 7B: Piti/Cabras Non-Attainment Area; GPA Applicable Source Modeling Results; Modeled + Background

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Figure 7C: Piti/Cabras Area; GPA Applicable Source Modeling Results; Modeled + Background

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Figure 7D: Maximum Area; GPA Applicable Source Modeling Results; Modeled + Background

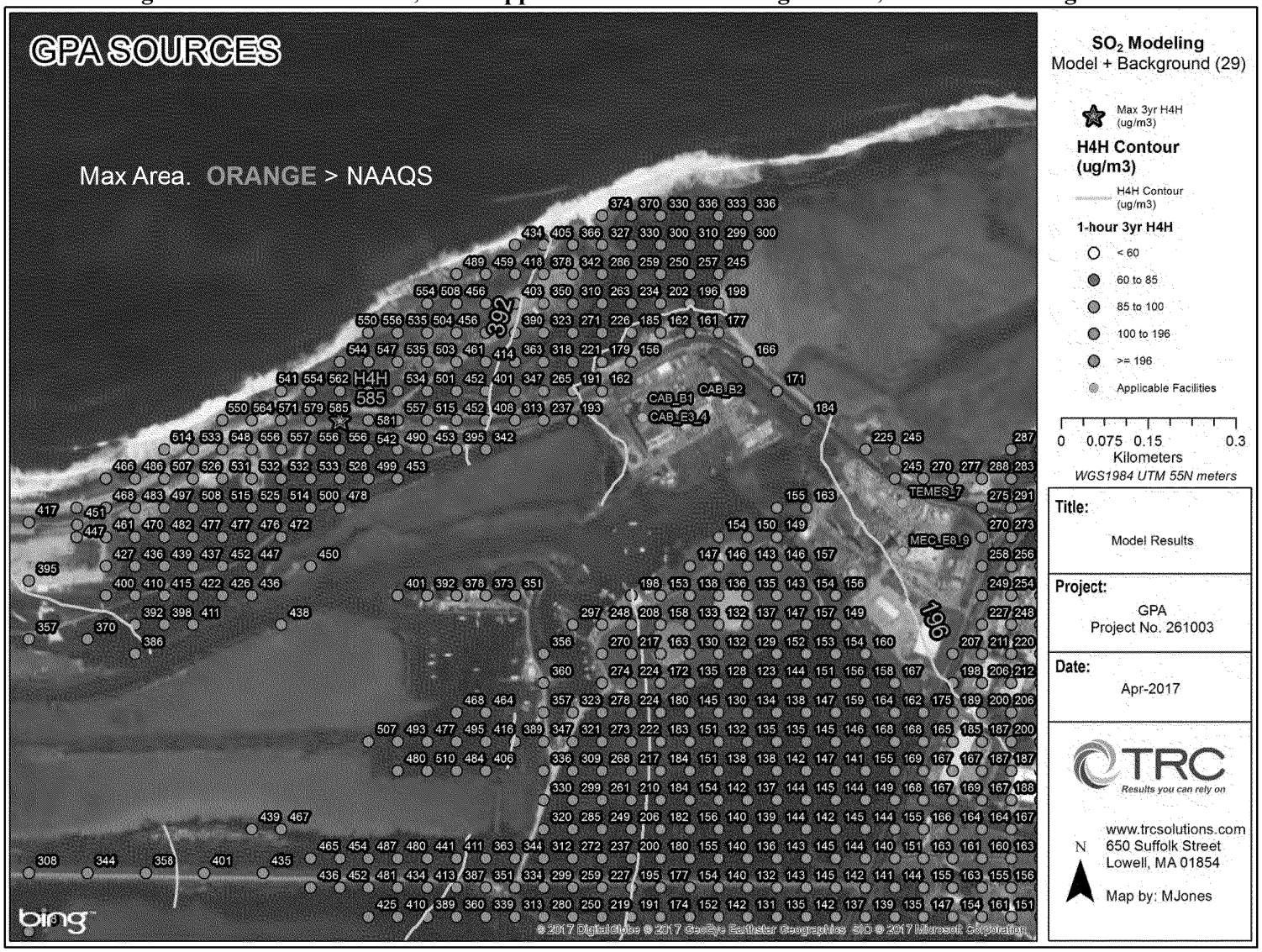

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Figure 7E: Nimitz Hill Area; GPA Applicable Source Modeling Results; Modeled + Background

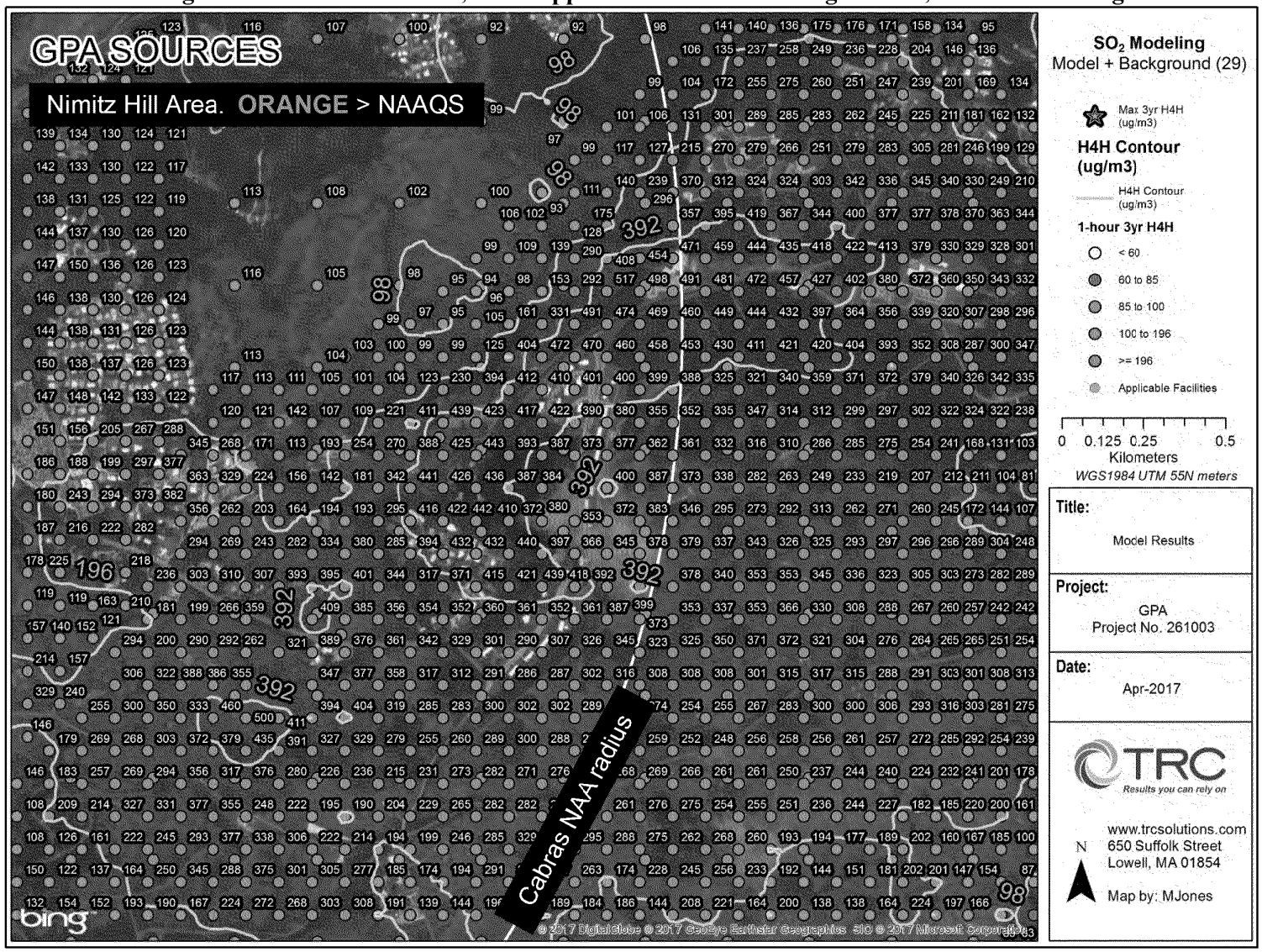

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Figure 8A: Entire Island; Other Sources Modeling Results; Modeled + Background

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Figure 8B: Piti/Cabras Non-attainment Area; Other Sources Modeling Results; Modeled + Background

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Total Modeled Results

All sources described in Table 1 were modeled together over the three year period 2011-2013 and the H4H averaged over three years was determined to be 556 µg/m^3 (with background concentration of 29 µg/m^3, this leads to a total impact of 585 µg/m^3). As stated above, the marine sources' impacts and GPA impacts do not generally overlap, leading to the culpability analysis results presented in Table 9. Namely, the total modeled H4H design value is due to GPA applicable sources, with no contribution from other marine sources. The substantially higher release temperature of the MEC modeled source (1000°F) versus the Cabras sources (300-343°F) would lead to a higher lofted plume such that maximums from the MEC source generally do not coincide with maximums from the Cabras sources in location and time, likely resulting in the low spatially/temporally consistent contribution (29 µg/m3) to the maximum design value of 556 µg/m^3 presented below.

Table 9: Culpability analysis of All Sources' Maximum Modeled H4H Result; No Background Added

	H4H (2011-2013)								Compliance Comparison			
Source	2011		2012		2013		3yr Avg		Modeled + Background (29 ug/m3)		NAAQS	
	µg/m^3	ppb	µg/m^3	ppb	µg/m^3	ppb	µg/m^3	ppb	µg/m^3	ppb	µg/m^3	ppb
ALL	478	182	571	218	619	236	**556**	**212**	**585**	**223**	**196**	**75**
CAB_B1	164	63	321	122	298	114	261	100				
CAB_B2	162	62	204	78	180	69	182	70				
CAB_E3_4	132	50	37	14	81	31	83	32				
HOTELING VESSELS	0	0	0	0	0	0	0	0				
MEC_E8_9	20	8	9	3	60	23	29	11				
TEMES_7	0	0	0	0	0	0	0	0				

Similar to the GPA applicable source results, the total modeled source H4H design value occurs in the port just west of the GPA sources with comparably high concentrations occurring over the Nimitz Hill elevated terrain to the southeast of the GPA modeled sources as can be noted in Figure 9A-B. In addition, there is an area of high design values over Orote Peninsula to the west that marine sources increase slightly. However, it is clear that maximum design values near the sources and on Nimitz Hill are essentially controlled by GPA applicable sources.

Overall, modeled impacts above the 1-hour SO_2 NAAQS of 196 µg/m^3 from all sources are restricted to the immediate area of the Cabras/Piti power stations and the marine vessel assumed locations. The furthest receptor from the Cabras/Piti sources modeled above the 1-hour NAAQS is approximately 6 kilometers to the east along Nimitz Hill. All other areas of the Island, including the Tanguisson non-attainment area for the 1971 SO_2 NAAQS (reference Figure 9-C), are in attainment and well below the 1-hour SO_2 NAAQS concentration.

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Figure 9A: Total Modeling Results; Modeled + Background

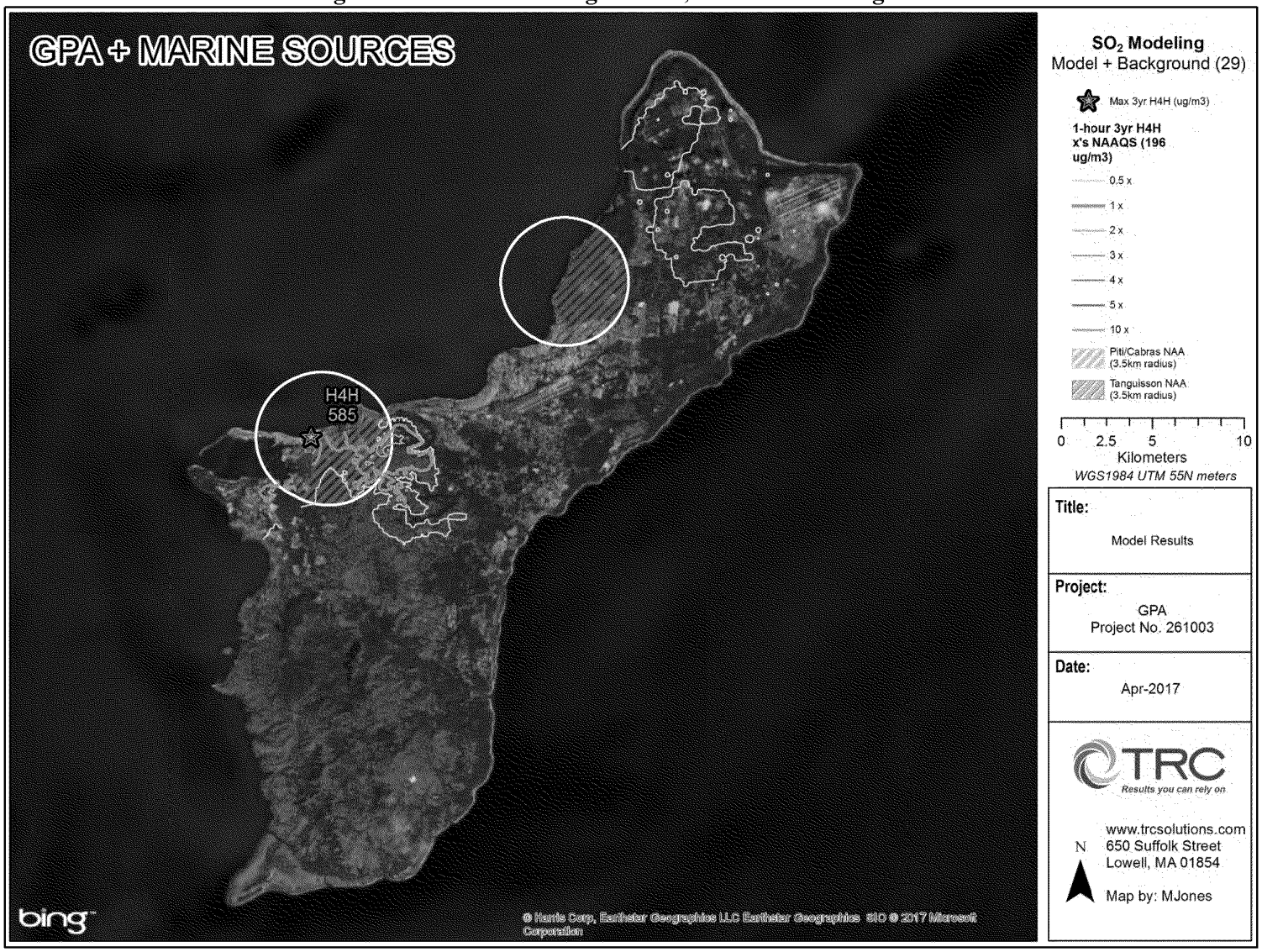

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Figure 9B: Piti/Cabras Non-attainment Area; Total Modeling Results; Modeled + Background

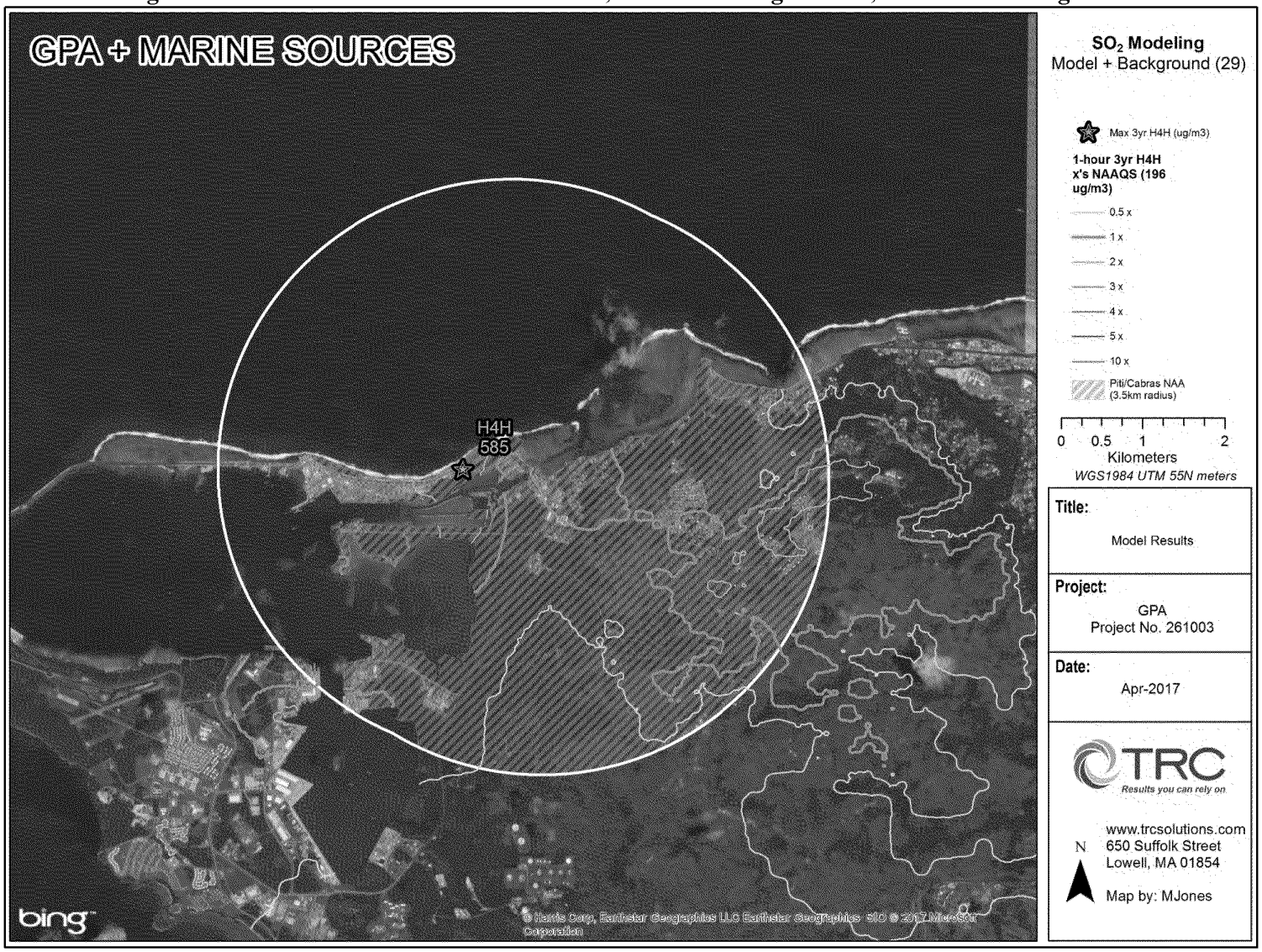

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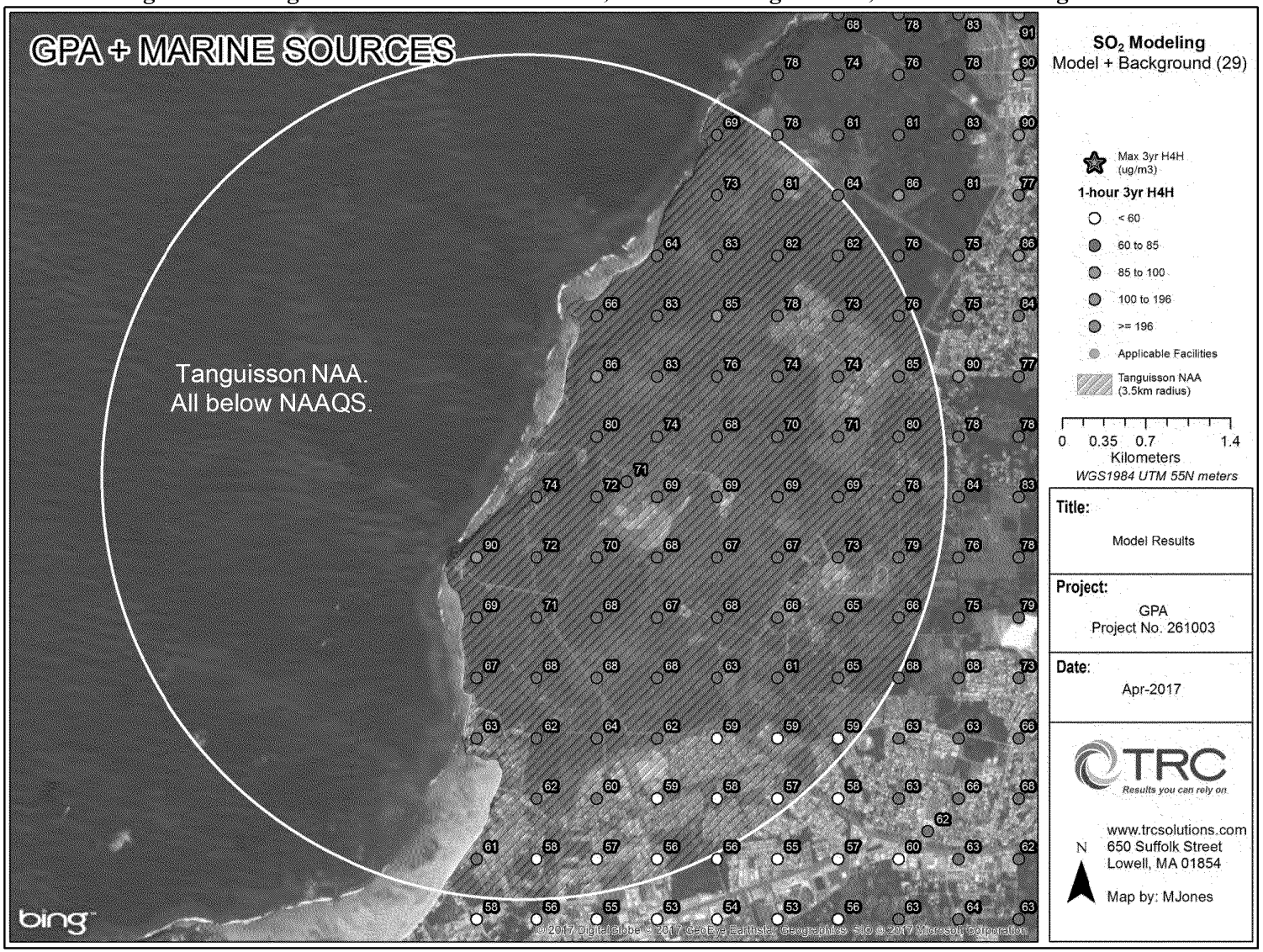
Figure 9C: Tanguisson Non-attainment Area; Total Modeling Results; Modeled + Background



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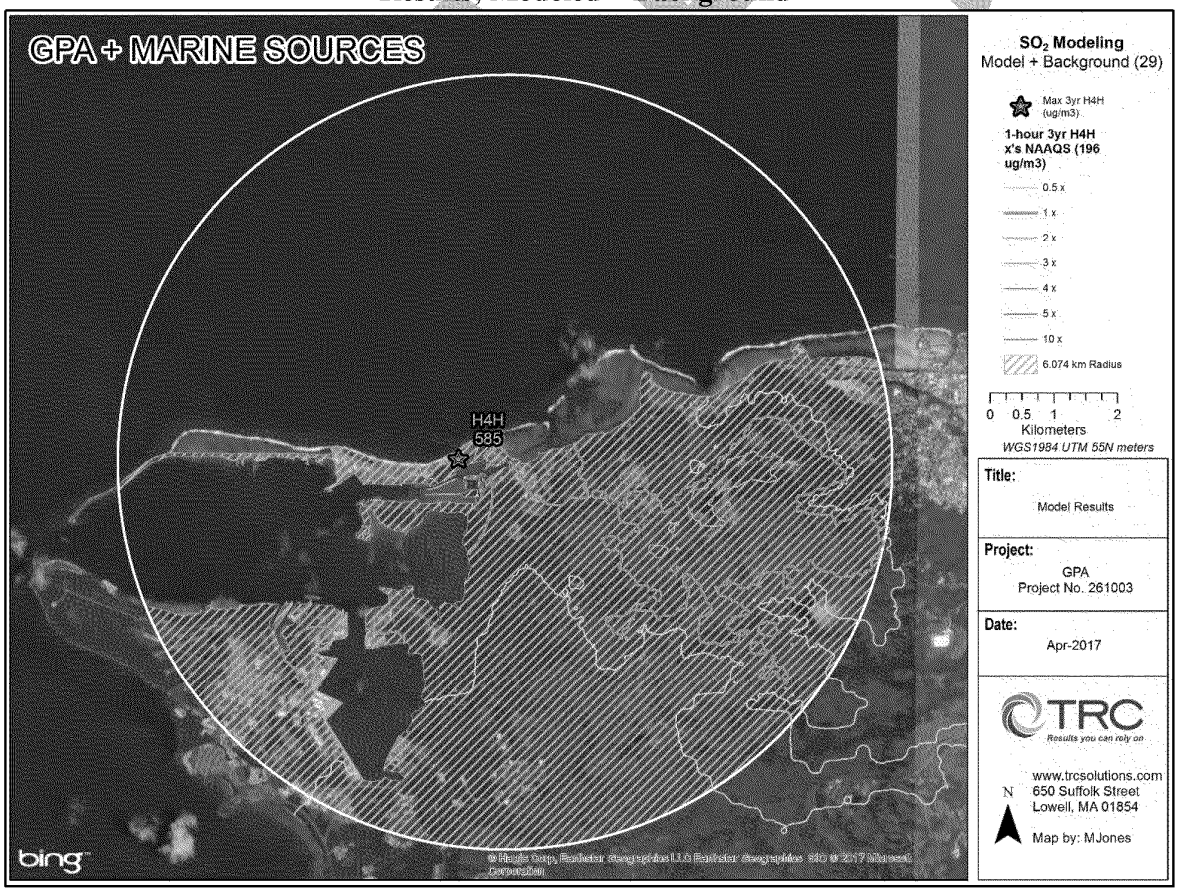
9.0 SUMMARY AND IMPLICATIONS

Based on the results of running the applicable sources at actual hourly emission rates, modeled receptors in the vicinity of the Cabras/Piti plants, eastern Orote Peninsula, and the terrain southeast of the plants (Nimitz Hill) are predicted to have concentrations above the 1-hour NAAQS for SO_2. Thus, the implication from the modeling analyses presented in this report to characterize the potential impact of sources subject to the DRR, plus a very conservative background concentration, is that the Cabras/Piti port area, a small portion of the eastern Orote Peninsula and the elevated terrain to the southeast of the Cabras/Piti plants are in modeled non-attainment of the 1-hour SO_2 NAAQS out to a distance of approximately 6,074 m from the mid-point of modeled applicable sources in Table 1 (see Figure 10 below). All other areas of the island of Guam are modeled to be in attainment of the 1-hour SO_2 NAAQS.

Figure 10: Radial Distance to Furthest Modeled Non-attainment Receptor; Total Modeling Results; Modeled + Background



The modeling files and supporting documentation of the modeled results presented in this report are provided in the following attachments and on digital media also included with this report.

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APPENDIX A

BPIPPRM OUTPUT

BPIP (Dated: 04274)

DATE : 4/18/2017

TIME : 14: 2:49

<<path>> BPIP-Prime Files 4/18/20

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BPIP PROCESSING INFORMATION:

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

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

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

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

<<path>>n BPIP-Prime Files 4/18/20

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE

(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
CAB_B1	61.00	0.10	85.25	85.25
CAB_B2	61.00	-0.06	85.41	85.41
CAB_E3_4	61.57	0.47	79.99	79.99
MEC_E8_9	61.90	-0.28	57.53	65.00
TEMES_7	21.21	-0.67	57.92	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building

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base elevation differences.

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

BPIP (Dated: 04274)

DATE : 4/18/2017

TIME : 14: 2:49

<<path>>BPIP-Prime Files 4/18/20

BPIP output is in meters

SO BUILDHGT	CAB_B1	34.14	34.14	32.10	32.10	32.10	32.10
SO BUILDHGT	CAB_B1	32.10	32.10	32.10	34.14	34.14	34.14
SO BUILDHGT	CAB_B1	34.14	34.14	34.14	34.14	34.14	34.14
SO BUILDHGT	CAB_B1	34.14	34.14	32.10	32.10	32.10	32.10
SO BUILDHGT	CAB_B1	32.10	32.10	32.10	34.14	34.14	34.14
SO BUILDHGT	CAB_B1	34.14	34.14	34.14	34.14	34.14	34.14
SO BUILDWID	CAB_B1	36.90	34.30	53.58	49.30	43.52	36.42
SO BUILDWID	CAB_B1	39.89	63.62	75.00	33.22	36.14	37.95
SO BUILDWID	CAB_B1	38.62	38.11	36.44	37.85	38.71	38.39
SO BUILDWID	CAB_B1	36.90	34.30	53.58	49.30	43.52	36.42
SO BUILDWID	CAB_B1	39.89	63.62	75.00	33.22	36.14	37.95
SO BUILDWID	CAB_B1	38.62	38.11	36.44	37.85	38.71	38.39
SO BUILDLEN	CAB_B1	33.22	36.14	54.79	52.90	49.41	44.41
SO BUILDLEN	CAB_B1	49.74	87.21	82.84	36.90	34.30	30.65
SO BUILDLEN	CAB_B1	26.07	20.69	14.69	18.93	24.49	29.30
SO BUILDLEN	CAB_B1	33.22	36.14	54.79	52.90	49.41	44.41
SO BUILDLEN	CAB_B1	49.74	87.21	82.84	36.90	34.29	30.65
SO BUILDLEN	CAB_B1	26.07	20.69	14.69	18.93	24.49	29.30
SO XBADJ	CAB_B1	-17.15	-15.98	-90.38	-90.42	-87.71	-82.34
SO XBADJ	CAB_B1	-80.48	-76.19	-69.59	-3.69	-2.51	-1.26
SO XBADJ	CAB_B1	0.02	1.31	2.56	-1.45	-6.58	-11.50
SO XBADJ	CAB_B1	-16.07	-20.16	35.58	37.52	38.31	37.94
SO XBADJ	CAB_B1	30.74	-11.02	-13.25	-33.22	-31.78	-29.38
SO XBADJ	CAB_B1	-26.09	-22.01	-17.25	-17.48	-17.91	-17.80
SO YBADJ	CAB_B1	-14.76	-14.63	11.42	0.31	-10.81	-21.61
SO YBADJ	CAB_B1	-31.91	-32.19	-36.70	-0.54	2.09	4.66
SO YBADJ	CAB_B1	7.08	9.29	11.22	12.51	13.69	14.44
SO YBADJ	CAB_B1	14.76	14.63	-11.42	-0.31	10.81	21.61
SO YBADJ	CAB_B1	31.91	32.19	36.70	0.54	-2.09	-4.66

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SO	YBADJ	CAB_B1	-7.08	-9.29	-11.22	-12.51	-13.69	-14.45
SO	BUILDHGT	CAB_B2	34.14	34.14	32.10	32.10	32.10	32.10
SO	BUILDHGT	CAB_B2	32.10	32.10	32.10	34.14	34.14	34.14
SO	BUILDHGT	CAB_B2	34.14	34.14	34.14	34.14	34.14	34.14
SO	BUILDHGT	CAB_B2	34.14	34.14	32.10	32.10	32.10	32.10
SO	BUILDHGT	CAB_B2	32.10	32.10	32.10	34.14	34.14	34.14
SO	BUILDHGT	CAB_B2	34.14	34.14	34.14	34.14	34.14	34.14
SO	BUILDWID	CAB_B2	36.90	34.30	53.58	49.30	43.52	36.42
SO	BUILDWID	CAB_B2	50.30	63.62	75.00	33.22	36.14	37.95
SO	BUILDWID	CAB_B2	38.62	38.11	36.44	37.85	38.71	38.39
SO	BUILDWID	CAB_B2	36.90	34.30	53.58	49.30	43.52	37.26
SO	BUILDWID	CAB_B2	50.30	63.62	75.00	33.22	36.14	37.95
SO	BUILDWID	CAB_B2	38.62	38.11	36.44	37.85	38.71	38.39
SO	BUILDLEN	CAB_B2	33.22	36.14	54.79	52.90	49.41	44.41
SO	BUILDLEN	CAB_B2	88.93	87.21	82.84	36.90	34.30	30.65
SO	BUILDLEN	CAB_B2	26.07	20.69	14.69	18.93	24.49	29.30
SO	BUILDLEN	CAB_B2	33.22	36.14	54.79	95.37	93.40	88.59
SO	BUILDLEN	CAB_B2	88.93	87.21	82.84	36.90	34.29	30.65
SO	BUILDLEN	CAB_B2	26.07	20.69	14.69	18.93	24.49	29.30
SO	XBADJ	CAB_B2	-36.27	-38.56	-115.74	-117.78	-116.25	-111.19
SO	XBADJ	CAB_B2	-108.75	-103.04	-94.19	-25.30	-20.47	-15.03
SO	XBADJ	CAB_B2	-9.13	-2.95	3.32	4.30	4.00	3.58
SO	XBADJ	CAB_B2	3.05	2.42	60.94	22.41	22.85	22.60
SO	XBADJ	CAB_B2	19.83	15.83	11.35	-11.61	-13.82	-15.62
SO	XBADJ	CAB_B2	-16.94	-17.75	-18.01	-23.23	-28.49	-32.88
SO	YBADJ	CAB_B2	6.84	3.32	25.19	9.46	-6.55	-22.37
SO	YBADJ	CAB_B2	-32.46	-42.77	-51.78	-19.66	-20.49	-20.70
SO	YBADJ	CAB_B2	-20.28	-19.25	-17.63	-15.76	-13.16	-10.16
SO	YBADJ	CAB_B2	-6.84	-3.32	-25.19	-9.46	6.55	21.95
SO	YBADJ	CAB_B2	32.46	42.77	51.78	19.66	20.49	20.70
SO	YBADJ	CAB_B2	20.28	19.25	17.63	15.76	13.16	10.16
SO	BUILDHGT	CAB_E3_4	32.10	32.10	32.10	32.10	23.75	0.00
SO	BUILDHGT	CAB_E3_4	32.10	32.10	32.10	34.14	34.14	32.10
SO	BUILDHGT	CAB_E3_4	32.10	32.10	32.10	32.10	32.10	32.10
SO	BUILDHGT	CAB_E3_4	32.10	32.10	32.10	32.10	23.75	0.00
SO	BUILDHGT	CAB_E3_4	32.10	32.10	32.10	34.14	34.14	32.10
SO	BUILDHGT	CAB_E3_4	32.10	32.10	32.10	32.10	32.10	32.10
SO	BUILDWID	CAB_E3_4	57.18	56.24	53.58	49.30	60.48	0.00
SO	BUILDWID	CAB_E3_4	50.30	45.89	50.50	30.88	30.88	54.79
SO	BUILDWID	CAB_E3_4	52.90	49.41	44.41	49.74	53.88	56.39
SO	BUILDWID	CAB_E3_4	57.18	56.24	53.58	49.30	60.48	0.00
SO	BUILDWID	CAB_E3_4	50.30	45.89	50.50	30.88	30.88	54.79
SO	BUILDWID	CAB_E3_4	52.90	49.41	44.41	49.74	53.88	56.39
SO	BUILDLEN	CAB_E3_4	53.57	55.02	54.79	52.90	52.89	0.00
SO	BUILDLEN	CAB_E3_4	88.93	53.88	56.39	36.90	34.30	53.59

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SO	BUILDLEN	CAB_E3_4	49.30	43.52	36.42	39.89	45.89	50.50
SO	BUILDLEN	CAB_E3_4	53.57	55.02	54.79	52.90	52.89	0.00
SO	BUILDLEN	CAB_E3_4	88.93	53.88	56.39	36.90	34.29	53.59
SO	BUILDLEN	CAB_E3_4	49.30	43.52	36.42	39.89	45.89	50.50
SO	XBADJ	CAB_E3_4	-58.52	-54.56	-48.93	-41.82	-35.24	0.00
SO	XBADJ	CAB_E3_4	-19.92	-15.22	-10.06	52.60	48.81	6.59
SO	XBADJ	CAB_E3_4	11.97	16.98	21.48	19.65	15.16	10.21
SO	XBADJ	CAB E3 4	4.95	-0.46	-5.86	-11.08	-17.65	0.00
SO	XBADJ	CAB_E3_4	-69.00	-38.66	-46.33	-89.50	-83.11	-60.18
SO	XBADJ	CAB_E3_4	-61.27	-60.51	-57.90	-59.54	-61.05	-60.71
SO	YBADJ	CAB_E3_4	-24.00	-29.13	-33.39	-36.62	-37.92	0.00
SO	YBADJ	CAB_E3_4	-34.39	-38.11	-35.46	23.09	35.13	-21.53
SO	YBADJ	CAB_E3_4	-15.37	-8.74	-1.84	4.95	11.72	18.14
SO	YBADJ	CAB_E3_4	24.00	29.14	33.39	36.62	37.92	0.00
SO	YBADJ	CAB_E3_4	34.39	38.11	35.46	-23.09	-35.13	21.53
SO	YBADJ	CAB_E3_4	15.37	8.74	1.84	-4.95	-11.72	-18.14

SO	BUILDHGT	MEC_E8_9	22.90	22.90	22.90	22.90	22.90	22.90
SO	BUILDHGT	MEC_E8_9	22.90	22.90	22.90	22.90	22.90	22.90
SO	BUILDHGT	MEC_E8_9	22.90	22.90	22.90	22.90	22.90	22.90
SO	BUILDHGT	MEC_E8_9	22.90	22.90	22.90	22.90	22.90	22.90
SO	BUILDHGT	MEC_E8_9	22.90	22.90	22.90	22.90	22.90	22.90
SO	BUILDHGT	MEC_E8_9	22.90	22.90	22.90	22.90	22.90	22.90
SO	BUILDWID	MEC_E8_9	38.50	39.68	45.07	49.09	51.62	52.58
SO	BUILDWID	MEC_E8_9	51.94	49.73	46.00	40.88	41.17	46.08
SO	BUILDWID	MEC_E8_9	49.58	51.58	52.01	50.85	48.16	44.00
SO	BUILDWID	MEC_E8_9	38.50	39.68	45.07	49.09	51.62	52.58
SO	BUILDWID	MEC_E8_9	51.94	49.73	46.00	40.88	41.17	46.08
SO	BUILDWID	MEC_E8_9	49.58	51.58	52.01	50.85	48.16	44.00
SO	BUILDLEN	MEC_E8_9	40.88	41.17	46.08	49.58	51.58	52.01
SO	BUILDLEN	MEC_E8_9	50.85	48.16	44.00	38.50	39.68	45.07
SO	BUILDLEN	MEC_E8_9	49.09	51.62	52.58	51.94	49.73	46.00
SO	BUILDLEN	MEC_E8_9	40.88	41.17	46.08	49.58	51.58	52.01
SO	BUILDLEN	MEC_E8_9	50.85	48.16	44.00	38.50	39.68	45.07
SO	BUILDLEN	MEC_E8_9	49.09	51.62	52.58	51.94	49.73	46.00
SO	XBADJ	MEC_E8_9	-13.45	-8.13	-5.74	-3.18	-0.52	2.15
SO	XBADJ	MEC_E8_9	4.76	7.23	9.47	11.43	8.88	3.63
SO	XBADJ	MEC_E8_9	-1.72	-7.02	-12.10	-16.82	-21.03	-24.60
SO	XBADJ	MEC_E8_9	-27.42	-33.04	-40.33	-46.40	-51.05	-54.16
SO	XBADJ	MEC_E8_9	-55.62	-55.38	-53.47	-49.93	-48.55	-48.70
SO	XBADJ	MEC_E8_9	-47.37	-44.60	-40.47	-35.12	-28.69	-21.40
SO	YBADJ	MEC_E8_9	-30.68	-28.72	-26.17	-22.83	-18.79	-14.18
SO	YBADJ	MEC_E8_9	-9.15	-3.83	1.60	6.98	12.45	17.29
SO	YBADJ	MEC_E8_9	21.61	25.26	28.15	30.19	31.30	31.47
SO	YBADJ	MEC_E8_9	30.68	28.71	26.17	22.83	18.79	14.18
SO	YBADJ	MEC_E8_9	9.15	3.83	-1.60	-6.98	-12.45	-17.29
SO	YBADJ	MEC_E8_9	-21.61	-25.26	-28.15	-30.19	-31.30	-31.47

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SO	BUILDHGT	TEMES_7	0.00	17.43	17.43	17.43	17.43	17.43
SO	BUILDHGT	TEMES_7	17.43	14.80	14.80	14.80	9.14	7.32
SO	BUILDHGT	TEMES_7	7.32	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	TEMES_7	0.00	14.80	0.00	0.00	0.00	9.14
SO	BUILDHGT	TEMES_7	9.14	9.14	14.80	14.80	9.14	0.00
SO	BUILDHGT	TEMES_7	0.00	22.90	22.90	22.90	22.90	22.90
SO	BUILDWID	TEMES_7	0.00	55.67	49.50	44.17	50.19	54.68
SO	BUILDWID	TEMES_7	57.51	102.44	97.30	90.00	8.59	10.08
SO	BUILDWID	TEMES_7	8.68	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	TEMES_7	0.00	107.58	0.00	0.00	0.00	13.20
SO	BUILDWID	TEMES_7	13.02	12.45	97.30	90.00	8.59	0.00
SO	BUILDWID	TEMES_7	0.00	51.58	52.01	50.85	48.16	44.00
SO	BUILDLEN	TEMES_7	0.00	56.92	53.10	48.48	54.41	59.30
SO	BUILDLEN	TEMES_7	62.37	98.43	104.69	107.77	13.25	18.43
SO	BUILDLEN	TEMES_7	18.04	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	TEMES_7	0.00	79.97	0.00	0.00	0.00	10.82
SO	BUILDLEN	TEMES_7	12.09	12.98	104.69	107.77	13.25	0.00
SO	BUILDLEN	TEMES_7	0.00	51.62	52.58	51.94	49.73	46.00
SO	XBADJ	TEMES_7	0.00	-95.34	-98.70	-99.88	-103.04	-103.07
SO	XBADJ	TEMES_7	-99.97	-128.70	-126.72	-120.89	-23.81	-50.77
SO	XBADJ	TEMES_7	-50.86	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	TEMES_7	0.00	15.36	0.00	0.00	0.00	9.00
SO	XBADJ	TEMES_7	9.94	10.59	22.03	13.12	10.56	0.00
SO	XBADJ	TEMES_7	0.00	-109.21	-113.15	-113.66	-110.71	-104.40
SO	YBADJ	TEMES_7	0.00	31.64	19.13	6.81	-5.56	-17.77
SO	YBADJ	TEMES_7	-29.43	-18.28	-31.45	-44.07	-4.27	3.03
SO	YBADJ	TEMES_7	-4.23	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	TEMES_7	0.00	-57.59	0.00	0.00	0.00	-10.17
SO	YBADJ	TEMES_7	-7.56	-4.73	31.45	44.07	4.27	0.00
SO	YBADJ	TEMES_7	0.00	26.86	11.96	-3.30	-18.47	-33.07

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APPENDIX B-1

AERMINUTE INPUT FILE

```
STARTEND 1 2011 12 2011
IFWGROUP Y 8 9 2004

DATAFILE STARTING
64050PGUM201101.dat
64050PGUM201102.dat
64050PGUM201103.dat
64050PGUM201104.dat
64050PGUM201105.dat
64050PGUM201106.dat
64050PGUM201107.dat
64050PGUM201108.dat
64050PGUM201109.dat
```

<note that remaining months are not available for 1-minute ASOS from NCDC. See ftp://ftp.ncdc.noaa.gov/pub/data/asos-onemin/6405-2011/.>

```
DATAFILE FINISHED

SURFDATA STARTING
912120-41415-2011

SURFDATA FINISHED

OUTFILES STARTING
HOURFILE GUM_2011.AERMINUTE
SUMMFILE GUM_2011.summ
COMPFILE GUM_2011.comp
OUTFILES FINISHED
```


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APPENDIX B-2

AERMET INPUT FILE

AERMET INPUT
STAGE 1

```
JOB

  MESSAGES   "aermet_2011.MS1"
  REPORT     "aermet_2011.RP1"

UPPERAIR

    AUDIT     UATT
    RANGE     UATT -350 < 400  99999
    DATA      "U:\Met_Data\Upper Air\PGAC_2011-2015.fsl"   FSL
    EXTRACT   "UAEXOUT.DSK"
    QAOUT     "UAQAOUT.DSK"

    XDATES    10/12/31 TO 12/1/1

    LOCATION  91212  13.55N  144.83E   -10

SURFACE

    DATA      "U:\Met_Data\Surface\912120-41415-2010-2015"  ISHD
    EXTRACT   "SFEXOUT.DSK"
    QAOUT     "SFQAOUT.DSK"
    AUDIT     TSKC
    RANGE     TMPD -330 < 420  999

    XDATES    10/12/31  TO  12/1/1

    LOCATION  41415  13.478N  144.793E  -10  77.4

ONSITE
  DATA      "U:\Met_Data\Onsite\onsite_2011-2015.txt"
  XDATES    10/12/31  TO  12/1/1
  LOCATION  0000001  144.687E  13.461N  0  2.0
  QAOUT     "OSQAOUT.DSK"


  READ 1 OSYR OSMO OSDY OSHR HT01 WS01 WD01

  FORMAT 1 FREE

RANGE WS 0 <= 50 99
RANGE WD 0 <= 360 999

  THRESHOLD  0.3
```


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STAGE 2

```
JOB

  MESSAGES "aermet_2011.MS2"
  REPORT   "aermet_2011.RP2"

ONSITE
  QAOUT    "OSQAOUT.DSK"

SURFACE

  QAOUT    "SFQAOUT.DSK"
  ASOS1MIN "U:\02_aerminute\GUM_2010-2015.AERMINUTE"

UPPERAIR

  QAOUT    "UAQAOUT.DSK"

MERGE

  OUTPUT   "aermet_2011.MRG"
  XDATES   10/12/31 TO 11/12/31
```

STAGE 3

```
JOB

  MESSAGES    "aermet_2011.MS3"
  REPORT      "aermet_2011.RP3"

METPREP

  DATA        "aermet_2011.MRG"
  METHOD      REFLEVEL SUBNWS
  METHOD      STABLEBL ADJ_U*
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND 10
  THRESH_1MIN 0.5
  UAWINDOW    -7 +3
  OUTPUT      "GPA_2011.SFC"
  PROFILE     "GPA_2011.PFL"
  MODEL       AERMOD
  XDATES      10/12/31 TO 11/12/31

** Primary site Onsite - WET
  FREQ_SECT ANNUAL 8
  SECTOR  1  0  45
  SITE_CHAR  1  1  0.127  0.179  0.004
```


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```
  SECTOR  2  45  90
  SITE_CHAR  1  2  0.127  0.179  0.054
  SECTOR  3  90  135
  SITE_CHAR  1  3  0.127  0.179  0.184
  SECTOR  4  135  180
  SITE_CHAR  1  4  0.127  0.179  0.343
  SECTOR  5  180  225
  SITE CHAR  1  5  0.127  0.179  0.373
  SECTOR  6  225  270
  SITE_CHAR  1  6  0.127  0.179  0.019
  SECTOR  7  270  315
  SITE_CHAR  1  7  0.127  0.179  0.013
  SECTOR  8  315  360
  SITE_CHAR  1  8  0.127  0.179  0.018

** Secondary site GUM - WET
  FREQ_SECT2 ANNUAL 8
  SECTOR2  1  0  45
  SITE_CHAR2  1  1  0.137  0.269  0.064
  SECTOR2  2  45  90
  SITE_CHAR2  1  2  0.137  0.269  0.076
  SECTOR2  3  90  135
  SITE_CHAR2  1  3  0.137  0.269  0.142
  SECTOR2  4  135  180
  SITE_CHAR2  1  4  0.137  0.269  0.178
  SECTOR2  5  180  225
  SITE_CHAR2  1  5  0.137  0.269  0.156
  SECTOR2  6  225  270
  SITE_CHAR2  1  6  0.137  0.269  0.116
  SECTOR2  7  270  315
  SITE_CHAR2  1  7  0.137  0.269  0.068
  SECTOR2  8  315  360
  SITE_CHAR2  1  8  0.137  0.269  0.061
```


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APPENDIX B-3

AERMAP INPUT FILE

```
CO STARTING
CO TITLEONE GPA DRR MODELING
CO TITLETWO WGS 84 ZONE 55
CO TERRHGTS EXTRACT
CO DATATYPE NED
CO DATAFILE "<<path>>\04_AERMAP\00354969.TIF"
CO DATAFILE "<<path>>\04_AERMAP\47642395.TIF"
CO DATAFILE "<<path>>\04 AERMAP\74318991.TIF"
CO ANCHORXY 245353.1 1464472 245353.1 1464472 55 3
CO RUNORNOT RUN
CO NADGRIDS "<<path>>"
CO FINISHED

SO STARTING
SO LOCATION CAB_B1 POINT 249454.6 1489682.1
SO LOCATION CAB_B2 POINT 249479.2 1489697.18
SO LOCATION CAB_E3_4 POINT 249395.07 1489668.61
SO LOCATION MEC_E8_9 POINT 249840.4 1489439.
SO LOCATION TEMES_7 POINT 249838.8 1489522.
SO LOCATION HOTELC1 VOLUME 246877. 1489122.
SO LOCATION HOTELN2 VOLUME 246777.8 1486660.
SO LOCATION HOTELN3 VOLUME 247504.1 1486606.
SO LOCATION MNGN_T01 POINT 256718.21 1484075
SO LOCATION TALO_T01 POINT 256557.77 1477300.6
SO LOCATION TALO_T02 POINT 256557.77 1477300.6
SO LOCATION MCHS01 POINT 264772.44 1494642.4
SO LOCATION MCHS02 POINT 264803.93 1494663.5
SO LOCATION CAB34S01 POINT 249406.05 1489600.7
SO LOCATION CAB34S02 POINT 249424.48 1489658.4
SO LOCATION CAB12S01 POINT 249514.91 1489659.5
SO LOCATION CAB1S01 POINT 249491.27 1489680.6
SO LOCATION CAB1S02 POINT 249488.24 1489681.6
SO LOCATION CAB2S01 POINT 249471.54 1489669.9
SO LOCATION CAB2S02 POINT 249467.85 1489670.4
SO LOCATION DDT1S01 POINT 267502.06 1495200
SO LOCATION DDT1S02 POINT 267477.33 1495240.9
SO LOCATION DDT2S01 POINT 267500.48 1495162.9
SO LOCATION DDT2S02 POINT 267475.19 1495197.1
SO LOCATION DDDS01 POINT 267533.83 1495150.9
SO LOCATION DDDS02 POINT 267565.45 1495171.6
SO LOCATION DDDS03 POINT 267534.52 1495169.2
SO LOCATION DDTS01 POINT 267476.57 1495273.1
SO LOCATION DDTS02 POINT 267491.94 1495272.7
SO LOCATION DDTS03 POINT 267495.52 1495252
SO LOCATION TNGS01 POINT 262764.27 1498088.2
SO LOCATION PIT25S01 POINT 249746.63 1489539.2
SO LOCATION PIT25S02 POINT 249753.96 1489462.8
SO LOCATION MEC89S01 POINT 249884.28 1489417.6
SO LOCATION TMS7S01 POINT 249824.74 1489518
```


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```
SO LOCATION TMS7S02 POINT 249808.62 1489537.1
SO LOCATION TMS7S03 POINT 249778.85 1489554.1
SO LOCATION TNJS01 POINT 249540.44 1484392.4
SO LOCATION TNJS02 POINT 249546.49 1484397.8
SO LOCATION YIGS01 POINT 271958.49 1498343.9
SO FINISHED

RE STARTING
<<CUT FOR SPACE, SEE DIGITAL FILES>>
RE FINISHED

OU STARTING
OU RECEPTOR "<<path>>\04_AERMAP\GPADRR.RCF"
OU SOURCLOC "<<path>>\04_AERMAP\GPADRR.SRF"
OU FINISHED
```


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APPENDIX B-4

AERMOD INPUT FILE

```
CO STARTING
CO TITLEONE GPA DRR Modeling
CO TITLETWO WGS 84 ZONE 55
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID SO2
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO ELEVUNIT METERS
** CABRAS - 66 MW Heavy Oil Fired Boiler and Steam Engine
SO LOCATION CAB_B1 POINT 249454.6 1489682.1 0.72
SO SRCPARAM CAB_B1 159.83707 61. 422. 15.700248 2.59
SO BUILDHGT CAB_B1          34.14    34.14    32.10    32.10    32.10    32.10
SO BUILDHGT CAB_B1          32.10    32.10    32.10    34.14    34.14    34.14
SO BUILDHGT CAB_B1          34.14    34.14    34.14    34.14    34.14    34.14
SO BUILDHGT CAB_B1          34.14    34.14    32.10    32.10    32.10    32.10
SO BUILDHGT CAB_B1          32.10    32.10    32.10    34.14    34.14    34.14
SO BUILDHGT CAB_B1          34.14    34.14    34.14    34.14    34.14    34.14
SO BUILDWID CAB_B1          36.90    34.30    53.58    49.30    43.52    36.42
SO BUILDWID CAB_B1          39.89    63.62    75.00    33.22    36.14    37.95
SO BUILDWID CAB_B1          38.62    38.11    36.44    37.85    38.71    38.39
SO BUILDWID CAB_B1          36.90    34.30    53.58    49.30    43.52    36.42
SO BUILDWID CAB_B1          39.89    63.62    75.00    33.22    36.14    37.95
SO BUILDWID CAB_B1          38.62    38.11    36.44    37.85    38.71    38.39
SO BUILDLEN CAB_B1          33.22    36.14    54.79    52.90    49.41    44.41
SO BUILDLEN CAB_B1          49.74    87.21    82.84    36.90    34.30    30.65
SO BUILDLEN CAB_B1          26.07    20.69    14.69    18.93    24.49    29.30
SO BUILDLEN CAB_B1          33.22    36.14    54.79    52.90    49.41    44.41
SO BUILDLEN CAB_B1          49.74    87.21    82.84    36.90    34.29    30.65
SO BUILDLEN CAB_B1          26.07    20.69    14.69    18.93    24.49    29.30
SO XBADJ    CAB_B1         -17.15   -15.98   -90.38   -90.42   -87.71   -82.34
SO XBADJ    CAB_B1         -80.48   -76.19   -69.59    -3.69    -2.51    -1.26
SO XBADJ    CAB_B1           0.02     1.31     2.56    -1.45    -6.58   -11.50
SO XBADJ    CAB_B1         -16.07   -20.16    35.58    37.52    38.31    37.94
SO XBADJ    CAB_B1          30.74   -11.02   -13.25   -33.22   -31.78   -29.38
SO XBADJ    CAB_B1         -26.09   -22.01   -17.25   -17.48   -17.91   -17.80
SO YBADJ    CAB_B1         -14.76   -14.63    11.42     0.31   -10.81   -21.61
SO YBADJ    CAB_B1         -31.91   -32.19   -36.70    -0.54     2.09     4.66
SO YBADJ    CAB_B1           7.08     9.29    11.22    12.51    13.69    14.44
SO YBADJ    CAB_B1          14.76    14.63   -11.42    -0.31    10.81    21.61
SO YBADJ    CAB_B1          31.91    32.19    36.70     0.54    -2.09    -4.66
SO YBADJ    CAB_B1          -7.08    -9.29   -11.22   -12.51   -13.69   -14.45
** CABRAS - 66 MW Heavy Oil Fired Boiler and Steam Engine
SO LOCATION CAB_B2 POINT 249479.2 1489697.18 0.56
SO SRCPARAM CAB_B2 159.83707 61. 422. 15.700248 2.59
SO BUILDHGT CAB_B2          34.14    34.14    32.10    32.10    32.10    32.10
SO BUILDHGT CAB_B2          32.10    32.10    32.10    34.14    34.14    34.14
```

```
SO BUILDHGT CAB_B2          34.14    34.14    34.14    34.14    34.14    34.14
SO BUILDHGT CAB_B2          34.14    34.14    32.10    32.10    32.10    32.10
SO BUILDHGT CAB_B2          32.10    32.10    32.10    34.14    34.14    34.14
SO BUILDHGT CAB_B2          34.14    34.14    34.14    34.14    34.14    34.14
SO BUILDWID CAB_B2          36.90    34.30    53.58    49.30    43.52    36.42
SO BUILDWID CAB_B2          50.30    63.62    75.00    33.22    36.14    37.95
SO BUILDWID CAB_B2          38.62    38.11    36.44    37.85    38.71    38.39
SO BUILDWID CAB_B2          36.90    34.30    53.58    49.30    43.52    37.26
SO BUILDWID CAB_B2          50.30    63.62    75.00    33.22    36.14    37.95
SO BUILDWID CAB_B2          38.62    38.11    36.44    37.85    38.71    38.39
SO BUILDLEN CAB_B2          33.22    36.14    54.79    52.90    49.41    44.41
SO BUILDLEN CAB_B2          88.93    87.21    82.84    36.90    34.30    30.65
SO BUILDLEN CAB_B2          26.07    20.69    14.69    18.93    24.49    29.30
SO BUILDLEN CAB_B2          33.22    36.14    54.79    95.37    93.40    88.59
SO BUILDLEN CAB_B2          88.93    87.21    82.84    36.90    34.29    30.65
SO BUILDLEN CAB_B2          26.07    20.69    14.69    18.93    24.49    29.30
SO XBADJ    CAB_B2         -36.27   -38.56  -115.74  -117.78  -116.25  -111.19
SO XBADJ    CAB_B2        -108.75  -103.04   -94.19   -25.30   -20.47   -15.03
SO XBADJ    CAB_B2          -9.13    -2.95     3.32     4.30     4.00     3.58
SO XBADJ    CAB_B2           3.05     2.42    60.94    22.41    22.85    22.60
SO XBADJ    CAB_B2          19.83    15.83    11.35   -11.61   -13.82   -15.62
SO XBADJ    CAB_B2         -16.94   -17.75   -18.01   -23.23   -28.49   -32.88
SO YBADJ    CAB_B2           6.84     3.32    25.19     9.46    -6.55   -22.37
SO YBADJ    CAB_B2         -32.46   -42.77   -51.78   -19.66   -20.49   -20.70
SO YBADJ    CAB_B2         -20.28   -19.25   -17.63   -15.76   -13.16   -10.16
SO YBADJ    CAB_B2          -6.84    -3.32   -25.19    -9.46     6.55    21.95
SO YBADJ    CAB_B2          32.46    42.77    51.78    19.66    20.49    20.70
SO YBADJ    CAB_B2          20.28    19.25    17.63    15.76    13.16    10.16
** CABRAS - 40 MW Low Speed Diesel Engine
SO LOCATION CAB_E3_4 POINT 249395.07 1489668.61 1.09
SO SRCPARAM CAB_E3_4 185.9719 61.5696 445.65 21.336 2.4384
SO BUILDHGT CAB_E3_4        32.10    32.10    32.10    32.10    23.75     0.00
SO BUILDHGT CAB_E3_4        32.10    32.10    32.10    34.14    34.14    32.10
SO BUILDHGT CAB_E3_4        32.10    32.10    32.10    32.10    32.10    32.10
SO BUILDHGT CAB_E3_4        32.10    32.10    32.10    32.10    23.75     0.00
SO BUILDHGT CAB_E3_4        32.10    32.10    32.10    34.14    34.14    32.10
SO BUILDHGT CAB_E3_4        32.10    32.10    32.10    32.10    32.10    32.10
SO BUILDWID CAB_E3_4        57.18    56.24    53.58    49.30    60.48     0.00
SO BUILDWID CAB_E3_4        50.30    45.89    50.50    30.88    30.88    54.79
SO BUILDWID CAB_E3_4        52.90    49.41    44.41    49.74    53.88    56.39
SO BUILDWID CAB_E3_4        57.18    56.24    53.58    49.30    60.48     0.00
SO BUILDWID CAB_E3_4        50.30    45.89    50.50    30.88    30.88    54.79
SO BUILDWID CAB_E3_4        52.90    49.41    44.41    49.74    53.88    56.39
SO BUILDLEN CAB_E3_4        53.57    55.02    54.79    52.90    52.89     0.00
SO BUILDLEN CAB_E3_4        88.93    53.88    56.39    36.90    34.30    53.59
SO BUILDLEN CAB_E3_4        49.30    43.52    36.42    39.89    45.89    50.50
SO BUILDLEN CAB_E3_4        53.57    55.02    54.79    52.90    52.89     0.00
SO BUILDLEN CAB_E3_4        88.93    53.88    56.39    36.90    34.29    53.59
SO BUILDLEN CAB_E3_4        49.30    43.52    36.42    39.89    45.89    50.50
SO XBADJ    CAB_E3_4       -58.52   -54.56   -48.93   -41.82   -35.24     0.00
```


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```
SO XBADJ    CAB_E3_4       -19.92   -15.22   -10.06    52.60    48.81     6.59
SO XBADJ    CAB_E3_4        11.97    16.98    21.48    19.65    15.16    10.21
SO XBADJ    CAB_E3_4         4.95    -0.46    -5.86   -11.08   -17.65     0.00
SO XBADJ    CAB_E3_4       -69.00   -38.66   -46.33   -89.50   -83.11   -60.18
SO XBADJ    CAB_E3_4       -61.27   -60.51   -57.90   -59.54   -61.05   -60.71
SO YBADJ    CAB_E3_4       -24.00   -29.13   -33.39   -36.62   -37.92     0.00
SO YBADJ    CAB_E3_4       -34.39   -38.11   -35.46    23.09    35.13   -21.53
SO YBADJ    CAB_E3_4       -15.37    -8.74    -1.84     4.95    11.72    18.14
SO YBADJ    CAB_E3_4        24.00    29.14    33.39    36.62    37.92     0.00
SO YBADJ    CAB_E3_4        34.39    38.11    35.46   -23.09   -35.13    21.53
SO YBADJ    CAB_E3_4        15.37     8.74     1.84    -4.95   -11.72   -18.14
** MEC PITI - Turbine
SO LOCATION MEC_E8_9 POINT 249840.4 1489439. 2.76
SO SRCPARAM MEC_E8_9 194.99910199999 61.8995 812.59 7.253535 5.3216
SO BUILDHGT MEC_E8_9        22.90    22.90    22.90    22.90    22.90    22.90
SO BUILDHGT MEC_E8_9        22.90    22.90    22.90    22.90    22.90    22.90
SO BUILDHGT MEC_E8_9        22.90    22.90    22.90    22.90    22.90    22.90
SO BUILDHGT MEC_E8_9        22.90    22.90    22.90    22.90    22.90    22.90
SO BUILDHGT MEC_E8_9        22.90    22.90    22.90    22.90    22.90    22.90
SO BUILDHGT MEC_E8_9        22.90    22.90    22.90    22.90    22.90    22.90
SO BUILDWID MEC_E8_9        38.50    39.68    45.07    49.09    51.62    52.58
SO BUILDWID MEC_E8_9        51.94    49.73    46.00    40.88    41.17    46.08
SO BUILDWID MEC_E8_9        49.58    51.58    52.01    50.85    48.16    44.00
SO BUILDWID MEC_E8_9        38.50    39.68    45.07    49.09    51.62    52.58
SO BUILDWID MEC_E8_9        51.94    49.73    46.00    40.88    41.17    46.08
SO BUILDWID MEC_E8_9        49.58    51.58    52.01    50.85    48.16    44.00
SO BUILDLEN MEC_E8_9        40.88    41.17    46.08    49.58    51.58    52.01
SO BUILDLEN MEC_E8_9        50.85    48.16    44.00    38.50    39.68    45.07
SO BUILDLEN MEC_E8_9        49.09    51.62    52.58    51.94    49.73    46.00
SO BUILDLEN MEC_E8_9        40.88    41.17    46.08    49.58    51.58    52.01
SO BUILDLEN MEC_E8_9        50.85    48.16    44.00    38.50    39.68    45.07
SO BUILDLEN MEC_E8_9        49.09    51.62    52.58    51.94    49.73    46.00
SO XBADJ    MEC_E8_9       -13.45    -8.13    -5.74    -3.18    -0.52     2.15
SO XBADJ    MEC_E8_9         4.76     7.23     9.47    11.43     8.88     3.63
SO XBADJ    MEC_E8_9        -1.72    -7.02   -12.10   -16.82   -21.03   -24.60
SO XBADJ    MEC_E8_9       -27.42   -33.04   -40.33   -46.40   -51.05   -54.16
SO XBADJ    MEC_E8_9       -55.62   -55.38   -53.47   -49.93   -48.55   -48.70
SO XBADJ    MEC_E8_9       -47.37   -44.60   -40.47   -35.12   -28.69   -21.40
SO YBADJ    MEC_E8_9       -30.68   -28.72   -26.17   -22.83   -18.79   -14.18
SO YBADJ    MEC_E8_9        -9.15    -3.83     1.60     6.98    12.45    17.29
SO YBADJ    MEC_E8_9        21.61    25.26    28.15    30.19    31.30    31.47
SO YBADJ    MEC_E8_9        30.68    28.71    26.17    22.83    18.79    14.18
SO YBADJ    MEC_E8_9         9.15     3.83    -1.60    -6.98   -12.45   -17.29
SO YBADJ    MEC_E8_9       -21.61   -25.26   -28.15   -30.19   -31.30   -31.47
** TEMES PITI - 40 MW simple cycle combustion turbine
SO LOCATION TEMES_7 POINT 249838.8 1489522. 2.37
SO SRCPARAM TEMES_7 28.85351465 21.209 831.83 26.33 4.0864
SO BUILDHGT TEMES_7          0.00    17.43    17.43    17.43    17.43    17.43
SO BUILDHGT TEMES_7         17.43    14.80    14.80    14.80     9.14     7.32
SO BUILDHGT TEMES_7          7.32     0.00     0.00     0.00     0.00     0.00
```


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```
SO BUILDHGT TEMES_7          0.00    14.80     0.00     0.00     0.00     9.14
SO BUILDHGT TEMES_7          9.14     9.14    14.80    14.80     9.14     0.00
SO BUILDHGT TEMES_7          0.00    22.90    22.90    22.90    22.90    22.90
SO BUILDWID TEMES_7          0.00    55.67    49.50    44.17    50.19    54.68
SO BUILDWID TEMES_7         57.51   102.44    97.30    90.00     8.59    10.08
SO BUILDWID TEMES_7          8.68     0.00     0.00     0.00     0.00     0.00
SO BUILDWID TEMES_7          0.00   107.58     0.00     0.00     0.00    13.20
SO BUILDWID TEMES_7         13.02    12.45    97.30    90.00     8.59     0.00
SO BUILDWID TEMES_7          0.00    51.58    52.01    50.85    48.16    44.00
SO BUILDLEN TEMES_7          0.00    56.92    53.10    48.48    54.41    59.30
SO BUILDLEN TEMES_7         62.37    98.43   104.69   107.77    13.25    18.43
SO BUILDLEN TEMES_7         18.04     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN TEMES_7          0.00    79.97     0.00     0.00     0.00    10.82
SO BUILDLEN TEMES_7         12.09    12.98   104.69   107.77    13.25     0.00
SO BUILDLEN TEMES_7          0.00    51.62    52.58    51.94    49.73    46.00
SO XBADJ    TEMES_7          0.00   -95.34   -98.70   -99.88  -103.04  -103.07
SO XBADJ    TEMES_7        -99.97  -128.70  -126.72  -120.89   -23.81   -50.77
SO XBADJ    TEMES_7        -50.86     0.00     0.00     0.00     0.00     0.00
SO XBADJ    TEMES_7          0.00    15.36     0.00     0.00     0.00     9.00
SO XBADJ    TEMES_7          9.94    10.59    22.03    13.12    10.56     0.00
SO XBADJ    TEMES_7          0.00  -109.21  -113.15  -113.66  -110.71  -104.40
SO YBADJ    TEMES_7          0.00    31.64    19.13     6.81    -5.56   -17.77
SO YBADJ    TEMES_7        -29.43   -18.28   -31.45   -44.07    -4.27     3.03
SO YBADJ    TEMES_7         -4.23     0.00     0.00     0.00     0.00     0.00
SO YBADJ    TEMES_7          0.00   -57.59     0.00     0.00     0.00   -10.17
SO YBADJ    TEMES_7         -7.56    -4.73    31.45    44.07     4.27     0.00
SO YBADJ    TEMES_7          0.00    26.86    11.96    -3.30   -18.47   -33.07
SO LOCATION HOTELC1 VOLUME 246877. 1489122. 0.00
SO SRCPARAM HOTELC1 2.1646 25. 13.9534884 11.627907
SO LOCATION HOTELN2 VOLUME 246777.8 1486660. 0.00
SO SRCPARAM HOTELN2 2.1646 25. 13.9534884 11.627907
SO LOCATION HOTELN3 VOLUME 247504.1 1486606. 0.00
SO SRCPARAM HOTELN3 2.1646 25. 13.9534884 11.627907

** Actual emissions developed March 2017
SO HOUREMIS "gpa_houremis.txt" CAB_B1 CAB_B2 CAB_E3_4 MEC_E8_9 TEMES_7

SO SRCGROUP ALL
SO SRCGROUP GPA  CAB_B1 CAB_B2 CAB_E3_4 MEC_E8_9 TEMES_7
SO SRCGROUP HOTEL  HOTELC1 HOTELN2 HOTELN3
SO SRCGROUP CAB_B1  CAB_B1
SO SRCGROUP CAB_B2  CAB_B2
SO SRCGROUP CAB_E3_4  CAB_E3_4
SO SRCGROUP MEC_E8_9  MEC_E8_9
SO SRCGROUP TEMES_7  TEMES_7
SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE DISCCART 249626.3 1488464 5.27 319.12
```


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```
<<< see digital file for all receptors >>>
RE DISCCART 246263.40 1489707.00 0.15 0.15
RE FINISHED

ME STARTING
ME SURFFILE "GPA_2011-2013.SFC" FREE
ME PROFFILE "GPA_2011-2013.PFL"
ME SURFDATA  41415 2011
ME UAIRDATA  91212 2011
ME PROFBASE 77.4 METERS
ME FINISHED

OU STARTING
OU RECTABLE 1 FIRST SECOND THIRD FOURTH
OU PLOTFILE 1 ALL FOURTH "GPADRR.GRF" 31
OU PLOTFILE 1 GPA FOURTH "GPADRR.GRF" 31
OU PLOTFILE 1 HOTEL FOURTH "GPADRR.GRF" 31
OU SUMMFILE "GPADRR.SUM"
OU FILEFORM EXP
OU FINISHED
```


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APPENDIX C

QUALITY CONTROL AND QUALITY ASSURANCE MANUAL FOR THE CABRAS POWER PLANT METEOROLOGICAL MONITORING PROGRAM (PROVIDED IN DIGITAL FORM WITH THE MODELING FILES)

QUALITY CONTROL
&
QUALITY ASSURANCE MANUAL

FOR THE

Cabras Power Plant
Meteorological Monitoring Program

GUAM POWER AUTHORITY

Planning & Regulatory Department
1911 Route 16
Harmon, Guam 96913

Revision 3: 11 February 2012

AMS TECH
Air Monitoring Services and Technology LLC
7321 Preston Way Boulder, Colorado 80301 303 530 9032

APPENDIX D

AMBIENT AIR QUALITY MONITORING NETWORK ANNUAL DATA REPORT FOR OCTOBER 1999-SEPTEMBER 2000

(PROVIDED IN DIGITAL FORM WITH THE MODELING FILES)

FINAL DATA REPORT
OCTOBER 2000

GUAM POWER AUTHORITY

AMBIENT AIR QUALITY MONITORING NETWORK

ANNUAL DATA REPORT FOR OCTOBER 1999 – SEPTEMBER 2000

Prepared for

Guam Power Authority
P.O. Box 2977
Hagåtña, Guam 96910-2977

OTTE
CONSULTING
P.O. Box 24501
Barrigada, Guam 96921

APPENDIX E

HOURLY EMISSION PROTOCOL

(DATA INCLUDED IN DIGITAL MODELING FILES)

Proposed Hourly Varying Emissions for Guam Power Authority
Data Requirements Rule SO_2 NAAQS Designation Modeling;
Revised April 7, 2017

The "Data Requirements Rule for the 2010 1-hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS)" (DRR) allows use of hourly emissions data for dispersion modeling for area compliance demonstrations. The SO_2 NAAQS Designations Modeling Technical Assistance Document (TAD) describes approaches for calculating temporally varying emissions appropriate for inclusion in an hourly emission file for AERMOD dispersion model input. As stated in the TAD, the use of production data and AP-42 emission factors is an acceptable approach when hourly emissions data (e.g. Continuous Emission Monitoring System [CEMS] data) are not readily available.

CEMS monitored SO_2 emissions data are not available for Cabras, MEC or TEMES generating stations. Previous modeling submitted for the area designation (SO_2 NAAQS Designations Modeling Analyses, Results, and Documentation for the Guam Power Authority Piti and Cabras Power Stations, November 2016) conservatively used permitted, full load SO_2 emissions for these sources for the entire modeling period (2011-2013). Since submittal of the previous modeling analyses and report, Guam Power Authority (GPA) has worked diligently to compile the data needed to calculate hourly emission rates based on AP-42 emission factors, hourly production data, and kilowatt-hours (kWh) for each unit included in the modeling. Electronic files containing the hourly production rates (Generation Loading Reports)[1], daily fuel use[2], the monthly fuel oil receiving reports[3], and the low sulfur fuel oil (LSFO) firing events reports (hours and minutes)[4] for the modeling period have been developed.

1. The Generation Loading Reports provide hourly megawatt (MW) production figures for each unit in GPA's portfolio. These files are generally in the format of an hourly production spreadsheet for each day of the month. Each month in years 2012 and 2013 is contained in a separate Excel compatible workbook; year 2011 hourly production data is contained in a single workbook.

2. The daily fuel use spreadsheets provide the unit identification, the rated capacity of each unit (MW), the total daily kWh produced, and daily fuel consumption (gallons) for Low Sulfur Fuel Oil (LSFO) and High Sulfur Fuel Oil (HSFO).

3. The Fuel Receiving Reports list the date of receipt or date of sampling for each shipment of LSFO and HSFO, together with the vessel delivering the fuel, the weight percent of sulfur in the delivered fuel, the barrels of fuel delivered, the sulfur content of the fuel storage tank before and after delivery and the volume of fuel in the storage tank before and after delivery. These data are provided on monthly spreadsheets.

4. The Cabras and MEC units automatically switch from HSFO to LSFO when the wind direction changes from offshore (easterly) to onshore (westerly) flow. These events are recorded in the LSFO Firing Events spreadsheets which report the start and end time of each LSFO firing event and the cumulative hours and minutes of each event for each unit. These spreadsheets also document when the units are offline. Firing event data are combined in quarterly Excel workbooks for the Cabras and MEC facilities.

The Proposed Hourly Sulfur Dioxide Emission Calculation Methodologies presented below describe the approach used to determine the production rate, fuel consumed and apply the AP-42 emission factor to determine the hourly SO_2 emission rate. Separate methods are presented for TEMES-7, which uses only ultra-low sulfur diesel (ULSD), and Cabras and MEC which use both LSFO and HSFO.

If the data needed to calculate an SO_2 emission rate for a unit in a given hour is not available, and the unit is determined to be online or its operating status is unknown, the maximum firing rate will be used to calculate the SO_2 emission rate for that hour. If the use of LSFO or HSFO for Cabras or MEC cannot be determined for a given hour, HSFO firing will be assumed. TEMES-7 fires only ULSD, thus that fuel will be used in all calculations for this unit.

The proposed methodology to derive hourly SO_2 emission rates for the modeling period of 2011 through 2013 for the GPA generating units subject to the DRR, is intended to replace the modeled overly conservative emission rates that are based on permitted emission rates for each unit and assumed to operate at such rates continuously. The proposed methodology is expected to provide a conservative representation of actual SO_2 emissions during the modeled period, and therefore

result in conservatively high predicted SO_2 impacts, but less conservative than the previous modeling analyses.

TRC provided a proposed methodology summary for GPA review and comment. Subsequently, GPA staff submitted and discussed the proposed methodology with Guam EPA and USEPA. The final methodology presented in this document represents the agreed upon methods and data that will be used in the revised DRR modeling analyses.

Guam Power Authority

Proposed Hourly Sulfur Dioxide Emission Calculation Methodology;

ULSD Facilities

Calendar Years 2011-2013

Objective:

Using electric power production rates and the AP-42 emission factor for sulfur dioxide (SO_2) calculate Hourly Sulfur Dioxide Emissions from the TEMES-7 Guam Power Authority (GPA) plant for the period calendar years 2011-2013

Given:

GPA maintains multiple records, including the following:

- Hourly Burn Rate: The hourly burn rate for TEMES-7 is provided on an annual basis for the turbine.
- Type of Fuel Burned: The facility listed above only burns ULSD; sulfur content is assumed to be 15 ppm
- The Generation Loading Reports (GLR) track megawatt (MW) generation per hour per turbine.

Procedure:

The following procedure was developed to determine hourly sulfur dioxide emissions of TEMES-7. This process can be replicated and scripted for other GPA turbine units that burn solely ULSD.

1. **Determine Hourly Gallons of Fuel Burned**
    a. Extract TEMES-7 hourly MW generation from the GLR data for the timeframe January 1, 2011 at 12 AM through December 31, 2013 at 11 PM.
    b. Import the Hourly Burn Rate for the unit based on the corresponding year.
    c. Calculate the gallons of oil used per hour using the MW generated per hour and the hourly burn rate:

    Gallons of Fuel = [ACTUAL_MW] * [1000 kW / MW] * [1 Hour] / [Efficiency (kWh/gallon)]

2. **Evaluate Sulfur Content of Fuel**
    a. This facility only burns ULSD. Assume that sulfur content is 15 ppm; or 0.0015% by weight.
3. **Calculate SO_2 Emissions**
    a. Calculate the pounds of SO_2 emissions per hour
        i. Use AP-42 factor for SO_2 for Distillate-fired turbines; 1.01*S lb/MMBtu where S = percent sulfur by weight (Table 3.1-2a)

ii. Assume S = 0.0015%,
iii. Assume ULSD heating value of 139 MMBtu/1000 gallons (Table 3.1-2a; Footnote e)
iv. SO_2 Emissions (lbs/hr) = [Fuel Use (1000 gallons/hour)] * [139 MMBtu/gallons]*[1.01 * 0.0015 lb/MMBtu]
v. SO_2 Emissions (lbs/hr) = [Fuel Use (1000 gallons/hour)] * [0.211 (lb/1000 gallon)]

Guam Power Authority

Proposed Hourly Sulfur Dioxide Emission Calculation Methodology;

Cabras and MEC

Calendar Years 2011-2013

Objective:

Using electric power production rates and the AP-42 emission factor for sulfur dioxide (SO_2) to calculate Hourly Sulfur Dioxide Emissions from the following Guam Power Authority (GPA) plants for the period calendar years 2011-2013

- Cabras (Units #1, #2, #3, and #4)
- MEC (Units #8 and #9)

Given:

GPA maintains multiple records, including the following:

- Daily Burn Rate: The daily fuel use for LSFO and HSFO for each turbine is provided for each individual turbine.
- Type of Fuel Burned: For the MEC and Cabras facilities, GPA tracks the hours of low-sulfur fuel oil (LSFO) use and high-sulfur fuel oil (HSFO) on a monthly basis.
- Sulfur Content: GPA maintains records of the sulfur content of fuel oil received and the date that the fuel oil is received. Fuel oil is accepted at one terminal and distributed to each facility.
- The Generation Loading Reports (GLR) track megawatt (MW) generation per hour per turbine.

Procedure:

The following procedure was developed to determine hourly sulfur dioxide emissions from Cabras Unit #1. This process can be replicated and scripted for other GPA turbine units.

1. **Determine Hourly Megawatt Generation**
    a. Extract Cabras #1 hourly MW generation from the GLR data for the timeframe January 1, 2011 at 12 AM through December 31, 2013 at 11 PM.
    b. If hourly MW generation is missing from the GLR data, assume an average MW production for the missing hours' time of day and month.
2. **Determine Type of Fuel Burned During Each Hour**
    a. Using the Firing Events data logs, for each hour of the appropriate model period, determine whether Cabras #1 was firing LSFO or was offline.
    b. Assume all other hours not found in the Firing Events log were hours that Cabras #1 fired HSFO.

c. If a one-hour period includes both a fuel burn (LSFO or HSFO) and OFFLINE status, the type of fuel burned will be LSFO or HSFO as appropriate; no matter the length of time the unit was OFFLINE.
d. If a one-hour period includes both LSFO and HSFO firing, assume HSFO was burned for the entire hour (as a conservative estimate of SO_2 emissions during that hour).

3. **Determine Hourly Fuel Use**
   a. For a one-day period (starting 12 AM through 11 PM), determine total kWh generated burning LSFO from the daily fuel use and total MW records.

   b. For each hour during a one-day period when the fuel use was LSFO, determine the fraction of kWh generated for that hour as compared to the course of the day

      LSFO Fraction kWh (LSFO kWh per hour/LSFO kWh per day): If "Burn Status" = LSFO, [ACTUAL_MW @ 12 AM *1 hour] / [Total kWh/day]

   c. To determine quantity of fuel burned per hour, multiply the gallons of LSFO burned during the day (from daily use records) and multiply by the LSFO Fraction kWh per hour.

      LSFO Gallons / Hour = [Day X LSFO Fuel Use (gallons)] * LSFO Fraction kWh

   d. Repeat steps 3.a – 3.c, replacing LSFO with HSFO, to determine gallons of HSFO burned per hour
4. **Evaluate Sulfur Content of Fuel**
   a. Extract fuel sulfur content from fuel oil shipment records for both LSFO and HSFO.
   b. The fuel oil content can be obtained from the Residual Fuel Oil Receiving Report.
   c. To determine sulfur content for both LSFO and HSFO, determine average fuel oil sulfur content for calendar year (January 1 – December 31) based on fuel oil shipments received during the calendar year.
5. **Calculate SO_2 Emissions**
   a. Calculate the pounds of SO_2 emissions per hour
      i. Use AP-42 factor for SO_2 for No. 6 oil; 157*S lb/1000 gallons, where S = percent sulfur by weight (AP-42 Table 1.3-1)
      ii. If the "Type of Fuel Burned" indicates HSFO, the sulfur content of HSFO shall be used. If the "Type of Fuel Burned" indicates LSFO, the sulfur content of LSFO shall be used. If the unit was OFFLINE for the entire one-hour period, the sulfur content is assumed to be 0%.
      iii. SO_2 Emissions (lbs/hr) = [Fuel Use (1000 gallons/hour)] * [157 * (Sulfur (% wt) lb/1000 gallon]

To: Farah Mohammadesmaeili[Mohammadesmaeili.Farah@azdeq.gov]
From: Lee, Anita
Sent: Fri 3/3/2017 6:22:08 PM
Subject: RE: AEPCO SO2 DRR-Updated Modeling Report

Thanks very much Farah!

Anita

From: Farah Mohammadesmaeili [mailto:Mohammadesmaeili.Farah@azdeq.gov]
Sent: Friday, March 3, 2017 9:54 AM
To: Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Cc: Mike Sonenberg <Sonenberg.Mike@azdeq.gov>; Brian Parkey <Parkey.Brian@azdeq.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Lee, Anita <Lee.Anita@epa.gov>
Subject: AEPCO SO2 DRR-Updated Modeling Report

Hi Cleve, I apologize for the delay in submitting the updated modeling files and report for AEPCO SO2 DRR. Attached are the Word and PDF versions of the updated modeling report. I'll send you the modeling files in another email. As we discussed before, we updated the modeling report with 2017 BART limits using AERMOD v15181 default option. We are also submitting the modeling files for 2012-2014 hourly emissions in AERMOD v16216 Beta Option for your information.

Please let me know, if you have any question or need anything else form us.

Regards,

Farah Mohammadesmaeili, PhD, PE

Associate Environmental Engineer

Air Quality Technical Analysis Unit

Arizona Department of Environmental Quality

1110 W Washington Street

Phoenix, AZ 85007

602-771-2350

Fm4@azdeq.gov

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To: Leon-Guerrero, Tim[Leon-Guerrero.Tim@epa.gov]
From: Kiss, Michael (DEQ)
Sent: Fri 3/10/2017 2:36:51 PM
Subject: RE: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

You can call me before 10AM. After that I have a meeting.

From: Leon-Guerrero, Tim [mailto:Leon-Guerrero.Tim@epa.gov]
Sent: Thursday, March 09, 2017 6:41 PM
To: Kiss, Michael (DEQ)
Subject: Re: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

Let me know when I can call you on Friday

Tim LG

From: Kiss, Michael (DEQ) <Michael.Kiss@deq.virginia.gov>
Sent: Thursday, March 9, 2017 4:26:06 PM
To: Leon-Guerrero, Tim; Jon McClung
Subject: RE: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

Tim,

Question…what happens if you receive no 3rd party modeling and we do not elect to update our modeling results? That doesn't appear to be addressed in that memo. Specifically, does EPA intend to rerun our modeling anyway or is it off limits for EPA to conduct its own modeling to inform these designations?

I know it's a loaded question but I would like to understand the thought process of EPA going into these designations. I'm personally inclined to wait and comment on whatever modeling EPA or a 3rd party may perform rather than submit revisions at this time.

Thanks.

Mike

From: Leon-Guerrero, Tim [mailto:Leon-Guerrero.Tim@epa.gov]
Sent: Thursday, March 09, 2017 3:43 PM
To: Kiss, Michael (DEQ); Jon McClung
Subject: FW: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

I'm forwarding this to both of you since you have Round 3 sources that used 15181 with Adj U*. We've already discussed this but I'm passing this along. Let me know if you'd like to discuss this further.

Tim LG

From: Bridgers, George
Sent: Thursday, March 09, 2017 3:30 PM
To: Arnold, Anne <Arnold.Anne@epa.gov>; Avey, Lance <Avey.Lance@epa.gov>; Biton, Leiran <biton.leiran@epa.gov>; Blakley, Pamela <blakley.pamela@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; Burkhart, Richard <burkhart.richard@epa.gov>; Carlton-Carew, Njeri <carlton-carew.njeri@epa.gov>; Colecchia, Annamaria <Colecchia.Annamaria@epa.gov>; Cox, Kyndall <Cox.Kyndall@epa.gov>; D'Agostino, Kathleen <dagostino.kathleen@epa.gov>; Doty, Edward <Doty.Edward@epa.gov>; Dresser, Chris <Dresser.Chris@epa.gov>; Elleman, Robert <Elleman.Robert@epa.gov>; ellsworth, todd <ellsworth.todd@epa.gov>; Feingersh, Henry <Feingersh.Henry@epa.gov>; Feldman, Michael <Feldman.Michael@epa.gov>; Fry, Jessica <fry.jessica@epa.gov>; Gillam, Rick <Gillam.Rick@epa.gov>; Hawkins, Andy <hawkins.andy@epa.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>; Howard, Chris <Howard.Chris@epa.gov>; Imhoff, Robert <imhoff.robert@epa.gov>; Kay, Rynda <Kay.Rynda@epa.gov>; Kelly, Bob <Kelly.Bob@epa.gov>; Ko, Joseph <ko.joseph@epa.gov>; Kotchenruther, Robert <Kotchenruther.Robert@epa.gov>; Krivo, Stan <Krivo.Stanley@epa.gov>; Langman, Michael <langman.michael@epa.gov>; Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>; Leslie, Michael <leslie.michael@epa.gov>; Liljegren,

Jennifer <Liljegren.Jennifer@epa.gov>; Lusky, Katy <Lusky.Kathleen@epa.gov>; Matichuk, Rebecca <Matichuk.Rebecca@epa.gov>; McAlpine, Jay <McAlpine.Jay@epa.gov>; Moeller, Michael <moeller.michael@epa.gov>; Mohr, Ashley <Mohr.Ashley@epa.gov>; Monteith, Richard <Monteith.Richard@epa.gov>; Nguyen, Phuong <Nguyen.Phuong@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; Persoon, Carolyn <persoon.carolyn@epa.gov>; Portanova, Mary <portanova.mary@epa.gov>; Rinck, Todd <Rinck.Todd@epa.gov>; Robinson, Randall <robinson.randall@epa.gov>; Sareen, Neha <sareen.neha@epa.gov>; schmidt, howard <schmidt.howard@epa.gov>; Schwartz, Colin <Schwartz.Colin@epa.gov>; Simcox, Alison <simcox.alison@epa.gov>; Snyder, Erik <snyder.erik@epa.gov>; Summerhays, John <Summerhays.John@epa.gov>; Tonnesen, Gail <Tonnesen.Gail@epa.gov>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Walther, Katherine <Walther.Katherine@epa.gov>; Wiley, Adina <Wiley.Adina@epa.gov>; Worstell, Aaron <Worstell.Aaron@epa.gov>
Subject: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

Regional Office Modeling Contacts,

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My regards,
George

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website at the following web address:
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---

George M. Bridgers, CPM, Environmental Scientist
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
AQAD - Air Quality Modeling Group
109 TW Alexander Drive
Room C431B - Mail Drop C439-01
Research Triangle Park, NC 27711
Phone: 919-541-5563
Fax: 919-541-0044

To: Leon-Guerrero, Tim[Leon-Guerrero.Tim@epa.gov]; Jon McClung[Jon.D.McClung@wv.gov]
From: Kiss, Michael (DEQ)
Sent: Thur 3/9/2017 9:26:06 PM
Subject: RE: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

Tim,

Question…what happens if you receive no 3rd party modeling and we do not elect to update our modeling results? That doesn't appear to be addressed in that memo. Specifically, does EPA intend to rerun our modeling anyway or is it off limits for EPA to conduct its own modeling to inform these designations?

I know it's a loaded question but I would like to understand the thought process of EPA going into these designations. I'm personally inclined to wait and comment on whatever modeling EPA or a 3rd party may perform rather than submit revisions at this time.

Thanks.

Mike

From: Leon-Guerrero, Tim [mailto:Leon-Guerrero.Tim@epa.gov]
Sent: Thursday, March 09, 2017 3:43 PM
To: Kiss, Michael (DEQ); Jon McClung
Subject: FW: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

I'm forwarding this to both of you since you have Round 3 sources that used 15181 with Adj U*. We've already discussed this but I'm passing this along. Let me know if you'd like to discuss this further.

Tim LG

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George M. Bridgers, CPM, Environmental Scientist
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
AQAD - Air Quality Modeling Group
109 TW Alexander Drive
Room C431B - Mail Drop C439-01
Research Triangle Park, NC 27711
Phone: 919-541-5563
Fax: 919-541-0044

To: Kiss, Michael (DEQ)[Michael.Kiss@deq.virginia.gov]
From: Leon-Guerrero, Tim
Sent: Thur 3/9/2017 11:40:46 PM
Subject: Re: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

Let me know when I can call you on Friday

Tim LG

From: Kiss, Michael (DEQ) <Michael.Kiss@deq.virginia.gov>
Sent: Thursday, March 9, 2017 4:26:06 PM
To: Leon-Guerrero, Tim; Jon McClung
Subject: RE: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions

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George M. Bridgers, CPM, Environmental Scientist
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
AQAD - Air Quality Modeling Group

109 TW Alexander Drive
Room C431B - Mail Drop C439-01
Research Triangle Park, NC 27711
Phone: 919-541-5563
Fax: 919-541-0044

To: Mike Kiss[mfkiss@deq.virginia.gov]; Jon McClung[Jon.D.McClung@wv.gov]
From: Leon-Guerrero, Tim
Sent: Thur 3/9/2017 8:43:04 PM
Subject: FW: Clarification on the AERMOD Modeling System Version for Use in SO2 Implementation Efforts and Other Regulatory Actions
SO2_DRR_Designation_Modeling_Clarificaiton_Memo-03082017.pdf

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To: Kiss, Michael (DEQ)[Michael.Kiss@deq.virginia.gov]
From: Leon-Guerrero, Tim
Sent: Fri 8/12/2016 12:10:48 PM
Subject: RE: SO2 Modeling Protocols - July 1, 2016 DRR Submittal

Probably but everything is running together for me at this point. Thanks, will look at this to see if there were any significant differences from what I looked at.

Hopefully you got the link to the updated Modeling TAD I sent out Thursday. Our whole email/internet system went out during or shortly after we talked. Am going to see if I can locate an ASOS site with 1 or 5 minute data that could be considered "representative". Probably won't change the final answer but at least there won't be as many calm processed hours.

Been exchanging emails with Jason (ACHD) with coking questions. He told me that SunCoke wanted to build a similar "non-recovery" unit in Allegheny County about 20 years ago. They bailed when people started expressing their opinions about the proposed facility. He said that one of their enforcement people went on a bus tour of Jewell back in the day and noted their particulate controls were "sheds". Not sure what that means but it doesn't sound very high tech like the PEC, pushing-emissions control, baghouses that are on USx Clairton/Mountain State Carbon/Erie Coke. Will try and get back to you with dates next week.

Tim LG

From: Kiss, Michael (DEQ) [mailto:Michael.Kiss@deq.virginia.gov]
Sent: Friday, August 12, 2016 7:53 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Subject: FW: SO2 Modeling Protocols - July 1, 2016 DRR Submittal

Tim,

You were copied on this e-mail in June. Did you get it? See date on Jewell protocol is June 2016.

Mike

From: Kiss, Michael (DEQ)
Sent: Monday, June 27, 2016 10:49 AM
To: Chow, Alice; 'Leon-Guerrero, Tim'; ellsworth, todd; Fry, Jessica; Gaige, Elizabeth
Cc: Turner, Charles (DEQ); McLeod, Doris (DEQ); Lute, Robert (DEQ); Ballou, Thomas (DEQ)
Subject: SO2 Modeling Protocols - July 1, 2016 DRR Submittal

Attached are the latest versions of the SO2 modeling protocols for Virginia facilities choosing to model to meet the SO2 DRR requirements. Below are comments on each protocol:

Dominion Chesterfield - EPA reviewed this protocol and all DEQ and EPA comments have been incorporated. This should be the final version.

Dominion Clover – This is the first submittal of this protocol. It's the most straightforward analysis and has no nearby facilities in the inventory. It also closely mirrors the DEQ and EPA-approved Dominion Chesterfield protocol and DEQ believes this represents a final version.

Dominion Yorktown – This is the initial draft of this protocol and DEQ originally submitted the document to EPA on May 11, 2016. Again, it closely mirrors the DEQ and EPA-approved Dominion Chesterfield protocol and DEQ believes this represents a final version.

Jewell Coke – This is the revised draft that DEQ received from Jewell Coke on June 23, 2016. The company has obviously not incorporated all of the DEQ and EPA comments. We will need to discuss a path forward for this project and have a joint conference call with the facility in the near future.

Please contact me if you have any questions. DEQ will reference this protocol submittal in its

letter to EPA addressing the July 1, 2016 DRR requirements.

Thanks.

Mike

Mike Kiss

Manager, Office of Air Quality Assessments

Virginia DEQ - Central Office

629 East Main Street

P.O. Box 1105, Richmond, VA 23218

Phone: (804) 698-4460

Fax: (804) 698-4510

Access the Air Quality Assessments website:

http://www.deq.virginia.gov/Programs/Air/AirQualityAssessments.aspx

To: Michael Woodman -MDE-[michael.woodman@maryland.gov]
Cc: Molla Sarros -MDE-[molla.sarros@maryland.gov]; Fry, Jessica[fry.jessica@epa.gov]; ellsworth, todd[ellsworth.todd@epa.gov]
From: Leon-Guerrero, Tim
Sent: Tue 6/7/2016 4:25:30 PM
Subject: RE: Chalk Point Final Modeling Protocol

Mike,

Just letting you know we received this. If you don't hear anything from us than consider this protocol "final".

Tim LG

From: Michael Woodman -MDE- [mailto:michael.woodman@maryland.gov]
Sent: Tuesday, June 07, 2016 11:56 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Cc: Molla Sarros -MDE- <molla.sarros@maryland.gov>
Subject: Chalk Point Final Modeling Protocol

Tim,

Attached is the Chalk Point 1-hour SO2 modeling protocol. This version of the modeling protocol

addresses all comments.

Mike

--

Michael Woodman

Chief, AQ Measurements, Modeling, and Analysis Division

Air Monitoring Program

Maryland Department of the Environment

1800 Washington Blvd, Suite 730

Baltimore, MD 21230-1720

Phone: 410.537.3229

Fax: 410.537.4243

Email: michael.woodman@maryland.gov

To: Michael Woodman -MDE-[michael.woodman@maryland.gov]
Cc: David Krask -MDE-[david.krask@maryland.gov]; Molla Sarros -MDE-[molla.sarros@maryland.gov]; Fry, Jessica[fry.jessica@epa.gov]; ellsworth, todd[ellsworth.todd@epa.gov]; Gaige, Elizabeth[Gaige.Elizabeth@epa.gov]
From: Leon-Guerrero, Tim
Sent: Tue 6/7/2016 4:24:17 PM
Subject: RE: Draft Luke Modeling Protocol Attached

Mike,

Just acknowledging receipt. Will try to formalize comments and get them to you as soon as we can.

Tim LG

From: Michael Woodman -MDE- [mailto:michael.woodman@maryland.gov]
Sent: Tuesday, June 07, 2016 11:58 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Cc: David Krask -MDE- <david.krask@maryland.gov>; Molla Sarros -MDE- <molla.sarros@maryland.gov>
Subject: Draft Luke Modeling Protocol Attached

Tim,

Attached is a draft of the Luke 1-hour SO2 modeling protocol.

Mike

--

Michael Woodman

Chief, AQ Measurements, Modeling, and Analysis Division

Air Monitoring Program

Maryland Department of the Environment

1800 Washington Blvd, Suite 730

Baltimore, MD 21230-1720

Phone: 410.537.3229

Fax: 410.537.4243

Email: michael.woodman@maryland.gov

EPA Region 3 Comments to: Jewell Coke Company Modeling Protocol for the SO_2 NAAQS Determination – Protocol Dated April 2016

3. SO_2 ACTUAL EMISSIONS CHARACTERIZATION

The modeling protocol characterizes all sources at Jewell Coke as point sources; fugitive emissions were dismissed as being a small inconsequential fraction of the total facility emissions. While this may be true, passing all emissions through the furnace vent stacks may bias the model results since the vent stacks would be made at higher release points than any fugitive emissions. The impact of passing all emissions through the vent stacks will artificially prohibit any analysis of the potential impacts of fugitive emissions along the facility's immediate ambient air boundary and at elevations near the coke oven batteries. Typical fugitive emission sources from coke batteries include pushing, quenching, oven charging, venting and general battery oven leakage. See WV DEP's proposed SO2 SIP document for a more detailed discussion of potential characterization of these types of fugitive emissions[1]

Jewell Coke is proposing a constant hourly emission rate from its coke oven vents. This may be overly conservative and not be reflective of actual conditions at the facility. For example, assuming constant (worst-case) conditions would not take into account any times when individual ovens or batteries are not charged, any changes in production schedules (day to day production variability) or scheduled outages for oven maintenance/inspection. Any modeling should reflect actual (hourly/daily) emission variability.

Please indicate if there are any coke oven gas flaring operations at the facility or other more transient emission activities (locomotive or other equipment for example).

4.1 Model Selection

Please indicate if any non-default options would be used in the modeling analysis. These could include any of the BETA options or the BUOYLINE option within AERMOD.

4.2 Meteorological Data

A meteorological completeness table (similar to Table 3) should be done for the upper air data to ensure the data meets completeness requirements[2]. The surface data source should be fully documented; Lonesome Pine Airport appears to be an AWOS III site. Is the assumption of no winter-time continuous snow cover correct for the simulated modeling period (2013-15)?

[1] See Appendix D, Section 3.1.3 of WV DEP's proposed SIP for Steubenville-Weirton, WV-OH: http://www.dep.wv.gov/daq/publicnoticeandcomment/Pages/default.aspx

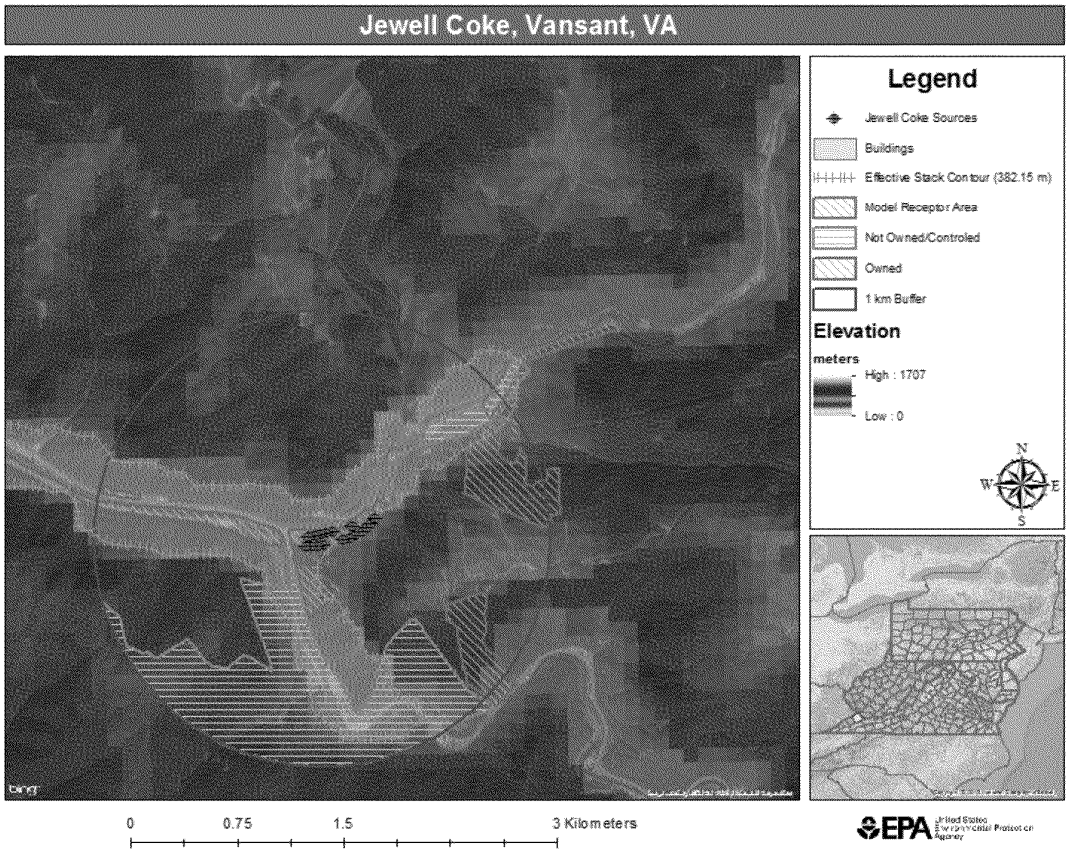
[2] See Section 5.3.2 and 5.4 of EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications*

ED_001261_00077459

4.3 Receptor Locations

Jewell Coke has proposed model receptor grid placement in a small area northeast of its coke oven batteries. This area is very limited in size and may prevent a proper assessment of modeled concentrations. Given the source characterization issues we raised in Section 3 of our comments (fugitives), the limited extent of modeled receptor grid could lead to an improper characterization of the source. In this instance, since Jewell Coke is assuming all emissions pass through the battery vent stacks, the modeled emissions may loft over the chosen receptor grid area and thus underestimate model concentrations significantly. Based on stack base and height information presented in Table 2 of the protocol, the effective model stack height is around 382 meters. It appears that the proposed model receptor elevations will range from roughly from 366 to 396 meters. This means nearly half of the proposed receptor area will be below Jewell Coke's effective stack height. Minimum plume height estimates from SCREEN3 simulations using the protocol's Table 2 stack parameters were almost 50 meters suggesting the modeled source plumes may "pass over" the proposed receptor grid area.

There appear to be two problems with the proposed model receptor grid. First, the protocol's proposed model receptor grid is too limited in coverage and may not actually reflect all areas where potential ambient monitors could be placed (see included figure). Second, the model receptor grid in combination with the source characterization choice of excluding all fugitive emissions could lead to underestimation of source impacts; model plumes could "pass over" the chosen receptor grids thus underestimating source impacts. We suggest Jewell Coke reevaluate areas surrounding the facility and expand the areas where model receptors will be placed and ensure source characterization and model receptor placement doesn't permit all emissions to "loft over" the chosen receptor grid.


Jewell Coke, Vansant, VA
Legend
Jewell Coke Sources
Buildings
Effective Stack Contour (382.15 m)
Model Receptor Area
Not Owned/Controled
Owned
1 km Buffer
Elevation
meters
High : 1707
Low : 0
N
W
E
S
0
0.75
1.5
3 Kilometers
EPA

To: Michael Woodman -MDE-[michael.woodman@maryland.gov]
Cc: ellsworth, todd[ellsworth.todd@epa.gov]; Fry, Jessica[fry.jessica@epa.gov]
From: Leon-Guerrero, Tim
Sent: Fri 5/6/2016 4:25:51 PM
Subject: RE: Morgantown Generating Station - 1-hour SO2 DRR Revised Modeling Protocol

Mike,

Just acknowledging that we got the revisions. If you don't hear from us the you can assume we have no further questions/concerns regarding the protocol. Have a good weekend.

Tim LG

From: Michael Woodman -MDE- [mailto:michael.woodman@maryland.gov]
Sent: Friday, May 06, 2016 9:55 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Subject: Morgantown Generating Station - 1-hour SO2 DRR Revised Modeling Protocol

Tim,

Attached is a revised copy of the Morgantown 1-hour SO2 modeling protocol. They should have addressed all your comments (those are attached too).

Let me know if you have any comments on this version of the modeling protocol.

Mike

--

Michael Woodman

Chief, AQ Measurements, Modeling, and Analysis Division

Air Monitoring Program

Maryland Department of the Environment

1800 Washington Blvd, Suite 730

Baltimore, MD 21230-1720

Phone: 410.537.3229

Fax: 410.537.4243

Email: michael.woodman@maryland.gov

To: Kiss, Michael (DEQ)[Michael.Kiss@deq.virginia.gov]
From: Leon-Guerrero, Tim
Sent: Fri 4/8/2016 10:45:46 AM
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

OK. I'll call you. Will try and get through WestRock and Lhoist in the time allotted.

Tim LG

From: Kiss, Michael (DEQ) [mailto:Michael.Kiss@deq.virginia.gov]
Sent: Thursday, April 07, 2016 3:22 PM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

I'm available tomorrow between 10-1030. Hopefully that works. Just call my office.

From: Leon-Guerrero, Tim [mailto:Leon-Guerrero.Tim@epa.gov]
Sent: Thursday, April 07, 2016 12:39 PM
To: Kiss, Michael (DEQ)
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

Thanks. Will probably start looking at this again. Are you in tomorrow (give me a time)? I should probably update you regarding what's going on with WestRock.

Tim LG

From: Kiss, Michael (DEQ) [mailto:Michael.Kiss@deq.virginia.gov]
Sent: Thursday, April 07, 2016 10:34 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Subject: FW: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

Tim,

The Lhoist re-ranking files that you requested are available for download at:

ftp.trinityconsultants.com

username – Kimballton

password – monitoring

Thanks.

Mike

From: Russell Bailey [mailto:RBailey@trinityconsultants.com]
Sent: Thursday, April 07, 2016 10:09 AM
To: Kiss, Michael (DEQ)
Cc: Turner, Charles (DEQ); Jim.Ruddell@lhoist.com; PACK Jeff; Justin Fickas; Brent Fitzgerald
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

Thanks Mike – all of the modeling files have been included at that same folder on the FTP site.

I am also attaching a downloadable link for the files for non-FTP users.

.....

J. Russell Bailey III
Principal Consultant

Trinity Consultants

15 E. Salem Ave, Suite 201 | Roanoke, Virginia 24011

Office: **540-342-5945 x1** | Direct: 540-904-7417 | Mobile: 678-938-1429

Email: rbailey@trinityconsultants.com

From: Kiss, Michael (DEQ) [mailto:Michael.Kiss@deq.virginia.gov]
Sent: Thursday, April 07, 2016 09:18
To: Russell Bailey <RBailey@trinityconsultants.com>
Cc: Turner, Charles (DEQ) <Charles.Turner@deq.virginia.gov>; Jim.Ruddell@lhoist.com; PACK Jeff <jeff.pack@lhoist.com>; Justin Fickas <JFickas@trinityconsultants.com>; Brent Fitzgerald <bfitzgerald@trinityconsultants.com>
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

Thanks Russell. Yes, please upload the modeling files and send me an email when they are available.

Mike

From: Russell Bailey [mailto:RBailey@trinityconsultants.com]
Sent: Thursday, April 07, 2016 8:33 AM
To: Kiss, Michael (DEQ)
Cc: Turner, Charles (DEQ); Jim.Ruddell@lhoist.com; PACK Jeff; Justin Fickas; Brent Fitzgerald
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

Mike,

We have uploaded the alternative ranking approach requested by EPA (including the site where monitor placement is infeasible, the North/Olean site) to the FTP.

The new files are located in a folder labeled

/2016-04-06 Olean Ranking/

At this time I've just uploaded the summary table and a plot. Please let me know if you would like us to upload the background modeling files for the alternative ranking also.

Thank you,

Russell

.....

J. Russell Bailey III
Principal Consultant

Trinity Consultants

15 E. Salem Ave, Suite 201 | Roanoke, Virginia 24011

Office: **540-342-5945 x1** | Direct: 540-904-7417 | Mobile: 678-938-1429

Email: rbailey@trinityconsultants.com

From: Russell Bailey
Sent: Tuesday, March 15, 2016 10:24
To: Michael.Kiss@deq.virginia.gov
Cc: 'Charles.Turner@deq.virginia.gov' <Charles.Turner@deq.virginia.gov>; Jim.Ruddell@lhoist.com; PACK Jeff <jeff.pack@lhoist.com>; Justin Fickas <jfickas@trinityconsultants.com>; Brent Fitzgerald <bfitzgerald@trinityconsultants.com>

Subject: Lhoist Kimballton - SO2 monitor siting draft report

Mike,

The draft report as well as all of the supporting files are now uploaded on the FTP site. I plan to leave this site active – you can use it to share material with EPA if you like.

ftp.trinityconsultants.com

user – Kimballton

pw – monitoring

Lhoist cannot receive FTP so I will separately send out another email with a link to all of the files via a different method. Those are still uploading. I will include you on that one also but it is the same files – just a non-FTP type of server.

Please let me know of any questions you may have.

Thank you,

Russell

.....

J. Russell Bailey III

Principal Consultant

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Office: **540-342-5945 x1** | Direct: 540-904-7417 | Mobile: 678-938-1429

Email: rbailey@trinityconsultants.com

Files attached to this message

Filename	Size	Checksum (SHA1)
ALL.mxd	1.05 MB	b0a465ef9d834b9407ee38eb25cf4934
Figure 3-4 - Potential Monitor Placement Receptor-Aerial Basemap (2016-04-06 1614 bf).tif	6.02 MB	ca7ac8d4c93c86272cc412d9fd1b691f
KIMSO2DAILYMAX2.ami	16.4 KB	5d9dd71e9af12ad8aa4a1536d595d2c4
KIMSO2DAILYMAX2.aml	37.6 KB	725ba50036bf10fc1352e1ba72107088
Receptor Scoring Calcs - w North Area (2016-04-06 1312 bf).xlsx	3.49 MB	d1f5d8483d0ed5dae1f1b1d842400ebc

Please click on the following link to download the attachments:
https://files.trinityconsultants.com/message/biE3pvNy3YmjcTldt2MtEm

This email or download link can not be forwarded to anyone else.

The attachments are available until: **Saturday, 7 May.**

Message ID: biE3pvNy

To: Kiss, Michael (DEQ)[Michael.Kiss@deq.virginia.gov]
From: Leon-Guerrero, Tim
Sent: Thur 4/7/2016 4:38:55 PM
Subject: RE: Lhoist Kimballton - SO2 monitor siting draft report - alternative ranking approach

Thanks. Will probably start looking at this again. Are you in tomorrow (give me a time)? I should probably update you regarding what's going on with WestRock.

Tim LG

From: Kiss, Michael (DEQ) [mailto:Michael.Kiss@deq.virginia.gov]
Sent: Thursday, April 07, 2016 10:34 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
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Thanks.

Mike

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Sent: Thursday, April 07, 2016 10:09 AM
To: Kiss, Michael (DEQ)
Cc: Turner, Charles (DEQ); Jim.Ruddell@lhoist.com; PACK Jeff; Justin Fickas; Brent Fitzgerald

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Email: rbailey@trinityconsultants.com

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Sent: Thursday, April 07, 2016 09:18
To: Russell Bailey <RBailey@trinityconsultants.com>
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Cc: Turner, Charles (DEQ); Jim.Ruddell@lhoist.com; PACK Jeff; Justin Fickas; Brent Fitzgerald
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Thank you,

Russell

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Principal Consultant

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Email: rbailey@trinityconsultants.com

From: Russell Bailey
Sent: Tuesday, March 15, 2016 10:24
To: Michael.Kiss@deq.virginia.gov
Cc: 'Charles.Turner@deq.virginia.gov' <Charles.Turner@deq.virginia.gov>; Jim.Ruddell@lhoist.com; PACK Jeff <jeff.pack@lhoist.com>; Justin Fickas <jfickas@trinityconsultants.com>; Brent Fitzgerald <bfitzgerald@trinityconsultants.com>
Subject: Lhoist Kimballton - SO2 monitor siting draft report

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ftp.trinityconsultants.com

user – Kimballton

pw – monitoring

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Russell

.....

J. Russell Bailey III
Principal Consultant

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Office: **540-342-5945 x1** | Direct: 540-904-7417 | Mobile: 678-938-1429

Email: rbailey@trinityconsultants.com

Files attached to this message

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Figure 3-4 - Potential Monitor Placement Receptor-Aerial Basemap (2016-04-06 1614 bf).tif	6.02 MB	ca7ac8d4c93c86272cc412d9fd1b691f
KIMSO2DAILYMAX2.ami	16.4 KB	5d9dd71e9af12ad8aa4a1536d595d2c4
KIMSO2DAILYMAX2.aml	37.6	725ba50036bf10fc1352e1ba72107088

Receptor Scoring Calcs - w North Area (2016-04-06 1312 bf).xlsx	KB 3.49 MB	d1f5d8483d0ed5dae1f1b1d842400ebc

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https://files.trinityconsultants.com/message/biE3pvNy3YmjcTldt2MtEm

This email or download link can not be forwarded to anyone else.

The attachments are available until: **Saturday, 7 May.**

Message ID: biE3pvNy

To: Kiss, Michael (DEQ)[Michael.Kiss@deq.virginia.gov]
From: Leon-Guerrero, Tim
Sent: Tue 4/5/2016 11:18:42 AM
Subject: RE: WestRock Mill Model Emissions

Thanks for the summary; it helps. I'm going to start my summary memos for your Adj U-star and emissions mixing requests. Can't say what Tyler's group will do with them since I haven't gotten a definitive answer on if these are acceptable.

Tim LG

From: Kiss, Michael (DEQ) [mailto:Michael.Kiss@deq.virginia.gov]
Sent: Monday, April 04, 2016 4:55 PM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Subject: RE: WestRock Mill Model Emissions

Tim,

This is what we know at this point:

1. The main sources proposing the use of a future allowable emission rate would be represented by a total rate out of the stack which is based on the combination of boilers 6 and 9. These units share a control device and emissions are from the combination stack are measured by CEMs. The emission reduction would be achieved by increasing the level of caustic being injected into the combined flue gas. This is far and away the largest SO2 emission source currently at the mill.

2. The sources (Recovery 1 and 2) using current actual emissions are probably second on the list in terms of magnitude of SO2 emissions.

3. The sources using current allowable emissions have much lower emission rates and are not really culpable in the modeling at all.

4. Additionally, two boilers have also been modeled using a future allowable emission rate based on the use of ULSD (boilers 10 and 11).

5. The #1 Lime Kiln is no longer in service and will be taken out of the permit pending the outcome of this DRR work and if a new enforceable limit is set on the combination stack.

Let me know if this answers your question or e-mail additional questions tomorrow. I will be in meetings throughout the day.

Thanks.

Mike

From: Leon-Guerrero, Tim [mailto:Leon-Guerrero.Tim@epa.gov]
Sent: Monday, April 04, 2016 2:39 PM
To: Kiss, Michael (DEQ)
Subject: WestRock Mill Model Emissions

Mike,

I left a voicemail for you this morning, not sure if you're in today. I spoke with James Thurman and we think there is a precedent for mixing allowable and actual emission rates through what was done for D E Karn in the MI TSD. There were a couple of items that I wanted to clear up. First, the Karn modeling mixed actual and allowable emission rates but the units using the allowable emission limits were much larger than the units using actuals (coal=allowables, oil=actuals). Second there was no comingling of unit emissions, that is the units using allowable limits were not passing through the same stack as the units using actuals; they were "sufficiently independent" (their words not mine).

To move forward (following this route) I think we need to establish that the bigger emission sources at Covington Mill will be modeled using allowable emission (the more conservative approach). I also think that we need to make sure that there is no mixing of actual and allowable emission rates into one stack. Then again, maybe you don't agree with this. Looking over the modeling files and Table 4-1 and 4-2 of the Protocol I noticed that the modeling files do not appear to account for emissions from the No 1 Lime Kiln. Maybe I'm missing something again.

P.S.

I was going through the Sierra Club's docket filing for Wagner. Not sure if you've seen this but they presented some modeling results for Lovett that appear to support using Adj U-star over the default AERMOD version. I attached their submittal (that I think they originally submitted for the App W revision). See Attachment 3 beginning on page 36. Let me know what you think. If we get to that point I can add this as supporting evidence to what you already submitted and possibly share it with MDE.

Thanks

Tim LG

From: Leon-Guerrero, Tim
Location: Conference Call 712 775-7300 Participant Code 589681#
Importance: Normal
Subject: Accepted: Discussion Lhoist Modeling Submittal - SO2 Data Requirements Rule
Start Date/Time: Mon 4/11/2016 5:30:00 PM
End Date/Time: Mon 4/11/2016 7:00:00 PM

To: Jeetendra Upadhyay -MDE-[jeetendra.upadhyay@maryland.gov]
Cc: Michael Woodman -MDE-[michael.woodman@maryland.gov]
From: Leon-Guerrero, Tim
Sent: Tue 3/1/2016 5:17:15 PM
Subject: RE: 1-Hr SO2 Modeling Protocol- Chalk Point

Thanks. Will look at this as soon as we can. May have comments to Morgantown in the next day or two.

Tim LG

From: Jeetendra Upadhyay -MDE- [mailto:jeetendra.upadhyay@maryland.gov]
Sent: Tuesday, March 01, 2016 10:59 AM
To: Leon-Guerrero, Tim <Leon-Guerrero.Tim@epa.gov>
Cc: Michael Woodman -MDE- <michael.woodman@maryland.gov>
Subject: 1-Hr SO2 Modeling Protocol- Chalk Point

Hello Tim,

Here is the proposed modeling protocol for Chalk Point Generating Plant, submitted by AECOM. Your comments are appreciated.

Let me know if you have any question.

Thanks,

Jeet

Jeetendra Upadhyay, Ph.D.

Meteorologist/Air Quality Modeler

Phone: 410.537.3122

Fax: 410.537.4243

Email: jeetendra.upadhyay@maryland.gov

To: Danilo Dragoni[ddragoni@ndep.nv.gov]
Cc: LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Bohning, Scott[Bohning.Scott@epa.gov]; Brenda Harpring[bharprin@ndep.nv.gov]; Adele Malone[amalone@ndep.nv.gov]
From: YOSHIMURA, GWEN
Sent: Wed 7/20/2016 4:11:57 PM
Subject: RE: SO2 modeling protocol?

Ah sweet, got it! Thanks Danilo! That was easy from our end ;-).

Appreciate it!

-Gwen

From: Danilo Dragoni [mailto:ddragoni@ndep.nv.gov]
Sent: Wednesday, July 20, 2016 9:08 AM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; Brenda Harpring <bharprin@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>
Subject: RE: SO2 modeling protocol?

Hi Gwen,

Let's see if this works.

The FTP site is

ftp://ftp.state.nv.us

If you click the link above, you should be able to be re-directed to the ftp site via your web browser (I tried with Chrome at it worked)

Or you can also copy and paste the link

the login is : Ex. 6 - Personal Privacy

and the password is: Ex. 6 - Personal Privacy

Once in, navigate to

NDEP/BAQP/SO2_DRR

You'll find the protocol in there.

Let me know if this works and when you get it. In theory, I should delete the file once it's not needed anymore. But no rush.

Best

Danilo

PS: I just saw your email about OneDrive… I'll try that one as well.

****

Danilo Dragoni, PhD

Bureau Chief - Air Quality Planning

Nevada Division of Environmental Protection

901 S. Stewart Street, Suite 4001

Carson City, NV 89701

Phone (775) 687 9340

****

From: Danilo Dragoni
Sent: Tuesday, July 19, 2016 4:51 PM
To: 'YOSHIMURA, GWEN'
Cc: LIMAYE, VIJAY; Bohning, Scott; Brenda Harpring; Adele Malone
Subject: RE: SO2 modeling protocol?

Hi Gwen,

Yes we do, but it's about 20MB… so email may not be the best way to send it around.

I know we can uploaded to an FTP site, but I haven't done it in a while.

I'll work on this tomorrow and get back to you asap. Unless, of course, you have a better option.

Best

Danilo

****

Danilo Dragoni, PhD

Bureau Chief - Air Quality Planning

Nevada Division of Environmental Protection

901 S. Stewart Street, Suite 4001

Carson City, NV 89701

Phone (775) 687 9340

****

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Tuesday, July 19, 2016 4:38 PM
To: Danilo Dragoni
Cc: LIMAYE, VIJAY; Bohning, Scott
Subject: SO2 modeling protocol?

Hi Danilo,

Would you happen to have an electronic copy of the Valmy SO2 modeling protocol? It looks like a hard copy was sent to Alexis Strauss on June 24, but we were hoping to get a copy via email in case the hard copy takes longer to get to us or just stays in the RA's office.

Thanks!

-Gwen

To: Brenda Harpring[bharprin@ndep.nv.gov]; Bohning, Scott[Bohning.Scott@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]
Cc: Danilo Dragoni[ddragoni@ndep.nv.gov]; Adele Malone[amalone@ndep.nv.gov]
From: LIMAYE, VIJAY
Sent: Mon 6/13/2016 9:58:44 PM
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Hi Brenda,

Just to follow up on the upcoming 7/1/2016 SO2 DRR deadline, we recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here: https://www3.epa.gov/airquality/sulfurdioxide/drr.html

In light of this, and to satisfy 40 CFR 51.1203(b), EPA believes a letter from NDEP to the EPA acting RA Alexis Strauss (cc'ing Doris Lo, Gwen Yoshimura, Scott Bohning, and myself) that lists the DRR source and how it will be characterized (along with submission of your modeling protocol) is appropriate.

Please let me know if you have any questions.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]

Sent: Wednesday, June 01, 2016 4:49 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Scott,

Thank you very much for your time to review the Valmy protocol, and also thank you very much for your comments. We will take a look at the two issues and suggestions and add some text to explain further.

Brenda

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Wednesday, June 01, 2016 4:24 PM
To: Brenda Harpring
Cc: Danilo Dragoni; Adele Malone; LIMAYE, VIJAY
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Brenda -

Again, I apologize for not getting back to you sooner on the Valmy protocol.

I don't think we are issuing "official approvals" for SO2 DRR protocols, that just occurs with EPA action on the submittals, but nevertheless it is very helpful to get a chance to look them over in advance.

I think you folks have done a good job on the protocol for the North Valmy Generating Station, and my view is that it will form an adequate basis for modeling conducted for the SO2 Data Requirements Rule. There are just two issues for which I think some expanded documentation would be helpful in a final version.

The first concerns the meteorological data; three stations are mentioned, with the focus on station #1, so I assume that is the one actually being used. Its being the nearest is a good reason for selecting it over the other two, but the protocol does not discuss any process for choosing between them, e.g. on the basis for representativeness or data availability. So I think the station selection should be addressed with some text and any analyses that may have been undertaken.

The second issue is how nearby sources are handled. The protocol does not explicitly state whether any sources other than Valmy will be included in the modeling, though TS Power Plant, Barrick Goldstrike Mine, and Newmont Mining Corporation's Gold Quarry are mentioned. It would be most conservative to include them, due to the possible overlap of their impacts with that of Valmy. However, if you were planning on excluding them, I think they are small enough and far enough away that a good case can be made for that. The time-varying background concentrations were developed in a conservative way, and seem like they would serve the purpose of accounting for emission sources not explicitly included in the model. My recommendation would be to address this issue explicitly with some text in the protocol.

Thank you for the opportunity to comment on the protocol.

- Scott B.

--

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=

"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Thursday, May 26, 2016 3:38 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Hi Scott,

We are wondering how your review is coming along? Can you give us any indication if your comments will be extensive and will require a lot of effort on our part (or not)?

Thank you,

Brenda

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Tuesday, May 17, 2016 4:28 PM
To: Brenda Harpring
Cc: Danilo Dragoni; Adele Malone
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Brenda & others -

Just to let you know I have not forgotten this... but I am behind on a few things. I am hoping to finish this by the end of the week, but may extend a bit longer, sorry about that.

- Scott B.

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Friday, April 29, 2016 4:52 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>
Subject: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Happy Friday Scott,

As promised here is the pre-DRAFT version of the Modeling Protocol for North Valmy Generating Station, NV.

Please let us know what you think and if you have any questions.

Thank you,

Brenda

Brenda Harpring

Planning and Modeling Branch
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City NV 89701
Phone: (775) 687-9498

Fax: (775) 687-6396

E-mail; **bharprin@ndep.nv.gov**

please consider the environment before printing this e-mail

To: LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: Roland Gutierrez
Sent: Thur 6/16/2016 5:42:26 AM
Subject: Re: Discuss Guam SO2 Modeling Protocol

Mr. Limaye,
I am not familiar with all of the individuals titles or sections you suggested we CC in the letter to Ms. Strauss. Can I have their titles or section so that I may cc them correctly and accordingly.

Thank you,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531
epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Thu, Jun 16, 2016 at 6:43 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

> Hi Conchita,
>
> Just to follow up briefly on the upcoming 7/1/2016 SO2 DRR deadline, we recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here: https://www.epa.gov/airquality/sulfurdioxide/drr.html
>
> In light of this, and to satisfy 40 CFR 51.1203(b), we believe that a letter from Guam EPA to EPA Region 9 Acting Regional Administrator Alexis Strauss (cc'ing Kerry Drake, Doris Lo, Gwen Yoshimura, Carol Bohnenkamp, and myself) listing the Piti-Cabras source and indicating that it will be characterized through modeling is appropriate. Please let me know if you have any questions. We will be responding about the protocol GPA sent shortly.
>
> Thanks for all of your work on this effort!

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Noel P. Cruz [mailto:ncruz1@gpagwa.com]
Sent: Tuesday, June 14, 2016 3:40 PM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; conchita.taitano@epa.guam.gov; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>; Paz A Tison <mtison@gpagwa.com>

Subject: Discuss Guam SO2 Modeling Protocol

Hi Gwen / Roland,

Please see our consultant's reply to the question 2 below.

Question 2: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

Reply: TRC will run the modeling analyses as proposed in the modeling protocol and will determine the appropriate design value resulting from the analyses. The receptor where

the design value concentration is predicted to occur will be viewed on a satellite map of the area to determine if the specific point is accessible and appropriate for monitor siting. If it is, the design concentration will be reported as modeled.

In the event that the receptor is located on a water body, inaccessible location, or a point where a monitor cannot physically be located, a new receptor will be placed at the nearest point where a monitor can be located and the concentration at that receptor will be determined consistent with the modeling protocol. TRC will document any receptor determined to be inaccessible and will discuss the receptors in question with GEPA and USEPA before finalizing the modeling report.

With regards to question 1, the Final Modeling Protocol was emailed to you yesterday with Appendices C and D.

Please let us know if you have any comments or further questions.

Noel P. Cruz *CESCO,CWMP*

Engineer II (Environmental)

Planning & Regulatory

Guam Power Authority

Ncruz1@gpagwa.com

Tel: (671) 648-3030

Fax: (671) 648-3167

From: Noel P. Cruz
Sent: Tuesday, June 14, 2016 2:56 PM
To: 'YOSHIMURA, GWEN' <Yoshimura.Gwen@epa.gov>; 'Roland Gutierrez' <roland.gutierrez@epa.guam.gov>
Cc: 'Bohnenkamp, Carol' <Bohnenkamp.Carol@epa.gov>; 'conchita.taitano@epa.guam.gov' <conchita.taitano@epa.guam.gov>; 'Drake, Kerry' <Drake.Kerry@epa.gov>; 'LIMAYE, VIJAY' <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; 'Luong Truong' <luong.truong@epa.guam.gov>
Subject: Discuss Guam SO2 Modeling Protocol

Gwen/Roland,

Appendix D …last email attachment.

-noel

From: Noel P. Cruz
Sent: Tuesday, June 14, 2016 2:46 PM
To: 'YOSHIMURA, GWEN' <Yoshimura.Gwen@epa.gov>; 'Roland Gutierrez' <roland.gutierrez@epa.guam.gov>
Cc: 'Bohnenkamp, Carol' <Bohnenkamp.Carol@epa.gov>; 'conchita.taitano@epa.guam.gov' <conchita.taitano@epa.guam.gov>; 'Drake, Kerry' <Drake.Kerry@epa.gov>; 'LIMAYE, VIJAY' <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; 'Luong Truong' <luong.truong@epa.guam.gov>
Subject: Discuss Guam SO2 Modeling Protocol

Gwen/Roland,

Appendix C attached.

-noel

From: Noel P. Cruz
Sent: Tuesday, June 14, 2016 2:41 PM
To: 'YOSHIMURA, GWEN' <Yoshimura.Gwen@epa.gov>; Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Conchita Taitano (conchita.taitano@epa.guam.gov) <conchita.taitano@epa.guam.gov>; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag

<sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>
Subject: RE: Discuss Guam SO2 Modeling Protocol

Hafa Adai Gwen/Roland,

Please see attached copy of FINAL Guam SO2 Modeling Protocol. I'm sending 2 more emails with attachment i.e. Appendices C and D, respectively. Let us know if you have other questions or need futher clarification.

Si' Yu'us Ma'ase.

Noel P. Cruz

Engineer II (Environmental)

Planning & Regulatory

Guam Power Authority

Ncruz1@gpagwa.com

Tel: (671) 648-3030

Fax: (671) 648-3167

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Tuesday, June 14, 2016 8:32 AM
To: Roland Gutierrez <roland.gutierrez@epa.guam.gov>; Roger U. Pabunan <rpabunan@gpagwa.com>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Conchita Taitano (conchita.taitano@epa.guam.gov) <conchita.taitano@epa.guam.gov>; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Noel P. Cruz <ncruz1@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>
Subject: RE: Discuss Guam SO2 Modeling Protocol

Hi Roland,

Thanks for checking in. A few comments on the latest Draft Modeling Protocol:

1. We did not receive Appendix C or Appendix D.

2. Section 5: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

3. Section 7: When we receive Appendix D, we can verify the appropriate background concentration.

That's it. Overall, we think the protocol is in good shape. Thanks, and please let Carol know if you have any questions.

-Gwen

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Sunday, June 12, 2016 4:17 PM
To: Roger U. Pabunan <rpabunan@gpagwa.com>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Conchita Taitano (conchita.taitano@epa.guam.gov) <conchita.taitano@epa.guam.gov>; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Noel P. Cruz <ncruz1@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>
Subject: Re: Discuss Guam SO2 Modeling Protocol

Gwen,

We are almost halfway through June and we wanted to follow up with USEPA to determine if there were any more comments, questions or concerns on the latest submission (attached) of the Draft Modeling Protocol. Please advise and we look forward to submitting the final Modeling Protocol in a timely manner for the island of Guam.

Sincerely,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Fri, May 27, 2016 at 9:33 AM, Roger U. Pabunan <rpabunan@gpagwa.com> wrote:

Good day Gwen.

Please see attached current version of the DRR Protocol for Guam. This is Revision 3, which includes responses to comments from Carol Bohnenkamp's May 9th Email.

Regards,

Roger U. Pabunan

Engineer Supervisor

Planning & Regulatory

Guam Power Authority

rpabunan@gpagwa.com

Tel: (671) 648-3032

Fax: (671) 648-3290

I-connect: 671*11*20152

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Friday, May 27, 2016 6:58 AM
To: Conchita San Nicolas Taitano; Sylvia L Ipanag; Roland Gutierrez - Air Program Supervisor
Cc: Bohnenkamp, Carol; Drake, Kerry; LIMAYE, VIJAY

Subject: RE: Discuss Guam SO2 Modeling Protocol

Hello,

We are nearing the end of the month, with about a month to go before the SO2 modeling protocol is due on July 1st. Carol has not received any questions concerning our May 9th modeling protocol comments. As a reminder, should questions arise, please feel free to contact her at the number provided below.

Thanks!

-Gwen

From: Bohnenkamp, Carol
Sent: Tuesday, May 10, 2016 8:11 AM
To: Drake, Kerry <Drake.Kerry@epa.gov>; Conchita San Nicolas Taitano <conchita.taitano@epa.guam.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Sylvia Ipanag <sipanag@gpagwa.com>; Roland Gutierrez - Air Program Supervisor <roland.gutierrez@epa.guam.gov>
Subject: RE: Discuss Guam SO2 Modeling Protocol

Here are the notes from yesterday's call about the SO2 NAAQS Designation Modeling for Guam. Please feel free to call me at (415) 947-4130 if you have any questions.

- 2.0 Emission and Source Data

- Please provide an emission inventory.
- List which sources will be explicitly modeled when you have completed that analysis.

- 5.0 Receptor Array.

- Clarify the process for editing out high concentrations.

- 6.0 Meteorological data

- Please clarify the hierarchy for data use for the surface data.
- Discuss the quality assurance and data completeness for each year.

- Please discuss other available surface data, if any.

- 7.0 Background concentration

- After determining which nearby sources will be explicitly modeled, please select a background concentration at will account for the point sources that are not modeled, as well as ships, etc.

- See SO2 Modeling TAD, page 30, regarding selecting background concentration

- 8.0 Modeling Results

- Explain why " For comparison to the 1 hour SO2 NAAQS, the maximum five year average of the 99th th percentile of the annual distribution of the maximum daily 1-hour predicted concentration determined for each receptor will be reported using three years of meteorological data."

Carol Bohnenkamp

US EPA Region 9 (AIR-7)

75 Hawthorne St.

San Francisco, CA 94105

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To: eugeniaquintana@navajo-nsn.gov[eugeniaquintana@navajo-nsn.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Gaurav Rajen[rajenwnr@gmail.com]; Raju Bisht[rbisht@navajo-nsn.gov]; Michael Z. King[mzking@navajo-nsn.gov]; Tennille B. Begay[tbbegay@navajo-nsn.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Bohning, Scott[Bohning.Scott@epa.gov]
From: McKaughan, Colleen
Sent: Wed 6/15/2016 10:36:22 PM
Subject: RE: Requesting letter for July 1 SO2 DRR deadline

Thanks, Eugenia!

From: Eugenia Quintana [mailto:eugeniaquintana@navajo-nsn.gov]
Sent: Wednesday, June 15, 2016 3:29 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Gaurav Rajen <rajenwnr@gmail.com>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>
Subject: RE: Requesting letter for July 1 SO2 DRR deadline

Hello.

Thank you for the information.

We do have a draft letter being finalized on this matter.

From: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Sent: Wednesday, June 15, 2016 2:20 PM
To: Gaurav Rajen; Raju Bisht; Michael Z. King; Eugenia Quintana; Tennille B. Begay
Cc: McKaughan, Colleen; YOSHIMURA, GWEN; Bohning, Scott
Subject: Requesting letter for July 1 SO2 DRR deadline

Hi Eugenia,

Just to follow up briefly on the upcoming 7/1/2016 SO2 DRR deadline, we recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here: https://www.epa.gov/airquality/sulfurdioxide/drr.html

In light of this, and to satisfy 40 CFR 51.1203(b), we believe that a letter from NNEPA to EPA Region 9 acting RA Alexis Strauss (cc'ing Doris Lo, Gwen Yoshimura, Scott Bohning, and

myself) listing the two DRR sources for Navajo Nation and indicating that they will both be characterized through modeling is appropriate. We can continue to work through the details of the modeling protocol after 7/1, but it would be helpful for us to have the letter by then.

Please let me know if you have any questions, and thanks for all of your work on this effort!

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Gaurav Rajen [mailto:rajenwnr@gmail.com]
Sent: Monday, June 13, 2016 12:40 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Withey, Charlotte <Withey.Charlotte@epa.gov>; Chen, Eugene <Chen.Eugene@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: A very balanced approach and eminently fair and reasonable

Thanks Scott:

We all appreciate your responses. These responses will help in framing the letters we send this week to FCPP and NGS, which I am currently drafting. There is an electronic Appendix in the FCPP's EIS that contains all the needed input files; hopefully, NGS will also provide these. Mike King had previously worked with Lakes Environmental while doing his research at Purdue on NOx and SOx transport in the Four Corners region; and they (Lakes Environmental), too, have input files set up.

Your approach seems very balanced, fair, and reasonable.

My take-aways are - 1) the July 1 deadline is met with our having sent in a draft protocol; we will finalize this in coming weeks; 2) we will use federally enforceable limits (from FIPs etc.) and could really benefit from EPA's help in making sure we have the right estimates to set the DRR-specified source terms; 3) we will do a parametric study on the effects of higher emissions, flow rates and changed temperatures to bound any future modeling work and determine if the EIS studies are truly conservative; 4) using the existing AERMET and AERMOD input data files from the existing EISs we will re-run the AERMOD models (if deemed required by (3) above) - re-running to be done using the existing met data, geophysical domain, receptor grids, etc., while changing the source emissions input data based on (2) above.

Best regards,

Gaurav

PS: I am fairly new at this - do we (as a team) have the correct numbers to use for SO2 emissions in lbs/hr that would be the federally enforceable limit in effect before January 2017? I went through several documents and came up with what seemed to be the limits. The EIS numbers are clearly stated and appear higher than the limits being enforced. The right numbers to use for the DRR limits will help in my doing an accurate parametric study as in (3) above.

On Mon, Jun 13, 2016 at 1:10 PM, Bohning, Scott <Bohning.Scott@epa.gov> wrote:

Guarav -

Thanks for the reply... I have to work on some other things today, hopefully we can discuss more Thursday 6/16 call, but here is a response for now.

- It does makes sense to quantitatively assess how much the emission rates change the stack temperature and exit velocity. That helps with the qualitative arguments about how the model reacts and the conservativeness of the EIS modeling. That stack parameter assessment would also help with just going ahead and remodeling. (Assuming we can get the original AERMOD input files and the AERMET output & hopefully input files, that would just be a matter of changing the stack parameter input lines to match what we think they are; changing either a few emission lines to reflect allowable emissions or a lot of emission lines to reflect actual emissions; and running the program. Avoids qualitative arguments on stack effects, ADJ_U* option, AERMOD version.)

- SO2 DRR says to use actual emissions of recent three year period, e.g. 2012-2014 or 2013-2015; or, allowable emissions reflecting federally enforceable emission limits in effect before Jan. 2017. It is not clear to us that the emission rates you stated are the appropriate ones to use for DRR modeling and/or to compare to the EIS; those would need to be spelled out more. (Charlotte noted that FCPP Consent Decree 90% control is not relative to the existing allowable emissions, but instead is relative to other assumptions.)

- On what I think you suggested in 6/10 email, re-running model later since already periodically required: that is not necessarily required under the DRR but instead is just discretionary, so we don't think the remodeling later should substitute for modeling now (if we find that it is needed due to EIS modeling not enough or not allowed to be substituted).

- Scott B.

From: Gaurav Rajen [mailto:rajenwnr@gmail.com]
Sent: Monday, June 13, 2016 11:00 AM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Withey, Charlotte <Withey.Charlotte@epa.gov>
Subject: Further clarifications and many thanks again Re: AERMOD model approaches regarding plume lofting etc.

Dear Scott:

Many thanks for your very helpful and valuable exchanges. It would be good to keep this exchange as informative as possible so we can have as productive a call on Thursday as possible. We all appreciate your help and that of others at the EPA Region 9 very, very much.

I apologize for being unclear - the way I see this is as follows: for selecting the source terms, the DRR does not solely specify a set of years alone - i.e. the past three years; it also specifies that a federally enforceable limit should set the source term - in our case the FIPs and the operating permits. The Table I sent you (re-pasted below) gives the lbs/hr of SO2 assumed in the EISs and what the DRR would require. As you see below, the DRR would require 1722 and 1790 lbs/hr for the NGS and FCPP respectively. The EISs use 2245 lbs/hr and 2816 lbs/hr respectively. The source terms are higher and should lead to higher levels at the maximally-impacted receptor locations. What I was pointing out is that the temperatures

will not change appreciably - however, higher SO2 content in lbs/hr implies higher coal burning rates (though one could also assume higher sulfur content, this content having a maximum allowable being set by the FIP and permits we have to assume higher quantities of coal being burned) which would imply higher gas exit velocities. Therefore, one would have to deal with the possibility of partial plume entry into the Stable Boundary Layer out of the Convective Boundary Layer and later re-entry and the possibility that the higher source emission rate is not automatically conservativen at the maximally-impacted loactions. There are some non-dimensional numbers (Reynold's number, Rayleigh number, Peclet number, Grashof number, etc.) that help us determine which effects predominate. Given the ranges we are dealing with, we can easily show that the higher source terms lead to higher levels at the maximally-impacted receptor locations even with higher stack exit velocities (that are associated with higher emission rates). Perhaps I have misunderstood these issues and am happy to be corrected.

Given the conservative assumptions inherent in the higher source terms used (see table below), I am suggesting that we hold off on re-running the models till we can build a local capability using our existing personnel and resources (e.g. Mike King has tremendous knowledge of modeling and fate and transport, he will be sending you a set of slides of his research at Purdue that you will find informative) and local Navajo colleges that have environmental programs. Getting the resources earmarked is also important and may be best done with more time available. For example, we could seek funding and assistance from EPA HQ and EPA research laboratories (in the Research Triangle Park for instance) - they may like the concept of building local Navajo capability using Navajo colleges to re-run the models. We always have the fall-back option of re-running with the help of the FCPP and the NGS and consultants, such as AECOM.

It just seems to me that as we have existing models and results that use higher conservative source terms and show NAAQS attainment, the fact that we will re-run again as required by the DRR (given the fact that the modeled results are within the %difference to the standards for which the DRR specifies periodic re-runs), we may have more time available to develop local capabilities. So, for the January of 2017 deadline we use the existing model results and further state that the models will be re-run as required by the DRR within a specified time-frame. Just a thought for consideration - again, using the existing modeled results seems justified as the source terms are higher than required by the DRR.

It is good to know that the draft protocol has allowed us to meet our July 1 deadline.

Thank you again,

Gaurav Rajen

Appendix B

B 1.0 Comparisons of input data required by the DRR and used in the EISs (source emissions, stack velocities, temperatures, beta versions of software to convert meteorological low-wind speed data into planetary boundary layer model parameters, and years selected for meteorological data)

The DRR states that –

…Modeling analyses shall characterize air quality based on either actual SO2 emissions from the most recent 3 years, or on any federally enforceable allowable emission limit or limits established by the air agency or the EPA and that are effective and require compliance by January 13, 2017.

Table B.1 provides the major differences between source emissions used as inputs from the requirements of the DRR and the source emissions factors used in the existing modeling studies done for Environmental Impact Statements by the FCPP and the NGS. Attachments provide copies of the text in the DRR, the Federal Implementation Plans and existing compliance documents that describe the applicable federally enforceable limits; as well as copies of the relevant pages from the EISs.

Table B.1

Source emissions data required by the DRR and used in the EISs

Plant	NGS		FCPP	
References from which data are derived	DRR	EIS - NGS	DRR	EIS - FCPP
Years for which data required/ or basis of quantities used	2014, 2015, 2016/ federally enforceable limits	As used in EIS – total SO2 from all sources, burners, boilers, mines, on and off-road equipment,	2014, 2015, 2016/ federally enforceable limit	As used in EIS - emission rates from the Units 4 and 5 stack are derived from consideration of actual hourly

		emergency generators, etc.		data, and the current Title V operating permit for FCPP
Average SO2 lbs/hr over any 1-hour period	**Approximately 1722 lbs/hr** – derived from 7544 tons/year allowed as a federally enforceable limit in the FIP	**2245 lbs/hr**	**1790 lbs/hr** (from draft FIP and federally enforceable limit – 10% of allowable SO2 generated; drops to 5% (i.e. lesser) in 2018	**2816 lbs/hr**

B 2.0 Considerations of stack exit velocities, temperatures and wind speed

When the source term used in the model is varied, there will also be a variation in the assumed stack gases' exit velocity and temperatures of the stack gases. Higher assumed quantities of SO2 released will be linked to higher coal burning rates and hence higher exit stack gas velocities and marginally higher temperatures. The 1-hour concentrations of SO2 at receptor sites in the near-field will be first order dependent on the quantities of SO2 released per hour and with a second to third –order dependence on the exit velocities and temperatures. Higher exit velocities and temperatures may cause some dilution of concentrations at far-field locations, but these effects will be substantially reduced and negligible in comparison to the increase in concentrations from increased SO2 releases in the near-field receptor locations with the maximum SO2 1-hour levels. This leads to the conclusions that the modeling studies conducted in the EISs are conservative in the derived SO2 1-hour concentrations as they use higher SO2 release terms.

Wind speeds will also be critical in determining the concentrations at receptor locations. The FCPP study used a beta version for deriving critical boundary layer parameters for low wind speeds – the following discussion taken from the FCPP EIS describes the rationale for doing so.

[] Low Wind Speed Improvements for AERMOD

In 2010, the results of an evaluation of low wind speed databases for short-range modeling applications were provided to USEPA. The reason for the study was that some of the most restrictive dispersion conditions and the highest model predictions occur under low wind speed conditions, but there had been very little model evaluation for these conditions. The

results of the evaluation indicated that in low wind conditions, the friction velocity formulation in AERMOD results in under-predictions of this important planetary boundary layer parameter. There were multiple outcomes of this under-prediction: mechanical mixing heights that were very low (less than 10 meters), very low effective dilution wind speeds, and very low turbulence in stable conditions. In addition, the evaluation study concluded that the minimum lateral turbulence (as parameterized using sigma-v) was too low by at least a factor of 2. After these issues were once again stated at the 10th USEPA Modeling Conference in March 2012, USEPA made some revisions in late 2012 to the AERMOD11 modeling system to correct the model deficiencies in this area. This culminated in USEPA releasing AERMET and AERMOD Versions 12345, which include "beta" options in AERMET for a revised u* formulation under stable conditions and two different low wind speed options in AERMOD. These updates are included in AERMET and AERMOD versions 13350, as well. During the USEPA webinar12 on January 14, 2014, USEPA staff stated that they are generally in favor of the AERMET beta u* option as it is based on peer-reviewed activities.

B 3.0 Issues related to variations in meteorological data used in the models from that suggested in the DRR

In development – we will trend data from our meteorological station in Shiprock to demonstrate that variations between the years of data used in the EIS and the most current trends are not significant.

On Mon, Jun 13, 2016 at 11:07 AM, Bohning, Scott <Bohning.Scott@epa.gov> wrote:

Gaurav -

I do not follow your argument -- cooler stack temperatures for this source would be same for EIS & new modeling, so that in itself would not tend to make EIS conservative... unless I am misunderstanding altogether.... we can talk more on Thurs. 6/16 call if needed on this.

Meanwhile, on your previous email about what issues need to get resolved in a protocol. Ideally a protocol would spell out pretty much the full procedure to be followed in the modeling, though some narrow issues might be left open. The big issue of what current actual emissions or what will be allowable emissions by the end of 2016 (and how those compare to the EIS emissions) is such a key one that we don't think a protocol can really be considered complete without that issue being decided. The related issue of whether new modeling will be done at all is also certainly important enough that it should be set out in the protocol.

However, I would note that July 1st deadline is mainly to get a decision on choice between modeling and monitoring, so as long as there is *some* form of protocol sent in, like the draft one you have already done, that deadline is met. I do not think EPA is issuing official approval of protocols anyway; approval is relative to the actual submitted modeling later on. So we do still have time to figure out emissions and other issues. Although it's good to get as much agreement as possible early on, we agree that we should take the time to get that issue right.

- Scott B.

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"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Gaurav Rajen [mailto:rajenwnr@gmail.com]
Sent: Friday, June 10, 2016 3:55 PM

To: Bohning, Scott <Bohning.Scott@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov; Tennille B. Begay <tbbegay@navajo-nsn.gov>
Subject: AERMOD model approaches regarding plume lofting etc.

Dear Scott:

Just a quick note to share some more thoughts - I have been reviewing the EPA document (AERMOD: DESCRIPTION OF MODEL FORMULATION) available at - https://www3.epa.gov/scram001/7thconf/aermod/aermod_mfd.pdf

From the document..

"AERMOD is designed to treat the effects on dispersion from vertical variations in wind and turbulence. Consideration of the vertical variation in meteorology is important for properly modeling releases in layers with strong gradients, for capturing the effects of meteorology in layers into which the plume may be vertically dispersing, and to provide a mechanism (in the Convective Boundary Layer, CBL) by which sources that are released into or penetrate into an elevated stable layer can eventually re-enter the mixed layer....

Fundamental to this approach is the concept that **the primary layer of importance, relative to receptor concentration, is the one through which plume material travels directly from source to receptor**."

The model does account for plume lofting and entry out of and back into the CBL Therefore, when the source emissions term changes and the exit gas velocities and temperature change the momentum flux and buoyancy forces also change and the plume averaging over heights could change - I looked closely at the terms used to estimate the stack momentum and buoyancy-induced fluxes in AERMOD. In our case, the stack gases are cooled and scrubbed before exit so temperature increases will be

lessened, hence buoyancy-induced fluxes are not appreciably changed. Exit velocities will be higher, but not sufficient to make a major difference in lessening concentrations at the maximum level receptor location. The last sentence in the quote presented above reinforces that the higher source terms used in the EISs lead to higher concentrations - thus the EIS results being conservative in their level estimates. In this regard it is also important to note that AERMOD does not use coupled equations for fate and transport and so the concentration of SO2 does not modify any of the transport parameters, densities, etc.. or change based on chemical reactions. This is why it seems reasonable (given that we can address momentum and buoyancy-induced fluxes at the stack) that higher emission sources will lead to more conservative and higher levels at receptor sites.

As you suggested, it does make sense to run the model again for various reasons that you laid out - I would like you all to consider the re-running of the model to happen at a later date in 2017, allowing us to develop more in-house capability, seek additional supplemental funding, and work with local universities and colleges to develop programs that bring modeling capabilities to the Navajo Nation and train more of our staff and graduate students. Such options could be Navajo Technical University, and Dine College, both of which have environmental programs. If we award a contract to an outside consultant in a rush to meet a deadline we will remain tied to the use of outside consultants. This is something to think through as we progress farther in this effort. Michael King for example has a master's from Purdue in atmospheric physics and has run versions of AERMOD and even more complex fate and transport models. We also have an opportunity when we run AERMOD to use our data to do model validation. Re-running at a later date of course will require us to accept the EIS models' data and results as a first step. Before this decision is made, however, we should first settle on the modeling protocol we will use.

Many thanks for your thoughts on this matter,

Gaurav

To: LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Bohning, Scott[Bohning.Scott@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]
Cc: Danilo Dragoni[ddragoni@ndep.nv.gov]; Adele Malone[amalone@ndep.nv.gov]
From: Brenda Harpring
Sent: Mon 6/13/2016 10:58:34 PM
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Hi Vijay,

Thank you. We will be happy to provide a correspondence letter stating how we intend to characterize our DRR source and thank you for the heads-up that EPA intends to post it.

We will submit the correspondence letter described below along with the modeling protocol by the July 1 deadline.

Best regards,

Brenda

Brenda Harpring

Planning and Modeling Branch
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City NV 89701
Phone: (775) 687-9498

Fax: (775) 687-6396

E-mail; bharprin@ndep.nv.gov

please consider the environment before printing this e-mail

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, June 13, 2016 2:59 PM
To: Brenda Harpring; Bohning, Scott; YOSHIMURA, GWEN
Cc: Danilo Dragoni; Adele Malone
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Hi Brenda,

Just to follow up on the upcoming 7/1/2016 SO2 DRR deadline, we recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here: https://www3.epa.gov/airquality/sulfurdioxide/drr.html

In light of this, and to satisfy 40 CFR 51.1203(b), EPA believes a letter from NDEP to the EPA acting RA Alexis Strauss (cc'ing Doris Lo, Gwen Yoshimura, Scott Bohning, and myself) that lists the DRR source and how it will be characterized (along with submission of your modeling protocol) is appropriate.

Please let me know if you have any questions.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Wednesday, June 01, 2016 4:49 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Scott,

Thank you very much for your time to review the Valmy protocol, and also thank you very much for your comments. We will take a look at the two issues and suggestions and add some text to explain further.

Brenda

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Wednesday, June 01, 2016 4:24 PM
To: Brenda Harpring
Cc: Danilo Dragoni; Adele Malone; LIMAYE, VIJAY
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Brenda -

Again, I apologize for not getting back to you sooner on the Valmy protocol.

I don't think we are issuing "official approvals" for SO2 DRR protocols, that just occurs with EPA action on the submittals, but nevertheless it is very helpful to get a chance to look them

over in advance.

I think you folks have done a good job on the protocol for the North Valmy Generating Station, and my view is that it will form an adequate basis for modeling conducted for the SO2 Data Requirements Rule. There are just two issues for which I think some expanded documentation would be helpful in a final version.

The first concerns the meteorological data; three stations are mentioned, with the focus on station #1, so I assume that is the one actually being used. Its being the nearest is a good reason for selecting it over the other two, but the protocol does not discuss any process for choosing between them, e.g. on the basis for representativeness or data availability. So I think the station selection should be addressed with some text and any analyses that may have been undertaken.

The second issue is how nearby sources are handled. The protocol does not explicitly state whether any sources other than Valmy will be included in the modeling, though TS Power Plant, Barrick Goldstrike Mine, and Newmont Mining Corporation's Gold Quarry are mentioned. It would be most conservative to include them, due to the possible overlap of their impacts with that of Valmy. However, if you were planning on excluding them, I think they are small enough and far enough away that a good case can be made for that. The time-varying background concentrations were developed in a conservative way, and seem like they would serve the purpose of accounting for emission sources not explicitly included in the model. My recommendation would be to address this issue explicitly with some text in the protocol.

Thank you for the opportunity to comment on the protocol.

- Scott B.

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"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Thursday, May 26, 2016 3:38 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Hi Scott,

We are wondering how your review is coming along? Can you give us any indication if your comments will be extensive and will require a lot of effort on our part (or not)?

Thank you,

Brenda

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Tuesday, May 17, 2016 4:28 PM
To: Brenda Harpring
Cc: Danilo Dragoni; Adele Malone
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Brenda & others -

Just to let you know I have not forgotten this... but I am behind on a few things. I am hoping to

finish this by the end of the week, but may extend a bit longer, sorry about that.

- Scott B.

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Friday, April 29, 2016 4:52 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>
Subject: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Happy Friday Scott,

As promised here is the pre-DRAFT version of the Modeling Protocol for North Valmy Generating Station, NV.

Please let us know what you think and if you have any questions.

Thank you,

Brenda

Brenda Harpring

Planning and Modeling Branch
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City NV 89701
Phone: (775) 687-9498

Fax: (775) 687-6396

E-mail; bharprin@ndep.nv.gov

please consider the environment before printing this e-mail

To: estevenson@baaqmd.gov[estevenson@baaqmd.gov]; Sweigert, Gayle@ARB[gayle.sweigert@arb.ca.gov]; Katherine Hoag[khoag@baaqmd.gov]
Cc: LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Mebust, Anna[Mebust.Anna@epa.gov]
From: YOSHIMURA, GWEN
Sent: Mon 6/13/2016 6:02:29 PM
Subject: RE: Letter describing how bay area SO2 sources will be characterized

Sounds good on our end!

Thanks!

From: Eric Stevenson [mailto:EStevenson@baaqmd.gov]
Sent: Monday, June 13, 2016 10:55 AM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Sweigert, Gayle@ARB <gayle.sweigert@arb.ca.gov>; Katherine Hoag <khoag@baaqmd.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Mebust, Anna <Mebust.Anna@epa.gov>
Subject: RE: Letter describing how bay area SO2 sources will be characterized

If that works for EPA, then there probably isn't a need for us to supply anything to ARB unless Gayle wants something from us, which makes it much easier from our end.

Thanks,

Eric

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Monday, June 13, 2016 10:48 AM
To: Eric Stevenson <EStevenson@baaqmd.gov>; Sweigert, Gayle@ARB <gayle.sweigert@arb.ca.gov>; Katherine Hoag <khoag@baaqmd.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Mebust, Anna <Mebust.Anna@epa.gov>
Subject: RE: Letter describing how bay area SO2 sources will be characterized

Understood – I think something that contains the following kind of information would work (and if it makes it easier it could prob be sent to the div director instead of RA):

In accordance with 40 CFR 51.1203(b), ARB is notifying EPA that the three sources in California subject to the Data Requirements Rule will be characterized through ambient air quality monitoring. The three sources, as identified in EPA's March 18, 2016 correspondence, are:

Source	County	Most recent emissions data (2013 CARB Emissions Inventory)
Shell Martinez Refinery	Contra Costa	1,230 tpy
Tesoro Refining & Marketing Co.	Contra Costa	572 tpy
Solvay USA Inc. (formerly Rhodia)	Contra Costa	324 tpy

Additional information will be contained within Bay Area Air Quality Management District's annual monitoring network plan due July 1, 2016.

It seems kinda idiotic, but at least it's short? You don't need to provide any details, just whether you're modeling, monitoring, or are providing emissions limits. Since you're monitoring, 51.1203(c)(1) says the ANP will contain the details.

Thoughts?

-Gwen

From: Eric Stevenson [mailto:EStevenson@baaqmd.gov]
Sent: Monday, June 13, 2016 10:16 AM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Sweigert, Gayle@ARB <gayle.sweigert@arb.ca.gov>; Katherine Hoag <khoag@baaqmd.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Mebust, Anna <Mebust.Anna@epa.gov>
Subject: RE: Letter describing how bay area SO2 sources will be characterized

Gwen –

I understand the need to address this through ARB. Unfortunately, this will require us to provide information to ARB that will need to be reviewed by Executive Management. I'm not sure what the process will be for ARB, but I would guess it will be extremely difficult to get this done on the timeline you're proposing. Is there a template or wording that you have that might make this process quicker and easier since I'm not sure how extensive the "how they will be characterized" requirement is.

Thanks,

Eric

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Monday, June 13, 2016 9:41 AM
To: Sweigert, Gayle@ARB <gayle.sweigert@arb.ca.gov>; Eric Stevenson <EStevenson@baaqmd.gov>; Katherine Hoag <khoag@baaqmd.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Mebust, Anna <Mebust.Anna@epa.gov>
Subject: Letter describing how bay area SO2 sources will be characterized

Hello,

As you know, air agencies are required to inform EPA by July 1, 2016 whether they will characterize sources subject to the Data Requirements Rule via modeling, monitoring, or emissions limits. For California, this applies to the three sources in Contra Costa County. We understand that BAAQMD intends to monitor these sources, and will be describing this in their ANP.

We recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here:

https://www3.epa.gov/airquality/sulfurdioxide/drr.html

In light of this, and to satisfy 40 CFR 51.1203(b), EPA believes a letter from ARB to the EPA acting RA Alexis Strauss (cc'ing BAAQMD, Meredith, myself and Vijay) that simply lists the three sources and how they will be characterized is appropriate. While this requires an extra correspondence, our understanding is that it will allow us to be consistent with other states (most of which have many sources and various ways of characterizing) in having a letter specific to the DRR sources, and distinct from any document submittal.

Would this be possible?

Let me know what you think or if you'd like to discuss.

Thanks!

-Gwen

To: Bohning, Scott[Bohning.Scott@epa.gov]
Cc: Danilo Dragoni[ddragoni@ndep.nv.gov]; Adele Malone[amalone@ndep.nv.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: Brenda Harpring
Sent: Wed 6/1/2016 11:48:44 PM
Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation
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Scott,

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- Scott B.

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"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

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To: Bohning, Scott <Bohning.Scott@epa.gov>
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Subject: RE: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

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Brenda & others -

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- Scott B.

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Sent: Friday, April 29, 2016 4:52 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: Danilo Dragoni <ddragoni@ndep.nv.gov>; Adele Malone <amalone@ndep.nv.gov>
Subject: Draft Modeling Protocol for North Valmy Generating Station, NV for the 2010 SO2 NAAQS Designation

Happy Friday Scott,

As promised here is the pre-DRAFT version of the Modeling Protocol for North Valmy Generating Station, NV.

Please let us know what you think and if you have any questions.

Thank you,

Brenda

Brenda Harpring

Planning and Modeling Branch
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City NV 89701
Phone: (775) 687-9498

Fax: (775) 687-6396

E-mail; bharprin@ndep.nv.gov

please consider the environment before printing this e-mail

********** ATTACHMENT REMOVED **********

This message contained an attachment which the administrator has caused to be removed.

********** ATTACHMENT REMOVED **********

Attachment name: [image001.jpg]
Attachment type: [image/jpeg]

To: Marina Mejia[Mejia.Marina@azdeq.gov]
Cc: Timothy Franquist Jr.[FranquistJr.Timothy@azdeq.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: McKaughan, Colleen
Sent: Wed 5/11/2016 4:11:38 PM
Subject: Re: SO2

Hi, Marina,
I'm adding Matt and Vijay to the invitation. I need their input for the options.
Colleen

Sent from my iPhone

> On May 11, 2016, at 8:13 AM, Marina Mejia <Mejia.Marina@azdeq.gov> wrote:
>
> Hi Colleen,
>
> We will be talking about the AEPCO SO2 modeling vs monitoring issue. It will only be Tim and I on our side, so the conversation will be related to the overall process moving forward as far as the options.
>
> Would this work? Did you want someone else to attend?
> Marina
>
> -----Original Message-----
> From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
> Sent: Tuesday, May 10, 2016 1:52 PM
> To: Marina Mejia <Mejia.Marina@azdeq.gov>
> Cc: Timothy Franquist Jr. <FranquistJr.Timothy@azdeq.gov>
> Subject: Re: SO2
>
> Which SO2 issue are we discussing because I may need others to participate?
>
> Sent from my iPhone
>
>> On May 10, 2016, at 11:28 AM, Marina Mejia <Mejia.Marina@azdeq.gov> wrote:
>>
>> That would be great, thank you!
>>
>> -----Original Message-----
>> From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
>> Sent: Tuesday, May 10, 2016 11:16 AM
>> To: Marina Mejia <Mejia.Marina@azdeq.gov>
>> Cc: Timothy Franquist Jr. <FranquistJr.Timothy@azdeq.gov>
>> Subject: Re: SO2
>>
>> OK, sounds good. Maybe we can touch base on the multi pollutant grants too since that is new.
>>
>> Sent from my iPhone
>>
>>> On May 10, 2016, at 11:12 AM, Marina Mejia <Mejia.Marina@azdeq.gov> wrote:
>>>
>>> Hi Colleen,
>>>
>>> I had talked to Matt about this in our check in, and he mentioned having all the technical team there, but we want to check in with you and see what you think of the approach first, before involving the rest of the team.

>>>
>>> Would this be ok?
>>> Marina
>>>
>>> -----Original Message-----
>>> From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
>>> Sent: Tuesday, May 10, 2016 11:06 AM
>>> To: Timothy Franquist Jr. <FranquistJr.Timothy@azdeq.gov>
>>> Cc: Marina Mejia <Mejia.Marina@azdeq.gov>
>>> Subject: Re: SO2
>>>
>>> Do you want Matt and Andy there too?
>>>
>>> Sent from my iPhone
>>>
>>>> On May 10, 2016, at 9:55 AM, Timothy Franquist Jr. <FranquistJr.Timothy@azdeq.gov> wrote:
>>>>
>>>>
>>>>
>>>> _____
>>>>
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>>>> <meeting.ics>
>>>
>>> **********
>>> NOTICE: This e-mail (and any attachments) may contain PRIVILEGED OR CONFIDENTIAL information and is intended only for the use of the specific individual(s) to whom it is addressed. It may contain information that is privileged and confidential under state and federal law. This information may be used or disclosed only in accordance with law, and you may be subject to penalties under law for improper use or further disclosure of the information in this e-mail and its attachments. If you have received this e-mail in error, please immediately notify the person named above by reply e-mail, and then delete the original e-mail. Thank you.
>>
>> **********
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>
> **********
> NOTICE: This e-mail (and any attachments) may contain PRIVILEGED OR CONFIDENTIAL information and is intended only for the use of the specific individual(s) to whom it is addressed. It may contain information that is privileged and confidential under state and federal law. This information may be used or disclosed only in accordance with law, and you may be subject to penalties under law for improper use or further disclosure of the information in this e-mail and its attachments. If you have received this e-mail in error, please immediately notify the person named above by reply e-mail, and then delete the original e-mail. Thank you.

To: LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
Cc: Ryan C. Templeton[Templeton.Ryan@azdeq.gov]
From: Farah Mohammadesmaeili
Sent: Mon 5/2/2016 3:45:08 PM
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Thank you Vijay.

Farah

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, May 02, 2016 7:59 AM
To: Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Farah,

Thanks—we are checking on the question re: projected hourly emissions, the DRR TAD does not make it clear whether this would be acceptable, so I am raising this a little further up our management chain to get their input. Please stay tuned and we will get back to you ASAP on these items—thanks for your patience!
Vijay

From: Farah Mohammadesmaeili [mailto:Mohammadesmaeili.Farah@azdeq.gov]
Sent: Friday, April 29, 2016 10:00 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Vijay,

Thank you for getting back to us. Actually I called you to ask an additional question regarding AEPCO SO2 modeling. We are performing preliminary modeling using the SO2 emission limits

for unit 2 and 3 based on the emission limits that the facility needs to meet by Dec.-05-2016. Based on the significant permit revision (Issued on May-13-2014), those emission limits are 0.15 lb/MMBtu heat input for both units.

I obtained the heat input information from a previous visibility modeling study (however, I am not sure if those are the heat inputs that must be used for this case) and calculated the emission rates as lb/hr and performed preliminary modeling with a constant emission rate for each unit. Using this approach, the preliminary results don't show attainment. I've been thinking of an alternative to perform modeling and thought maybe we could obtain an hourly emission profile from the facility with projected hourly emissions for Dec.-05-2016, when the controls are in place and use it in the model instead of using a constant emission rate. However, before we request that information from AEPCO, we would like to make sure that this approach is acceptable by EPA. In the SO2 designation guidance it is stated that the modeling should be done using 3 years of actual data or allowable emission rates, but it does not mention if a projected hourly emission profile can be used.

I would highly appreciate your help and clarification on this.

Thank you,

Farah

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Friday, April 29, 2016 9:15 AM
To: Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: Re: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Farah,

Sorry for our delay in getting back to you-- Cleve Holladay is reviewing the modeling methodology you sent for Cholla and we are checking on the AEPCO question, I expect

that we can get back to you very soon. Again, apologies for this delay.

Vijay

From: Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>
Sent: Thursday, April 28, 2016 9:36:09 AM
To: LIMAYE, VIJAY
Cc: Ryan C. Templeton; Balaji Vaidyanathan; Marina Mejia; Feng Mao; Holladay, Cleveland
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Vijay, I would like to follow up with you regarding on the modeling methodology that we submitted for APS-Cholla and the clarification on heat input data that should be used for AEPCO. Thanks very much for your help.

Farah

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Thursday, April 21, 2016 2:26 PM
To: Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Farah,

I am checking with Cleve on this as well as your AEPCO question and anticipate that we'll be able to get back to you with our feedback on both topics by early next week. I will follow up as soon as I hear more—thanks for your patience!

Vijay

From: Farah Mohammadesmaeili [mailto:Mohammadesmaeili.Farah@azdeq.gov]
Sent: Thursday, April 21, 2016 11:46 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>

Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Vijay,

I would like to follow up with you regarding the modeling methodology that we submitted for APS-Cholla last week. Would you please give us an estimated timeline to receive your feedback?

Thanks very much for your help,

Farah

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, April 13, 2016 3:58 PM
To: Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Farah,

Thank you for sending this. We will have a look and get back to you with some feedback—I'll be in touch soon!
Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Farah Mohammadesmaeili [mailto:Mohammadesmaeili.Farah@azdeq.gov]
Sent: Wednesday, April 13, 2016 3:51 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: APS-Cholla SO2 Data Requirement Rule Modeling Methodology

Hi Vijay,

Following our discussion on 03-30-2016 regarding SO2 Data Requirement Rule modeling for APS-Cholla, attached is the modeling methodology that we used to model this facility. We would appreciate your feedback on this.

Regards,

Farah Mohammadesmaeili, PhD, PE

Associate Environmental Engineer

Air Quality Technical Analysis Unit

Arizona Department of Environmental Quality

1110 W Washington Street

Phoenix, AZ 85007

602-771-2350

Fm4@azdeq.gov

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To: Conchita San Nicolas Taitano[conchita.taitano@epa.guam.gov]; Roland Gutierrez[roland.gutierrez@epa.guam.gov]
Cc: Mann, Michael[Mann.Michael@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; CHANG, RANDALL[Chang.Randall@epa.gov]; Luong Truong - Air Program[luong.truong@epa.guam.gov]
From: YOSHIMURA, GWEN
Sent: Tue 3/22/2016 4:11:43 PM
Subject: FW: Electronic copy of EPA's concurrence with the list of sources in Nevada that must be characterized under the SO2 Data Requirements Rule.
03-18_Quintana_Navajo EPA.pdf

Hello,

Attached please find the letter conveying EPA's concurrence on your list of SO2 sources subject to the Data Requirements Rule. We appreciate your engagement on this important issue. Please let us know if you have any updates concerning our previous discussion of modeling vs monitoring, and if there is any additional information we can provide at this point in time.

Thanks much!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Drake, Kerry
Sent: Monday, March 21, 2016 2:56 PM
To: eugeniaquintana@navajo-nsn.gov
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Jordan, Deborah <Jordan.Deborah@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA,

GWEN <Yoshimura.Gwen@epa.gov>
Subject: Electronic copy of EPA's concurrence with the list of sources in Nevada that must be characterized under the SO2 Data Requirements Rule.

Dear Ms. Quintana,

Attached is an electronic copy of EPA's concurrence with the list of sources for Navajo Nation that must be characterized under the SO2 Data Requirements Rule in response to your January 14, 2016 letter. You should be receiving a mailed copy soon.

Please call me if you have any questions.

Best Regards,

Kerry Drake

Associate Director, Air Division

U.S. EPA, Region 9

415-947-4157

To: LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Balaji Vaidyanathan[Vaidyanathan.Balaji@azdeq.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Marina Mejia[Mejia.Marina@azdeq.gov]
From: Ryan C. Templeton
Sent: Wed 3/16/2016 10:09:55 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Hey Vijay,

We were able to pull together some additional information on throughput for the kilns based on the annual emission reports, see below. Balaji is following up on the emission factors utilized for the kilns, but I'm not sure this information will be available before the meeting.

Through put for Nelson lime plant kilns 2012-2014, based on lime output from the Kilns to the product coolers.

Year	Kiln 1 (tons lime)	Kiln 2 (tons lime)
2012	245416	378296
2013	257321	351021
2014	238427	347119

Ryan Templeton

Environmental Program Supervisor

Arizona Department of Environmental Quality

rct@azdeq.gov

(602) 771-4230

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, March 16, 2016 2:00 PM
To: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Ryan,

Thank you for getting back to us so quickly! Do you have information from the annual emission reports on the emissions factors for the kilns the production levels/hours of operation have been for the last few years?

Vijay

From: Ryan C. Templeton [mailto:Templeton.Ryan@azdeq.gov]
Sent: Wednesday, March 16, 2016 1:30 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hey Vijay,

We looked into the point source data reported to SLEIS (Arizona's current point source emission reporting tool and repository) for 2014 and previous year emissions for the Nelson Lime Plant. The kilns utilize a site specific emission factor for estimating emissions. Lhoist did not supply supporting information as to the development of these site specific emission factors in their annual emission reports, which indicates that they should be included in the permit application documentation. For other facility processes, EPA AP-42 emission factors were utilized.

If more information is needed as to how the kiln emission factors were developed, we may need a little more time. Please let us know if you are looking for more detail.

Ryan Templeton

Environmental Program Supervisor

Arizona Department of Environmental Quality

rct@azdeq.gov

(602) 771-4230

From: Balaji Vaidyanathan
Sent: Wednesday, March 16, 2016 1:08 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Sure Vijay. If possible, we will try to get you the information prior to the call.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, March 16, 2016 10:47 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We'll speak with you in a few hours—but I did want to ask you if you could check on the situation at Lhoist North America-Nelson Lime Plant. We understand that the FIP controls (low

sulfur fuels) are now in place there, and you expect SO2 emissions to be below 2,000 tpy moving forward. Can you help us to shed some light no how the emissions for the plant have been calculated for 2014 and prior years (I don't think SO2 CEMS monitoring began until this year?).

Thanks for your help on this!

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Monday, March 14, 2016 9:21 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

Many thanks Vijay. We look forward to the call.

Balaji

On Mar 14, 2016, at 8:30 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Great! 3:30p (AZ time) on Wednesday 3/16 will work well for us. Here's a conference line for you to call, I will follow up with a brief agenda before we all talk on Wednesday.

Ex. 6 - Personal Privacy

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]

Sent: Sunday, March 13, 2016 8:57 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

HI Vijay. How about 3:30 pm AZ time on Wednesday? Please let me know.

Thanks,

Balaji

On Mar 12, 2016, at 11:12 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

> Hi Balaji,
>
> Thanks for getting back to me so quickly! Would you have any times on Wednesday after 2p, or on Thursday or Friday? I would like for Cleve to be able to join us, and I just got word that he is out until Wednesday afternoon. Please let me know if a later day/time might work, we are looking forward to talking with you and Feng.
>
> Vijay
>
> **From:** Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
> **Sent:** Friday, March 11, 2016 7:19 AM
> **To:** LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
> **Cc:** Feng Mao <Mao.Feng@azdeq.gov>
> **Subject:** RE: SO2 Information for the Data Requirements Rule
>
> Certainly Vijay, how about next Tuesday (3/15) at either 9:00 am or 1:00 pm? Alternately, how about 11:00 am on Wednesday (3/16)? It will be Feng Mao (our senior modeler) and me on the call.
>
> Please let me know. We really appreciate your willingness to guide us.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Thursday, March 10, 2016 10:49 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>; Kay, Rynda <Kay.Rynda@epa.gov>; Lakin, Matt <Lakin.Matthew@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message and for this document. I have shared the summary you shared with our team, and we are definitely interested in talking with you next week about specifics. For now, can you let me know if there's a particularly good time to talk on the phone mid/late next week? We look forward to continuing to work with ADEQ on the SO2 Data Requirements Rule.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]

Sent: Thursday, March 10, 2016 9:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Vijay,

Hope things are well. We are getting to a point where our preliminary modeling efforts are concluding. Even as we wrap that up, we want to touch base with you real quick. Attached is a quick summary of our overall modeling methodology. We have outlined some technical issues and our proposed approach to address those. We feel confident that the approach should be defensible but we will feel a whole lot better if we had EPA's general concurrence that we are headed in the right direction. One of our modelers, Feng Mao, discussed some of these issues with Cleve earlier this week. Can I trouble you to take a quick look at this please? If you could provide your feedback in the next week to ten days, it will help us out a ton!

Regards,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, February 29, 2016 9:45 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks for this update, Balaji!
Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, February 26, 2016 3:11 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Not yet Vijay, we are getting close though. We have completed some preliminary modeling for 2 facilities but have to finish up the background determination process. I look forward to sharing some results in a few weeks.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, February 24, 2016 3:22 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

I hope all is well on your end—I'm checking in to see if there might be any updates on your modeling efforts. If you are considering conducting monitoring to meet the Data Requirements Rule, we would be interested to set up a discussion with you and your team to discuss the details.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Wednesday, January 20, 2016 6:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>

Subject: RE: SO2 Information for the Data Requirements Rule

Definitely Vijay, I will keep you posted once we have some preliminary modeling results. Thanks.

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Tuesday, January 19, 2016 4:43 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We appreciate the timely submission of the SO2 source list from ADEQ, and look forward to any updates on your preliminary modeling and planning for further modeling/monitoring of the sources you mentioned. Please let me know if you'd like to set up a time to talk or if you have any questions on the Data Requirements Rule.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve <Clancy.Maeve@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Marina Mejia <Mejia.Marina@azdeq.gov>; Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)

- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*

- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)

- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy

FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber	??	On implementation of proposed changes, emission will reduce to 552 tons/year
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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To: Balaji Vaidyanathan[Vaidyanathan.Balaji@azdeq.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Marina Mejia[Mejia.Marina@azdeq.gov]
From: Ryan C. Templeton
Sent: Wed 3/16/2016 8:29:43 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Hey Vijay,

We looked into the point source data reported to SLEIS (Arizona's current point source emission reporting tool and repository) for 2014 and previous year emissions for the Nelson Lime Plant. The kilns utilize a site specific emission factor for estimating emissions. Lhoist did not supply supporting information as to the development of these site specific emission factors in their annual emission reports, which indicates that they should be included in the permit application documentation. For other facility processes, EPA AP-42 emission factors were utilized.

If more information is needed as to how the kiln emission factors were developed, we may need a little more time. Please let us know if you are looking for more detail.

Ryan Templeton

Environmental Program Supervisor

Arizona Department of Environmental Quality

rct@azdeq.gov

(602) 771-4230

From: Balaji Vaidyanathan
Sent: Wednesday, March 16, 2016 1:08 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Sure Vijay. If possible, we will try to get you the information prior to the call.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, March 16, 2016 10:47 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We'll speak with you in a few hours—but I did want to ask you if you could check on the situation at Lhoist North America-Nelson Lime Plant. We understand that the FIP controls (low sulfur fuels) are now in place there, and you expect SO2 emissions to be below 2,000 tpy moving forward. Can you help us to shed some light no how the emissions for the plant have been calculated for 2014 and prior years (I don't think SO2 CEMS monitoring began until this year?).

Thanks for your help on this!

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Monday, March 14, 2016 9:21 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

Many thanks Vijay. We look forward to the call.

Balaji

On Mar 14, 2016, at 8:30 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Great! 3:30p (AZ time) on Wednesday 3/16 will work well for us. Here's a conference line for you to call, I will follow up with a brief agenda before we all talk on Wednesday.

Ex. 6 - Personal Privacy

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Sunday, March 13, 2016 8:57 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

HI Vijay. How about 3:30 pm AZ time on Wednesday? Please let me know.

Thanks,

Balaji

On Mar 12, 2016, at 11:12 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Thanks for getting back to me so quickly! Would you have any times on Wednesday after 2p, or on Thursday or Friday? I would like for Cleve to be able to join us, and I just got word that he is out until Wednesday afternoon. Please let me know if a later day/time might work, we are looking forward to talking with you and Feng.

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, March 11, 2016 7:19 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Certainly Vijay, how about next Tuesday (3/15) at either 9:00 am or 1:00 pm? Alternately, how about 11:00 am on Wednesday (3/16)? It will be Feng Mao (our senior modeler) and me on the call.

Please let me know. We really appreciate your willingness to guide us.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Thursday, March 10, 2016 10:49 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>; Kay, Rynda <Kay.Rynda@epa.gov>; Lakin, Matt <Lakin.Matthew@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message and for this document. I have shared the summary you shared with our team, and we are definitely interested in talking with you next week about specifics. For now, can you let me know if there's a particularly good time to talk on the phone mid/late next week? We look forward to continuing to work with

ADEQ on the SO2 Data Requirements Rule.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Thursday, March 10, 2016 9:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Vijay,

Hope things are well. We are getting to a point where our preliminary modeling efforts are concluding. Even as we wrap that up, we want to touch base with you real quick. Attached is a quick summary of our overall modeling methodology. We have outlined some technical issues and our proposed approach to address those. We feel confident that the approach should be defensible but we will feel a whole lot better if we had EPA's general concurrence that we are headed in the right direction. One of our modelers, Feng Mao, discussed some of these issues with Cleve earlier this week. Can I trouble you to take a quick look at this please? If you could provide your feedback in the next week to ten days, it will help us out a ton!

Regards,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, February 29, 2016 9:45 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks for this update, Balaji!
Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, February 26, 2016 3:11 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Not yet Vijay, we are getting close though. We have completed some preliminary modeling for 2 facilities but have to finish up the background determination process. I look forward to sharing some results in a few weeks.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, February 24, 2016 3:22 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>

Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

I hope all is well on your end—I'm checking in to see if there might be any updates on your modeling efforts. If you are considering conducting monitoring to meet the Data Requirements Rule, we would be interested to set up a discussion with you and your team to discuss the details.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Wednesday, January 20, 2016 6:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Definitely Vijay, I will keep you posted once we have some preliminary modeling results. Thanks.

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Tuesday, January 19, 2016 4:43 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We appreciate the timely submission of the SO2 source list from ADEQ, and look

forward to any updates on your preliminary modeling and planning for further modeling/monitoring of the sources you mentioned. Please let me know if you'd like to set up a time to talk or if you have any questions on the Data Requirements Rule.

Best,

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From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve <Clancy.Maeve@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Marina Mejia <Mejia.Marina@azdeq.gov>; Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

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To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D.

Savarirayan <Savarirayan.Naveen@azdeq.gov>
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Hope this helps. Please let us know if there are further questions.

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Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit

fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

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Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
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Hope that helps.

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From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
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We have a few questions:

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- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)

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Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if

you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber	??	On implementation of proposed changes, emission will reduce to 552 tons/year
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating	4811	As part of the BART process the following changes will occur: Unit 2 will switch from	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission

Station	coal to natural gas. Unit 2 will install SNCR control technology.	reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on

this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Marina Mejia[Mejia.Marina@azdeq.gov]; Feng Mao[Mao.Feng@azdeq.gov]
From: Balaji Vaidyanathan
Sent: Fri 2/26/2016 11:10:39 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Not yet Vijay, we are getting close though. We have completed some preliminary modeling for 2 facilities but have to finish up the background determination process. I look forward to sharing some results in a few weeks.

Thanks,

Balaji

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Vijay Limaye, Ph.D.

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APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON				

ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION		No changes are planned at the facility		No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you

have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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Cc: Heather Colson[Colson.Heather@azdeq.gov]; Bradley R. Busby[Busby.Bradley@azdeq.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Balaji Vaidyanathan[Vaidyanathan.Balaji@azdeq.gov]; Clancy, Maeve[Clancy.Maeve@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; McKaughan, Colleen[McKaughan.Colleen@epa.gov]; Viswanathan, Krishna[Viswanathan.Krishna@epa.gov]; Kaibah Tsosie[Tsosie.Kaibah@azdeq.gov]
From: Lo, Doris
Sent: Fri 1/15/2016 8:45:49 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Thank you!

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Friday, January 15, 2016 12:37 PM
To: Lo, Doris <Lo.Doris@epa.gov>
Cc: Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Kaibah Tsosie <Tsosie.Kaibah@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule
Importance: High

Hi Doris,

I am attaching the signed and scanned copy of the letter identifying all SO2 sources within Arizona that exceed the 2,000 tons per year annual threshold. This letter is addressed to Jared, as requested.

Please let me know if you have any questions, we will be mailing the letter as well.

Thank you,

Marina

From: Marina Mejia

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Hi Doris,

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Thank you again!

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Subject: RE: SO2 Information for the Data Requirements Rule

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Please let us know if you have any questions or need additional information.

Thank you,

Marina

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, December 28, 2015 9:45 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Cc: Marina Mejia <Mejia.Marina@azdeq.gov>; Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message on this. EPA is compiling a docket of these submissions from each state, and for those purposes, a letter identifying all SO2 sources within the state that exceeded the 2,000 tons per year annual threshold is preferable to the email chain-- just for a bit more consistency and formality. The list of modeling/monitoring choices for each of the sources is not due to us until July 1, 2016.

Hopefully getting a letter to us before January 15, 2016 won't be too much of a hassle? We appreciate your efforts on this, let me know if you have any more questions.

Best,

Vijay

Vijay Limaye, Ph.D.
US EPA Region IX
Air Planning Office (AIR-2)
75 Hawthorne St. San Francisco, CA 94105
Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve; LIMAYE, VIJAY
Cc: Marina Mejia; Heather Colson; Bradley R. Busby
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the

timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)
- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*
- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)
- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber	??	On implementation of proposed changes, emission will reduce to 552 tons/year
APS - CHOLLA	3806.583	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated

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To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

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As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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Subject: RE: SO2 Information for the Data Requirements Rule
2015 SO2 NAAQS facility_information- RA.pdf

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Please let me know if you have any questions, we will be mailing the letter as well.

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Cc: Marina Mejia <Mejia.Marina@azdeq.gov>; Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

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Vijay

Vijay Limaye, Ph.D.
US EPA Region IX
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Cc: Marina Mejia; Heather Colson; Bradley R. Busby
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve

Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)
- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*
- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)
- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber	??	On implementation of proposed changes, emission will reduce to 552 tons/year
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN

Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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To: Roland Gutierrez[roland.gutierrez@epa.guam.gov]
Cc: Mann, Michael[Mann.Michael@epa.gov]; Luong Truong - Air Program[luong.truong@epa.guam.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: Maria Duenas
Sent: Fri 1/15/2016 2:27:34 AM
Subject: Re: FW: Guam Data Requirements Rule (DRR) Follow-ups
Request to Operate Non-Rd engines in Accordance with 40 CFR 89 at Yigo Power Plant.GU.pdf

Hafa Adai All,

Please see attached document Re: Request to Operate Non-Road Engines in Accordance with 40 CFR 89 at Yigo Power Plant, Yigo, Guam.

On Fri, Jan 15, 2016 at 10:22 AM, Roland Gutierrez <roland.gutierrez@epa.guam.gov> wrote:

Michael,
Here is the list of all Emission Sources identified over 2,000 tons per year for the last emission data available. It is the Cabra/Piti Non-Attainment area. The formal letter and hard copy to follow.

Sincerely,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531
epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Thu, Dec 24, 2015 at 3:40 AM, Mann, Michael <Mann.Michael@epa.gov> wrote:

Hafa Adai Roland,

Please see below and attached. GEPA has a January 15 deadline to provide a letter to EPA re: the Data Requirements Rule. Please confirm that you'll be able to get the

letter to us by the deadline. Let me know if you need any additional info or assistance.

Thanks,

Michael

Michael Mann

Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505

Guam cell: (671) 929-1324
E-mail: mann.michael@epa.gov

From: YOSHIMURA, GWEN
Sent: Tuesday, December 22, 2015 1:30 PM
To: Mann, Michael <Mann.Michael@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hi Michael,

We haven't heard from Guam since sending the email below, and the subsequent email forwarding EPA's letter stating that we would not be sending further comments on their monitoring plan at this time.

The Data Requirements Rule deadlines are fast approaching. GEPA should be aware of the following deadlines:

By January 15, 2016 Submit a list of sources subject to the Data Requirements Rule (per 40 CFR 51.1203(a)).

Send to Jared Blumenfeld, cc: Kerry Drake. Email a copy to Gwen Yoshimura (yoshimura.gwen@epa.gov),

Vijay Limaye (limaye.vijay@epa.gov), Michael Mann (mann.michael@epa.gov)

By July 1, 2016 Per 40 CFR 51.1203(b), provide notification to EPA R9 whether GEPA has chosen to:

a. characterize peak 1-hour SO2 concentrations in each identified source areas by monitoring;

b. characterize peak 1-hour SO2 concentrations in each identified source area by modeling; or

c. provide federally enforceable emission limitations by January 13, 2017 that limit emissions of applicable sources to less than 2,000 tpy.

We would appreciate confirmation that they will be sending a letter by January 15, 2016. We also hope to talk to GEPA prior to July 1, to discuss what option they are contemplating for Piti Cabras.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street

San Francisco, CA 94105

From: YOSHIMURA, GWEN
Sent: Thursday, October 15, 2015 4:27 PM
To: conchita.taitano@epa.guam.gov
Cc: CHANG, RANDALL <Chang.Randall@epa.gov>; Mann, Michael <Mann.Michael@epa.gov>; Chen, Eugene <Chen.Eugene@epa.gov>; Maurin, Lawrence <Maurin.Lawrence@epa.gov>; Vallano, Dena <Vallano.Dena@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>; Biland, Larry <Biland.Larry@epa.gov>; Zabel, Allan <Zabel.Allan@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Drake, Kerry <Drake.Kerry@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hello Conchita,

As a follow-up to our call on September 21, 2015, we are sending two documents that we hope will convey our thoughts on potential paths forward for modeling or monitoring to address the SO2 NAAQS in Guam, and potential resource implications of either path. The document titled “guamOptions_flowchart” presents the two options in flow chart form. The red-brown colored path down the left side of the page shows what we would anticipate being the requirements and resources needed should modeling be submitted for Piti-Cabras. The blue-colored path down the right side shows what we would anticipate should monitoring be conducted.

We are also sending a document titled “guamOptions_detailed”. This document follows the flow chart but presents more detail.

A letter concerning the review of the monitoring plan should be sent shortly. Please let us know if you have any questions.

Thanks!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Conchita San Nicolas Taitano [mailto:conchita.taitano@epa.guam.gov]
Sent: Monday, September 21, 2015 6:30 PM
To: YOSHIMURA, GWEN
Subject: Re: Guam Data Requirements Rule (DRR) Follow-ups

Håfa Ådai Gwen!

Thank you.

Kindest Regards,

CONCHITA SAN NICOLAS TAITANO, MSEM
Division Administrator, Air and Land Division - Guam EPA

Email: conchita.taitano@epa.guam.gov

Tel. No. 671.300.4751

Fax No. 671.300.4531

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On Tue, Sep 22, 2015 at 11:07 AM, YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov> wrote:

Hello,

Thank you for the call today.

EPA attendees were:

Allan Zabel

Carol Bohnenkamp

Vijay Limaye

Michael Mann

Gwen Yoshimura

We will be sending a letter from Kerry Drake to GPA stating that we will not be providing further comments on the Ambient Air Quality Monitoring document Guam sent at this time, and recommending that if you do decide to do monitoring and want to submit documentation, what you have produced should be reviewed

against the modeling and monitoring technical assistance documents and the Data Requirements Rule. I will also shortly be sending up a write-up outlining what we see as the monitoring and modeling paths.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

-----Original Appointment-----
From: Tamra M Muna [mailto:tmuna@gpagwa.com]
Sent: Friday, September 18, 2015 8:58 AM
To: Tamra M Muna; CHANG, RANDALL; Mann, Michael; Chen, Eugene; Maurin, Lawrence; YOSHIMURA, GWEN; Vallano, Dena; Kurpius, Meredith; Biland, Larry; Zabel, Allan; LIMAYE, VIJAY; Bohnenkamp, Carol; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Tamra M Muna [mailto:tmuna@gpagwa.com]
Sent: Thursday, September 17, 2015 9:40 PM
To: Tamra M Muna; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Sylvia L Ipanag **On Behalf Of** Tamra M Muna
Sent: Wednesday, September 16, 2015 2:39 PM
To: Tamra M Muna; Conchita (conchita.taitano@epa.guam.gov); Planning and Regulatory Division; Sylvia L Ipanag
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: (671) 300-8367 Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Tamra M Muna
Sent: Wednesday, September 16, 2015 1:51 PM
To: Tamra M Muna; Sylvia L Ipanag
Subject: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: (671) 300-8367 Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

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Participant information

To join the conference, click here:

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Thanks,

Maria Duenas
Executive Assistant to the Administrator/Board Secretary
Guam EPA
300-4759 (w)
300-4531 (f)
website: epa.guam.gov

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EDDIE BAZA CALVO, GOVERNOR OF GUAM | RAY TENORIO, LT. GOVERNOR OF GUAM | ERIC M. PALACIOS, ADMINISTRATOR | YVETTE CRUZ, DEPUTY ADMINISTRATOR

P.O. BOX 22439 BARRIGADA, GU 96921 EPA.GUAM.GOV

Jan 15 2016

Jared Blumenfeld
Administrator
Environmental Protection Agency
Pacific Southwest Region (Region 9)
75 Hawthorne Street
San Francisco, CA 94105

Hafa Adai, Mr. Blumenfeld,

The Guam Environmental Protection Agency is pleased to submit to you a list that identifies all emission sources within our jurisdiction that have SO2 emissions that exceeded the two thousand (2.000) tons per year (tpy) annual threshold for which the most recent which emissions data are available. The only area on Guam with emission sources currently over the 2,000 tpy annual emissions threshold is the Cabra/Piti Non-Attainment Area.

The following emission sources over the 2,000 tpy annual emission threshold in the Cabras/Piti Non-Attainment area are:

1. Cabras 1
2. Cabras 2
3. Cabras 3
4. Cabras 4
5. MEC DE8
6. MEC DE9

Attached you will find a list of their actual emission for the last year emissions data was available. We are hopeful that this submission satisfies the requirements under 40 CFR 51.1203(a). If you have any questions, please contact Mr. Roland Gutierrez, the Air Pollution Control Program Manager at (671) 300-4751/2 or by email at roland.gutierrez@epa.guam.gov.

ED_001261_00081157

Sincerely,

ERIC M. PALACIOS
Administrator

CC: Kerry Drake
Gwen Yoshimura (By Email)
Vijay Limaye (By Email)
Michael Mann (By Email)
Conchita Taitano (By Email)

GUAM POWER AUTHORITY

Annual SO2 Emissions (tons)

Facility	2010	2011	2012	2013	2014
Cabras 1 - 4	9,394.06	8,238.70	8,109.06	7,828.31	7,833.47
Cabras 1	2,601.48	1,998.28	2,918.71	2,614.11	2,294.49
Cabras 2	2,590.87	2,084.93	2,842.72	3,372.19	1,737.26
Cabras 3	2,210.91	1,528.91	1,034.55	414.44	2,063.20
Cabras 4	1,990.79	2,626.58	1,313.09	1,427.57	1,738.52
Dededo CT	1.66	0.15	0.00	0.00	0.00
Dededo DSL	0.10	0.03	0.01	0.00	N/A
Macheche CT	1.71	6.21	5.34	11.40	0.03
Manengon	1.15	0.26	0.02	0.02	0.02
Marbo CT	0.00	0.00	0.00	0.00	N/A
Talofofo	0.80	0.13	0.01	0.02	0.01
Tenjo	5.33	1.34	0.06	0.08	0.09
Yigo CT	2.45	0.05	0.18	0.17	6.51
MEC DE8					2,279.47
MEC DE9					2,067.12

Note: Data compiled from Annual Emissions Inventory

Cells shaded grey have reached the 2,000 tpy threshold

To: Mann, Michael[Mann.Michael@epa.gov]; Maria Duenas[maria.duenas@epa.guam.gov]
Cc: Luong Truong - Air Program[luong.truong@epa.guam.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: Roland Gutierrez
Sent: Fri 1/15/2016 12:22:45 AM
Subject: Re: FW: Guam Data Requirements Rule (DRR) Follow-ups
DRR List.pdf

Michael,
Here is the list of all Emission Sources identified over 2,000 tons per year for the last emission data available. It is the Cabra/Piti Non-Attainment area. The formal letter and hard copy to follow.

Sincerely,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531
epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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Please see below and attached. GEPA has a January 15 deadline to provide a letter to EPA re: the Data Requirements Rule. Please confirm that you'll be able to get the letter to us by the deadline. Let me know if you need any additional info or assistance.

Thanks,

Michael

Michael Mann

Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505

Guam cell: (671) 929-1324
E-mail: mann.michael@epa.gov

From: YOSHIMURA, GWEN
Sent: Tuesday, December 22, 2015 1:30 PM
To: Mann, Michael <Mann.Michael@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

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Send to Jared Blumenfeld, cc: Kerry Drake. Email a copy to Gwen Yoshimura (yoshimura.gwen@epa.gov),

Vijay Limaye (limaye.vijay@epa.gov), Michael Mann (mann.michael@epa.gov)

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b. characterize peak 1-hour SO2 concentrations in each identified source area by modeling; or

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We would appreciate confirmation that they will be sending a letter by January 15, 2016. We also hope to talk to GEPA prior to July 1, to discuss what option they are contemplating for Piti Cabras.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

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Sent: Thursday, October 15, 2015 4:27 PM
To: conchita.taitano@epa.guam.gov
Cc: CHANG, RANDALL <Chang.Randall@epa.gov>; Mann, Michael <Mann.Michael@epa.gov>; Chen, Eugene <Chen.Eugene@epa.gov>; Maurin, Lawrence

<Maurin.Lawrence@epa.gov>; Vallano, Dena <Vallano.Dena@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>; Biland, Larry <Biland.Larry@epa.gov>; Zabel, Allan <Zabel.Allan@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Drake, Kerry <Drake.Kerry@epa.gov>
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Hello Conchita,

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We are also sending a document titled "guamOptions_detailed". This document follows the flow chart but presents more detail.

A letter concerning the review of the monitoring plan should be sent shortly. Please let us know if you have any questions.

Thanks!

-Gwen

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75 Hawthorne Street
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From: Conchita San Nicolas Taitano [mailto:conchita.taitano@epa.guam.gov]
Sent: Monday, September 21, 2015 6:30 PM
To: YOSHIMURA, GWEN
Subject: Re: Guam Data Requirements Rule (DRR) Follow-ups

Håfa Ådai Gwen!

Thank you.

Kindest Regards,

CONCHITA SAN NICOLAS TAITANO, MSEM
Division Administrator, Air and Land Division - Guam EPA
Email: conchita.taitano@epa.guam.gov

Tel. No. *671.300.4751*

Fax No. *671.300.4531*

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EPA attendees were:

Allan Zabel

Carol Bohnenkamp

Vijay Limaye

Michael Mann

Gwen Yoshimura

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Thanks,

Gwen

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Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
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To: Tamra M Muna; CHANG, RANDALL; Mann, Michael; Chen, Eugene; Maurin, Lawrence; YOSHIMURA, GWEN; Vallano, Dena; Kurpius, Meredith; Biland, Larry; Zabel, Allan; LIMAYE, VIJAY; Bohnenkamp, Carol; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
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Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

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Where: Dial In Number: (671) 300-8367 Access Codes: Participant: Ex. 6 - Personal Privacy

Ex. 6 - Personal Privacy

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Sent: Wednesday, September 16, 2015 2:39 PM
To: Tamra M Muna; Conchita (conchita.taitano@epa.guam.gov); Planning and Regulatory Division; Sylvia L Ipanag
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Subject: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: P

Ex. 6 - Personal Privacy

Ex. 6 - Personal Privacy

Leader information

To join the conference, click here:

Ex. 6 - Personal Privacy

Participant information

To join the conference, click here:

Ex. 6 - Personal Privacy

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Note:

If you use Outlook to reschedule this meeting, be sure to use ShoreTel Converged Conferencing to reschedule the conference call. If you do not reschedule the call, the access codes and links shown above may not be valid during your appointment.

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GUAM POWER AUTHORITY

Annual SO2 Emissions (tons)

Facility	2010	2011	2012	2013	2014
Cabras 1 - 4	9,394.06	8,238.70	8,109.06	7,828.31	7,833.47
Cabras 1	2,601.48	1,998.28	2,918.71	2,614.11	2,294.49
Cabras 2	2,590.87	2,084.93	2,842.72	3,372.19	1,737.26
Cabras 3	2,210.91	1,528.91	1,034.55	414.44	2,063.20
Cabras 4	1,990.79	2,626.58	1,313.09	1,427.57	1,738.52
Dededo CT	1.66	0.15	0.00	0.00	0.00
Dededo DSL	0.10	0.03	0.01	0.00	N/A
Macheche CT	1.71	6.21	5.34	11.40	0.03
Manengon	1.15	0.26	0.02	0.02	0.02
Marbo CT	0.00	0.00	0.00	0.00	N/A
Talofofo	0.80	0.13	0.01	0.02	0.01
Tenjo	5.33	1.34	0.06	0.08	0.09
Yigo CT	2.45	0.05	0.18	0.17	6.51
MEC DE8					2,279.47
MEC DE9					2,067.12

Note: Data compiled from Annual Emissions Inventory

Cells shaded grey have reached the 2,000 tpy threshold

ED_001261_00081160

To: Madsen, Michael A[michael.madsen@doh.hawaii.gov]; CHANG, RANDALL[Chang.Randall@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
Cc: nolan.hirai@doh.hawaii.gov[nolan.hirai@doh.hawaii.gov]; lisa.young@doh.hawaii.gov[lisa.young@doh.hawaii.gov]; Wong, David Tien Lun[david.wong@doh.hawaii.gov]; McFall, Keith[Keith.McFall@doh.hawaii.gov]; Hamamoto, Dale[dale.hamamoto@doh.hawaii.gov]
From: YOSHIMURA, GWEN
Sent: Mon 1/11/2016 5:34:55 PM
Subject: RE: 1-Hour SO2 Data Requirements Rule Final Report

Thank you!

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Madsen, Michael A [mailto:michael.madsen@doh.hawaii.gov]
Sent: Friday, January 08, 2016 5:08 PM
To: CHANG, RANDALL <Chang.Randall@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Cc: nolan.hirai@doh.hawaii.gov; lisa.young@doh.hawaii.gov; Wong, David Tien Lun <david.wong@doh.hawaii.gov>; McFall, Keith <Keith.McFall@doh.hawaii.gov>; Hamamoto, Dale <dale.hamamoto@doh.hawaii.gov>
Subject: 1-Hour SO2 Data Requirements Rule Final Report

Hi Randal, Vijay, and Gwen,

Please find attached Hawaii's ***December 2015 Final Report Modeling for Monitor Placement Data Requirements Rule for 1-Hour Sulfur Dioxide Primary National Ambient Air Quality Standard*** with cover letter. We have also sent these documents by Federal Express to the EPA Region 9 Regional Administrator/c: Vijay Limaye.

Please let us know if you have any questions.

Thanks,

Mike

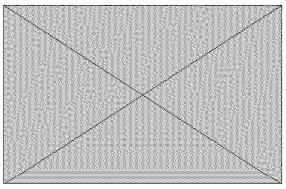
Mike Madsen

Environmental Engineer, Clean Air Branch

Hawaii Department of Health

Michael.madsen@doh.hawaii.gov

Office: (808) 586-4200 |Fax: (808) 586-4359



To: Mann, Michael[Mann.Michael@epa.gov]
Cc: Luong Truong - Air Program[luong.truong@epa.guam.gov]; Conchita San Nicolas Taitano[conchita.taitano@epa.guam.gov]; Yvette Cruz[yvette.cruz@epa.guam.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: Roland Gutierrez
Sent: Wed 12/30/2015 1:16:33 AM
Subject: Re: FW: Guam Data Requirements Rule (DRR) Follow-ups

Michael,
Thank you for your response. Yes, I would like to confirm the conference call for next week Wednesday, January 6, 2016 at 9:00 am Chamorro Standard time. In preparation for the call, there are a few issues we would like to discuss in addition to the Data Requirement Rule. They are as follows:

1. The Data Requirement Rule

2. The request from Guam Power Authority (GPA) for a waiver of their Annual Compliance testing for several GPA power plants including Talofofo, Manenggon, Tenjo, Yigo and Macheche pursuant Section II.D.7 provisions of their Title V permit.

3. GPA request to operate 39 non-road engines in accordance with 49 CFR 89 at the Yigo Power Plant, Yigo, Guam without a permit for no longer than 12 months.

Sincerely,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
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On Wed, Dec 30, 2015 at 2:25 AM, Mann, Michael <Mann.Michael@epa.gov> wrote:

Hafa Adai Roland,

Unfortunately with the holidays and leave schedules we won't be able to get everyone together until next week Wednesday, your time. If that works for you, I'll set up a call for 9 a.m. If you have any urgent questions that you need answered before then, Gwen is available today until 9:30 your time at 415-947-4134.

Thanks!

Michael

Michael Mann

Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505

Guam cell: (671) 929-1324
E-mail: mann.michael@epa.gov

From: Mann, Michael
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To: 'Roland Gutierrez' <roland.gutierrez@epa.guam.gov>
Cc: Luong Truong - Air Program <luong.truong@epa.guam.gov>; Conchita San Nicolas Taitano <conchita.taitano@epa.guam.gov>; Yvette Cruz <yvette.cruz@epa.guam.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: RE: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hi Roland,

I'm guessing your Wednesday next week is the earliest a call could be set up, but we won't know until Gwen is back in the office. I'm out until the 5th but I may be able to sit in on a call. I'll get back to you on your Tuesday to confirm a date/time.

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Michael

Michael Mann

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Subject: Re: FW: Guam Data Requirements Rule (DRR) Follow-ups

Michael,

Can we have a conference call on Tuesday to discuss this? I met with GPA this week regarding this issue and just need some clarification on roles and responsibilities to get me up to speed. i will check my email to see if this is possible. if not Wednesday the 30th.

Thank you,

Roland T. Gutierrez Jr., MPA

EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
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CONCHITA SAN NICOLAS TAITANO, MSEM
Division Administrator, Air and Land Division - Guam EPA
Email: conchita.taitano@epa.guam.gov

Tel. No. *671.300.4751*

Fax No. *671.300.4531*

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Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

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Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port

Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Tamra M Muna
Sent: Wednesday, September 16, 2015 1:51 PM
To: Tamra M Muna; Sylvia L Ipanag
Subject: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Ex. 6 - Personal Privacy
Ex. 6 - Personal Privacy

Leader information

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Participant information

To join the conference, click here:

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Note:

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To: Clancy, Maeve[Clancy.Maeve@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
Cc: Marina Mejia[Mejia.Marina@azdeq.gov]; Heather Colson[Colson.Heather@azdeq.gov]; Bradley R. Busby[Busby.Bradley@azdeq.gov]
From: Balaji Vaidyanathan
Sent: Thur 12/24/2015 6:22:23 PM
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a

few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)
- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*
- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)
- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture	??	On implementation of proposed changes,

		figitive emissions and capture/routing these to aisle caustic scrubber		emission will reduce to 552 tons/year
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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individual(s) to whom it is addressed. It may contain information that is privileged and confidential under state and federal law. This information may be used or disclosed only in accordance with law, and you may be subject to penalties under law for improper use or further disclosure of the information in this e-mail and its attachments. If you have received this e-mail in error, please immediately notify the person named above by reply e-mail, and then delete the original e-mail. Thank you.

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Cc: Roland Gutierrez[roland.gutierrez@epa.guam.gov]; Luong Truong - Air Program[luong.truong@epa.guam.gov]; Conchita San Nicolas Taitano[conchita.taitano@epa.guam.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
To: Mann, Michael[Mann.Michael@epa.gov]
From: yvette.cruz@epa.guam.gov
Sent: Thur 12/24/2015 3:03:31 AM
Subject: Re: Guam Data Requirements Rule (DRR) Follow-ups

Thank you for the coordination efforts Mike, it is greatly appreciated.

Thanks,
Yvette

On Dec 24, 2015, at 11:48 AM, Mann, Michael <Mann.Michael@epa.gov> wrote:

Hi Roland,

I'm guessing your Wednesday next week is the earliest a call could be set up, but we won't know until Gwen is back in the office. I'm out until the 5th but I may be able to sit in on a call. I'll get back to you on your Tuesday to confirm a date/time.

Thanks,

Michael

Michael Mann

Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505

Guam cell: (671) 929-1324
E-mail: mann.michael@epa.gov

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Wednesday, December 23, 2015 4:46 PM
To: Mann, Michael <Mann.Michael@epa.gov>
Cc: Luong Truong - Air Program <luong.truong@epa.guam.gov>; Conchita San Nicolas Taitano <conchita.taitano@epa.guam.gov>; Yvette Cruz <yvette.cruz@epa.guam.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>

Subject: Re: FW: Guam Data Requirements Rule (DRR) Follow-ups

Michael,

Can we have a conference call on Tuesday to discuss this? I met with GPA this week regarding this issue and just need some clarification on roles and responsibilities to get me up to speed. i will check my email to see if this is possible. if not Wednesday the 30th.

Thank you,

Roland T. Gutierrez Jr., MPA

EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Thu, Dec 24, 2015 at 3:40 AM, Mann, Michael <Mann.Michael@epa.gov> wrote:

Hafa Adai Roland,

Please see below and attached. GEPA has a January 15 deadline to provide a letter to EPA re: the Data Requirements Rule. Please confirm that you'll be able to get the letter to us by the deadline. Let me know if you need any additional info or assistance.

Thanks,

Michael

Michael Mann

Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505

Guam cell: (671) 929-1324
E-mail: mann.michael@epa.gov

From: YOSHIMURA, GWEN
Sent: Tuesday, December 22, 2015 1:30 PM
To: Mann, Michael <Mann.Michael@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hi Michael,

We haven't heard from Guam since sending the email below, and the subsequent email forwarding EPA's letter stating that we would not be sending further comments on their monitoring plan at this time.

The Data Requirements Rule deadlines are fast approaching. GEPA should be aware of the following deadlines:

By January 15, 2016 Submit a list of sources subject to the Data Requirements Rule (per 40 CFR 51.1203(a)).

Send to Jared Blumenfeld, cc: Kerry Drake. Email a copy to Gwen Yoshimura (yoshimura.gwen@epa.gov),

Vijay Limaye (limaye.vijay@epa.gov), Michael Mann (mann.michael@epa.gov)

By July 1, 2016 Per 40 CFR 51.1203(b), provide notification to EPA R9 whether GEPA has chosen to:

a. characterize peak 1-hour SO2 concentrations in each identified source areas by monitoring;

b. characterize peak 1-hour SO2 concentrations in each identified source area by modeling; or

c. provide federally enforceable emission limitations by January 13, 2017 that limit emissions of applicable sources to less than 2,000 tpy.

We would appreciate confirmation that they will be sending a letter by January 15, 2016. We also hope to talk to GEPA prior to July 1, to discuss what option they are contemplating for Piti Cabras.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: YOSHIMURA, GWEN
Sent: Thursday, October 15, 2015 4:27 PM
To: conchita.taitano@epa.guam.gov
Cc: CHANG, RANDALL <Chang.Randall@epa.gov>; Mann, Michael <Mann.Michael@epa.gov>; Chen, Eugene <Chen.Eugene@epa.gov>; Maurin, Lawrence <Maurin.Lawrence@epa.gov>; Vallano, Dena <Vallano.Dena@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>; Biland, Larry <Biland.Larry@epa.gov>; Zabel, Allan <Zabel.Allan@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Drake, Kerry <Drake.Kerry@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hello Conchita,

As a follow-up to our call on September 21, 2015, we are sending two documents that we hope will convey our thoughts on potential paths forward for modeling or monitoring to address the SO2 NAAQS in Guam, and potential resource implications of either path. The document titled "guamOptions_flowchart" presents the two options in flow chart form. The red-brown colored path down the left side of the page shows what we would anticipate being the requirements and resources needed should modeling be submitted for Piti-Cabras. The blue-colored path down the right side shows what we would anticipate should monitoring be conducted.

We are also sending a document titled "guamOptions_detailed". This document follows the flow chart but presents more detail.

A letter concerning the review of the monitoring plan should be sent shortly. Please let us know if you have any questions.

Thanks!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Conchita San Nicolas Taitano [mailto:conchita.taitano@epa.guam.gov]
Sent: Monday, September 21, 2015 6:30 PM
To: YOSHIMURA, GWEN
Subject: Re: Guam Data Requirements Rule (DRR) Follow-ups

Håfa Ådai Gwen!

Thank you.

Kindest Regards,

CONCHITA SAN NICOLAS TAITANO, MSEM
Division Administrator, Air and Land Division - Guam EPA
Email: conchita.taitano@epa.guam.gov

Tel. No. *671.300.4751*

Fax No. 671.300.4531

epa.guam.gov - facebook.com/GuamEPA - twitter.com/GuamEPA

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On Tue, Sep 22, 2015 at 11:07 AM, YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov> wrote:

Hello,

Thank you for the call today.

EPA attendees were:

Allan Zabel

Carol Bohnenkamp

Vijay Limaye

Michael Mann

Gwen Yoshimura

We will be sending a letter from Kerry Drake to GPA stating that we will not be providing further comments on the Ambient Air Quality Monitoring document Guam sent at this time, and recommending that if you do decide to do monitoring and want to submit documentation, what you have produced should be reviewed against the modeling and monitoring technical assistance documents and the Data Requirements Rule. I will also shortly be sending up a write-up outlining what we see as the monitoring and modeling paths.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

-----Original Appointment-----
From: Tamra M Muna [mailto:tmuna@gpagwa.com]
Sent: Friday, September 18, 2015 8:58 AM
To: Tamra M Muna; CHANG, RANDALL; Mann, Michael; Chen, Eugene; Maurin, Lawrence; YOSHIMURA, GWEN; Vallano, Dena; Kurpius, Meredith; Biland, Larry; Zabel, Allan; LIMAYE, VIJAY; Bohnenkamp, Carol; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Ex. 6 - Personal Privacy

Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Tamra M Muna [mailto:tmuna@gpagwa.com]
Sent: Thursday, September 17, 2015 9:40 PM
To: Tamra M Muna; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Ex. 6 - Personal Privacy
Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Sylvia L Ipanag **On Behalf Of** Tamra M Muna
Sent: Wednesday, September 16, 2015 2:39 PM
To: Tamra M Muna; Conchita (conchita.taitano@epa.guam.gov); Planning and Regulatory Division; Sylvia L Ipanag
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participan Ex. 6 - Personal Privacy
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To: Roland Gutierrez[roland.gutierrez@epa.guam.gov]
Cc: Luong Truong - Air Program[luong.truong@epa.guam.gov]; Conchita San Nicolas Taitano[conchita.taitano@epa.guam.gov]; Yvette Cruz[yvette.cruz@epa.guam.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
From: Mann, Michael
Sent: Wed 12/23/2015 5:40:58 PM
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups
guamOptions_flowchart.docx
guamOptions_detailed.docx

Hafa Adai Roland,

Please see below and attached. GEPA has a January 15 deadline to provide a letter to EPA re: the Data Requirements Rule. Please confirm that you'll be able to get the letter to us by the deadline. Let me know if you need any additional info or assistance.

Thanks,

Michael

Michael Mann

Guam Program Manager
U.S. EPA Region 9
Tel.: (415) 972-3505

Guam cell: (671) 929-1324
E-mail: mann.michael@epa.gov

From: YOSHIMURA, GWEN
Sent: Tuesday, December 22, 2015 1:30 PM
To: Mann, Michael <Mann.Michael@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hi Michael,

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By January 15, 2016 Submit a list of sources subject to the Data Requirements Rule (per 40 CFR 51.1203(a)).

Send to Jared Blumenfeld, cc: Kerry Drake. Email a copy to Gwen Yoshimura (yoshimura.gwen@epa.gov),

Vijay Limaye (limaye.vijay@epa.gov), Michael Mann (mann.michael@epa.gov)

By July 1, 2016 Per 40 CFR 51.1203(b), provide notification to EPA R9 whether GEPA has chosen to:

a. characterize peak 1-hour SO2 concentrations in each identified source areas by monitoring;

b. characterize peak 1-hour SO2 concentrations in each identified source area by modeling; or

c. provide federally enforceable emission limitations by January 13, 2017 that limit emissions of applicable sources to less than 2,000 tpy.

We would appreciate confirmation that they will be sending a letter by January 15, 2016. We also hope to talk to GEPA prior to July 1, to discuss what option they are contemplating for Piti Cabras.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: YOSHIMURA, GWEN
Sent: Thursday, October 15, 2015 4:27 PM
To: conchita.taitano@epa.guam.gov
Cc: CHANG, RANDALL <Chang.Randall@epa.gov>; Mann, Michael <Mann.Michael@epa.gov>; Chen, Eugene <Chen.Eugene@epa.gov>; Maurin, Lawrence <Maurin.Lawrence@epa.gov>; Vallano, Dena <Vallano.Dena@epa.gov>; Kurpius, Meredith <Kurpius.Meredith@epa.gov>; Biland, Larry <Biland.Larry@epa.gov>; Zabel, Allan <Zabel.Allan@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Drake, Kerry <Drake.Kerry@epa.gov>
Subject: FW: Guam Data Requirements Rule (DRR) Follow-ups

Hello Conchita,

As a follow-up to our call on September 21, 2015, we are sending two documents that we hope will convey our thoughts on potential paths forward for modeling or monitoring to address the SO2 NAAQS in Guam, and potential resource implications of either path. The document titled "guamOptions_flowchart" presents the two options in flow chart form. The red-brown colored path down the left side of the page shows what we would anticipate being the requirements and resources needed should modeling be submitted for Piti-Cabras. The blue-colored path down the right side shows what we would anticipate should monitoring be conducted.

We are also sending a document titled "guamOptions_detailed". This document follows the flow chart but presents more detail.

A letter concerning the review of the monitoring plan should be sent shortly. Please let us know if you have any questions.

Thanks!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Conchita San Nicolas Taitano [mailto:conchita.taitano@epa.guam.gov]
Sent: Monday, September 21, 2015 6:30 PM
To: YOSHIMURA, GWEN
Subject: Re: Guam Data Requirements Rule (DRR) Follow-ups

Håfa Ådai Gwen!

Thank you.

Kindest Regards,

CONCHITA SAN NICOLAS TAITANO, MSEM
Division Administrator, Air and Land Division - Guam EPA
Email: conchita.taitano@epa.guam.gov

Tel. No. *671.300.4751*

Fax No. *671.300.4531*

epa.guam.gov - facebook.com/GuamEPA - twitter.com/GuamEPA

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On Tue, Sep 22, 2015 at 11:07 AM, YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov> wrote:

Hello,

Thank you for the call today.

EPA attendees were:

Allan Zabel

Carol Bohnenkamp

Vijay Limaye

Michael Mann

Gwen Yoshimura

We will be sending a letter from Kerry Drake to GPA stating that we will not be providing further comments on the Ambient Air Quality Monitoring document Guam sent at this time, and recommending that if you do decide to do monitoring and want to submit documentation, what you have produced should be reviewed against the modeling and monitoring technical assistance documents and the Data Requirements Rule. I will also shortly be sending up a write-up outlining what we see as the monitoring and modeling paths.

Thanks,

Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

-----Original Appointment-----
From: Tamra M Muna [mailto:tmuna@gpagwa.com]
Sent: Friday, September 18, 2015 8:58 AM

To: Tamra M Muna; CHANG, RANDALL; Mann, Michael; Chen, Eugene; Maurin, Lawrence; YOSHIMURA, GWEN; Vallano, Dena; Kurpius, Meredith; Biland, Larry; Zabel, Allan; LIMAYE, VIJAY; Bohnenkamp, Carol; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Tamra M Muna [mailto:tmuna@gpagwa.com]
Sent: Thursday, September 17, 2015 9:40 PM
To: Tamra M Muna; Conchita Taitano (conchita.taitano@epa.guam.gov); Drake, Kerry
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Sylvia L Ipanag **On Behalf Of** Tamra M Muna
Sent: Wednesday, September 16, 2015 2:39 PM
To: Tamra M Muna; Conchita (conchita.taitano@epa.guam.gov); Planning and Regulatory Division; Sylvia L Ipanag
Subject: FW: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy

-----Original Appointment-----
From: Tamra M Muna
Sent: Wednesday, September 16, 2015 1:51 PM
To: Tamra M Muna; Sylvia L Ipanag
Subject: EPA Call for Sylvia
When: Tuesday, September 22, 2015 8:45 AM-10:45 AM (UTC+10:00) Guam, Port Moresby.
Where: Dial In Number: Ex. 6 - Personal Privacy Access Codes: Participant: Ex. 6 - Personal Privacy Leader: Ex. 6 - Personal Privacy

Leader information

To join the conference, click here:

Ex. 6 - Personal Privacy

Participant information

To join the conference, click here:

Ex. 6 - Personal Privacy

==========

Note:

If you use Outlook to reschedule this meeting, be sure to use ShoreTel Converged Conferencing to reschedule the conference call. If you do not reschedule the call, the access codes and links shown above may not be valid during your appointment.

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Assuming Piti-Cabras has an emissions inventory of 2,000 tpy SO2 or more:

MODELING PATH

Piti-Cabras is nonattainment for the 1971 NAAQS.

1/15/2016

Guam submits list of sources subject to the Data Requirements Rule (2,000 tpy SO2 or greater according to the emissions inventory).

7/1/2016

Modeling protocol is due. See EPA's Monitoring Technical Assistance Document: http://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2ModelingTAD.pdf

1/13/2017

Modeling is due.

NLT 12/31/2017

EPA promulgates designations for modeled areas.

A. If Piti-Cabras is modeled and shows attainment:

- NLT 12/31/2017:
  - Designated unclassifiable/attainment or attainment for the 2010 SO2 NAAQS (and 1971 SO2 NAAQS).
- July 1st, every year:
  - If the modeling was based on actual emissions (as opposed to allowables), Guam would be required to address the situation (i.e. assess whether the existing modeling is adequate) by July 1st of each year.
- **Note: The 1971 SO2 NAAQS nonattainment requirements stand** (a redesignation request and maintenance plan would need to be submitted and approved for the area to be redesignated as attainment for the 1971 standard).

B. If Piti-Cabras is modeled and shows nonattainment:

- NLT 12/31/2017
  - Designated nonattainment for the 2010 SO2 NAAQS
- Around 8/2019 (+ 18 months from effective date of designations)
  - Attainment SIP is due.
    - SIP must demonstrate attainment 5 years after the effective date of designation (**2023**).
    - This would be done using **attainment demonstration modeling.** It is likely that it could be based on the modeling used for the initial designation.
    - This SIP would satisfy both the 2010 and 1971 SO2 NAAQS.
- If an area is designated nonattainment under the 2010 SO2 NAAQS, and subsequently submits and EPA approves an attainment plan for the 2010 SO2 NAAQS, **the resulting SIP would satisfy the 2010 and 1971 NAAQS.**

MONITORING PATH

Piti-Cabras is nonattainment for the 1971 NAAQS.

1/15/2016

Guam submits list of sources subject to the Data Requirements Rule (2,000 tpy SO2 or greater according to the emissions inventory).

7/1/2016

Guam submits an Annual Monitoring Network Plan for EPA approval. It must fulfill all requirements of 40 CFR part 58 and 40 CFR part 51, and contain information about the proposed SO2 monitoring locations.

Modeling will likely be required to determine appropriate monitoring locations. This modeling would be submitted to EPA in support of the proposed monitoring locations. See EPA's Monitoring Technical Assistance Document: http://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf

1/1/2017

Monitors required to be installed and operational by January 1, 2017. (Note: if monitors are not installed and operational on January 1, 2017, the area will be designated using available information by December 31, 2017, and the area will still be required to install and operate monitors.)

12/31/2020

EPA promulgates designations for all remaining areas, including those with new monitors up by January 1, 2017.

A. If Piti-Cabras is monitored and shows attainment:

- NLT 12/31/2020
  - Designated unclassifiable/attainment or attainment for the 2010 SO2 NAAQS (and 1971 SO2 NAAQS).
- **Ongoing Requirement:**
  - **Monitoring would be required to continue indefinitely (in order to show continued attainment) **** unless the monitor does not measure violations for five years and an approved SIP provides for a specific, reproducible approach to representing the air quality of the affected area in the absence of actual monitoring data.
- **Note: The 1971 SO2 NAAQS nonattainment requirements stand** (a redesignation request and maintenance plan would need to be submitted and approved for the area to be redesignated as attainment for the 1971 standard).

B. If Piti-Cabras is monitored and shows nonattainment:

- NLT 12/31/2020
  - Designated nonattainment for the 2010 SO2 NAAQS.
- Around 8/2022 (+ 18 months from effective date of designations)
  - Attainment SIP is due.
    - SIP must demonstrate attainment 5 years after the effective date of designation (**2026**).
    - This would be done using **attainment demonstration modeling.**
- Note: If an area is designated nonattainment under the 2010 SO2 NAAQS, and subsequently submits and EPA approves an attainment plan for the 2010 SO2 NAAQS, **the resulting SIP would satisfy the 2010 and 1971 NAAQS.**

**Monitoring Requirements that must be fulfilled while regulatory ambient air monitoring is occurring - 40 CFR part 58, and Appendices A, C, and E, including:

- Quality Management Plan must be approved, showing an appropriate quality system is in place. This includes independent quality assurance (independence of staff and independence of instruments).
- Quality Assurance Project Plan must be approved.
- Ongoing quality assurance and data validation must be conducted in accordance with 40 CFR 58 Appendix A. See http://www3.epa.gov/ttn/amtic/files/ambient/pm25/qa/QA-Handbook-Vol-II.pdf (brief excerpt from SO2 validation table below).
- Every year, an Annual Monitoring Network Plan must be put out for 30 day public notice and subsequently submitted for approval to EPA by July 1st.
- Data must be submitted quarterly to AQS, EPA's database for ambient air monitoring data, in accordance with deadlines and submittal requirements per 40 CFR 58.16.
- Data must be certified annually, per 40 CFR 58.15.
- Monitors must be purchased and run in accordance with 40 CFR 53.
- Sites must be established that meet siting requirements outlined in 40 CFR 58 Appendix E.
- Any systems modifications must be approved prior to implementation by EPA, per 40 CFR 58.14.

Note that if monitors do not meet the critical criteria contained in the table below, the data are typically invalidated. If a monitor is down for a period or data are invalidated such that data completeness requirements are not met (see table below. SO2 requires 75% completeness for each quarter), a 3-year design value may not be valid for use in regulatory decisions.

Other considerations – PSD for new sources

- Background concentrations for PSD are determined on a case-by-case basis. (40 CFR Pt 51, App W. 8.2 Background Concentrations) Modeling of near-by sources could potentially be used to establish background concentrations.

SO_2 Validation Template

1) Requirement (SO_2)	2) Frequency	3) Acceptance Criteria	Information /Action
CRITICAL CRITERIA- SO_2			
One Point QC Check Single analyzer	*1/ 2 weeks*	≤ ±10% (percent difference)	1 and 2) 40 CFR Part 58 App A Sec 3.2 3) Recommendation based on DQO in 40 CFR Part 58 App A Sec 2.3.1.2 QC Check Conc range 0.01 - 0.10 ppm Relative to routine concentrations
Zero/span check	1/ 2 weeks	Zero drift ≤ ± 3.0 ppb (24 hr) ≤ ± 5.0 ppb (>24hr-14 day) Span drift ≤ ± 10 %	1 and 2) QA Handbook Volume 2 Section 12.3 3) Recommendation and related to DQO
OPERATIONAL CRITERIA- SO_2			
Shelter Temperature Range	Daily (hourly values)	20 to 30° C. (Hourly avg) or per manufacturers specifications if designated to a wider temperature range	1, 2 and 3) QA Handbook Volume 2 Section 7.2.2 Generally the 20-30 ° C range will apply but the most restrictive operable range of the instruments in the shelter may also be used as guidance. FRM/FEM list found on AMTIC provides temp. range for given instrument.FRM/FEM monitor testing is required at 20-30 ° C range per 40 CFR Part 53.32
Shelter Temperature Control	Daily (hourly values)	≤ ± 2° C SD over 24 hours	1, 2 and 3) QA Handbook Volume 2 Section 7.2.2
Shelter Temperature Device Check	1/6 mo	± 2° C of standard	1, 2 and 3) QA Handbook Volume 2 Section 7.2.2
Annual Performance Evaluation Single Analyzer	*Every site 1/year 25 % of sites quarterly*	Percent difference of audit levels 3-10 ≤ ±15% Audit levels 1&2 ± 1.5 ppb difference or ±15%	1 and 2) 40 CFR Part 58 App A sec 3.2.2 3) Recommendation - 3-audit concentrations not including zero. AMTIC guidance 2/17/2011 http://www.epa.gov/ttn/amtic/cpreldoc.html
Federal Audits (NPAP)	1/year at selected sites 20% of sites audited	Audit levels 1&2 ± 1.5 ppb difference all other levels percent difference ± 15%	1) 40 CFR Part 58 App A sec 2.4 2) NPAP adequacy requirements on AMTIC 3) NPAP QAPP/SOP
Verification/Calibration	Upon receipt/adjustment/repair/ installation/moving 1/6 months if manual zero/span performed biweekly 1/year if continuous zero/span performed daily	All points within ± 2 % of calibration range of best-fit straight line	1) 40 CFR Part 50 App A-1 Section 4 2 and 3) Recommendation Multi-point calibration (0 and 4 upscale points)
Gaseous Standards	*All gas cylinders*	*NIST Traceable* *(e.g., EPA Protocol Gas)*	1) 40 CFR Part 50 App A-1 Section 4.1.6.1 2) NA Green book 3) 40 CFR Part 50 App F Section 1.3.1 Producers must participate in Ambient Air Protocol Gas Verification Program 40 CFR Part 58 App A sec 2.6.1
Zero Air/ Zero Air Check	1/year	Concentrations below LDL	1) 40 CFR Part 50 App A-1 Section 4.1.6.2

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1) Requirement (SO_2)	2) Frequency	3) Acceptance Criteria	Information /Action
		< 0.1 ppm aromatic hydrocarbons	2) Recommendation 3) Recommendation and 40 CFR Part 50 App A-1 Section 4.1.6.2
Gas Dilution Systems	1/year or after failure of 1 point QC check or performance evaluation	*Accuracy ± 2 %*	1) 40 CFR Part 50 App A-1sec 4.1.2 2) Recommendation 3) 40 CFR Part 50 App A-1 sec 4.1.2
Detection (FEM/FRMs)			
Noise	NA	*0.001 ppm (standard range)* *0.0005 ppm (lower range)*	1) 40 CFR Part 53.23 (b) (definition & procedure) 2) NA 3)) 40 CFR Part 53.20 Table B-1
Lower detectable level	1/year	*0.002 ppm (standard range)* *0.001 ppm (lower range)*	1) 40 CFR Part 53.23 (c) (definition & procedure) 2) Recommendation 3) 40 CFR Part 53.20 Table B-1
SYSTEMATIC CRITERIA- SO_2			
Sampler/Monitor	NA	*Meets requirements listed in FRM/FEM designation*	1) 40 CFR Part 58 App C Section 2.1 2) NA 3) 40 CFR Part 53 & FRM/FEM method list
Standard Reporting Units	*All data*	*ppb (final units in AQS)*	1, 2 and 3) 40 CFR Part 50 App T Sec 2 (c)
Rounding convention for data reported to AQS	*All data*	*1 place after decimal with digits to right truncated*	1, 2 and 3) 40 CFR Part 50 App T Sec 2 (c)
Completeness	*1 hour standard*	*Hour – 75% of hour* *Day- 75% hourly Conc* *Quarter- 75% complete days* *Years- 4 complete quarters* *5-min value reported only for valid hours*	1, 2 and 3) 40 CFR Part 50 App T Section 3 (b), (c) More details in CFR on acceptable completeness. 5-min values or 5-min max value only reported for the valid portion of the hour reported. If the hour is incomplete no 5-min or 5-min max reported.
Sample Residence Time Verification	1/year	*< 20 seconds*	1) 40 CFR Part 58 App E, section 9 (c) 2) Recommendation 3) 40 CFR Part 58 App E, section 9 (c)
Sample Probe, Inlet, Sampling train	*All sites*	*Borosilicate glass (e.g., Pyrex®) or Teflon®*	1, 2 and 3) 40 CFR Part 58 App E sec 9 (a) FEP and PFA have been accepted as equivalent material to Teflon. Replacement or cleaning is suggested as 1/year and more frequent if pollutant load or contamination dictate
Siting	1/year	*Meets siting criteria or waiver documented*	1) 40 CFR Part 58 App E, sections 2-5 2) Recommendation 3) 40 CFR Part 58 App E, sections 2-5
Precision(using 1-point QC checks)	*Calculated annually and as appropriate for design value estimates*	*90% CL CV ≤ 10%*	1) 40 CFR Part 58 App A sec 2.3.1.6 & 3.2.1 2) 40 CFR Part 58 App A sec 4 (b) 3) 40 CFR Part 58 App A sec 4.1.2
Bias (using 1-point QC checks)	*Calculated annually and as appropriate for design value estimates*	*95% CL ≤ ± 10%*	1) 40 CFR Part 58 App A sec 2.3.1.6 & 3.2.1 2) 40 CFR Part 58 App A sec 4 (b) 3) 40 CFR Part 58 App A sec 4.1.3
Annual PE Primary QA Organization (PQAO)	1/year	*95% of audit percent differences fall within the one point QC check 95% probability intervals*	1) 40 CFR Part 58 App A Section 3.2.2 2) Recommendation
Evaluation		*at PQAO level of aggregation*	3) 40 CFR Part 58 App A sec 4.1.4 and 4.1.5

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Assuming Tanguisson is over 2,000 tpy according to the emissions inventory, but has since been Permanently Shut Down

Tanguisson is nonattainment for the 1971 NAAQS.

1/15/2016

Guam submits list of sources subject to the Data Requirements Rule (2,000 tpy SO2 or greater according to the emissions inventory).

7/1/2016

Guam provides EPA with a commitment to having federally permanent and enforceable emissions limits to bring the source below 2,000 tpy by January 13, 2017.

1/13/2017

Guam provides EPA documentation demonstrating that the source has permanent and federally enforceable emissions limits that brings the source below 2,000 tpy due to EPA.

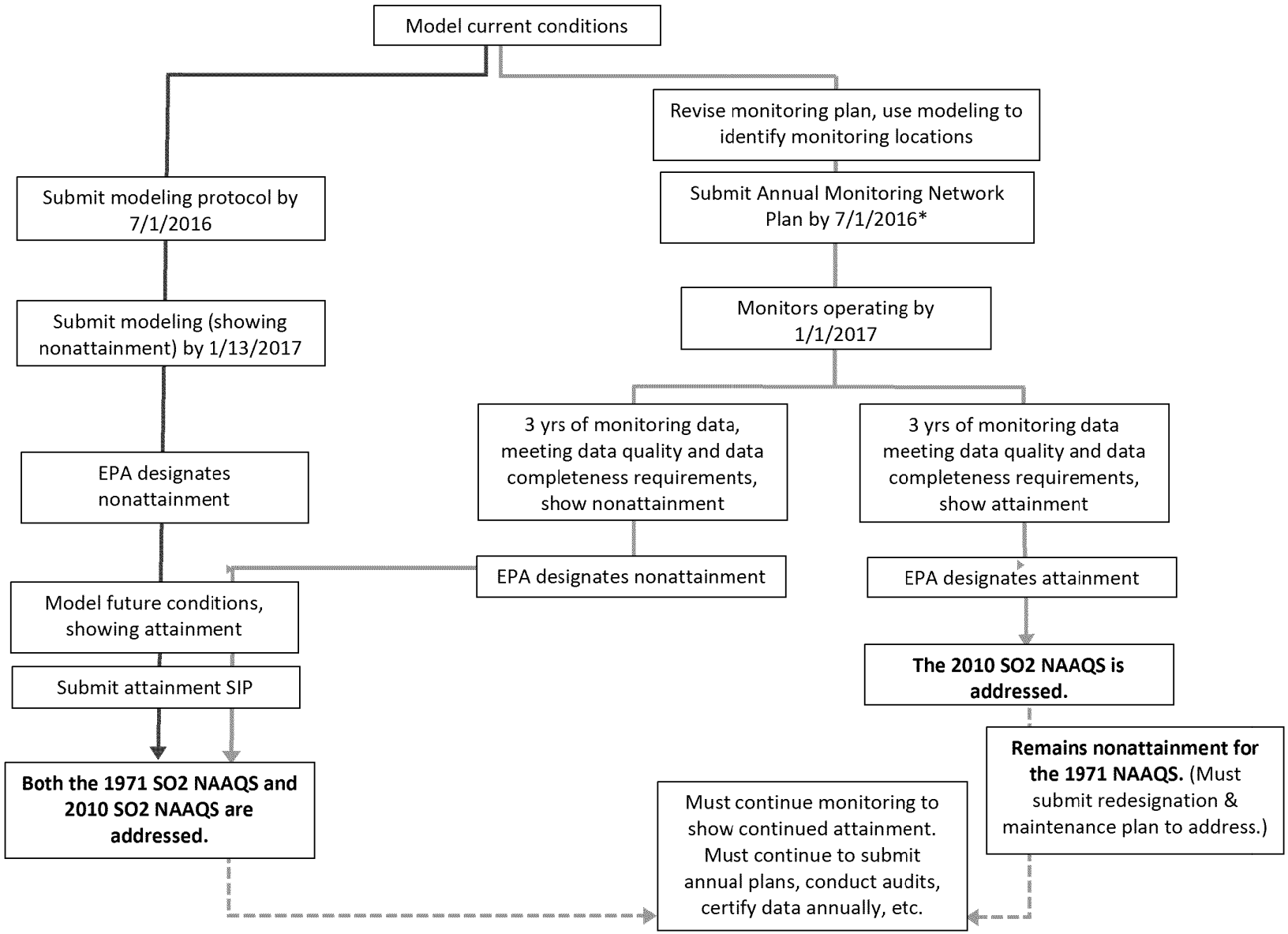
12/31/2020

EPA promulgates designations for all remaining areas

Note: If an area is nonattainment for the 1971 NAAQS and is designated unclassifiable/attainment for the 2010 SO2 NAAQS, **the 1971 NAAQS requirements stand (a redesignation request and maintenance plan would need to be submitted and approved for the area to be redesignated as attainment for the 1971 standard).**

More information, including modeling and monitoring Technical Assistance Documents, available at:
http://www.epa.gov/airquality/sulfurdioxide/implement.html

2010 SO2 NAAQS:
http://www.epa.gov/air/sulfurdioxide/actions.html#jun10



*Include: Information about proposed SO2 monitoring location, evidence of meeting requirements of 40CFR58 Appendices A, C, D, and E (includes having in place: quality assurance documentation, audit capabilities, quality assurance independence), evidence that the plan was made available for 30 day public notice prior to submittal to EPA.

Red line = modeling path. Blue line = monitoring path. Dashed Boxes = EPA action or note indirectly associated with modeling/monitoring paths.

ED_001261_00081212

To: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]
Cc: Robert Tekniepe[Tekniepe@ClarkCountyNV.gov]; huys@clarkcountynv.gov[huys@clarkcountynv.gov]; hameed@clarkcountynv.gov[hameed@clarkcountynv.gov]; Lewis Wallenmeyer[Wallenmeyer@ClarkCountyNV.gov]; Mike Sword[SWORD@ClarkCountyNV.gov]; Stephen Deyo[DEYO@ClarkCountyNV.gov]; Zimpfer, Amy[Zimpfer.Amy@epa.gov]; 'pshoopman@ndep.nv.gov'[pshoopman@ndep.nv.gov]; 'amalone@ndep.nv.gov'[amalone@ndep.nv.gov]
From: Vasant Rajagopalan
Sent: Fri 10/2/2015 3:28:26 PM
Subject: RE: Final Data Requirements Rule for the 2010 1-hour SO2 Standard
ClarkCountyNV_SO2 Sources.pdf

Hi Gwen and Vijay,

Please find attached, an electronic copy of Clark County, Nevada's letter to satisfy the requirements of the SO2 Data Requirements Rule. Let me know if you have any questions.

Thank you,

Vasant.

Vasant Rajagopalan, PE, CEM

Air Quality Modeler

Clark County Department of Air Quality

4701 W Russell Road Suite 200

Las Vegas, NV 89118.

(702) 455-1622

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Monday, August 24, 2015 9:07 AM
To: Stephen Deyo
Cc: Robert Tekniepe; Vasant Rajagopalan; Jean-Paul Huys; Yousaf Hameed; LIMAYE, VIJAY; Bohning, Scott
Subject: RE: Final Data Requirements Rule for the 2010 1-hour SO2 Standard

Hello Stephen,

Please send the letter to the Regional Administrator, and cc the Air Division Director. If possible, we always appreciate it when folks also send an electronic copy – that could be sent to me and to Vijay Limaye (limay.vijay@epa.gov). We (almost) always get our emails in a timely fashion, but our mail can be woefully slow sometimes.

Thanks! If you would like to have a call on the subject, either now or further down the road, please let us know and we'd be more than happy to set something up. Sounds like you are in good shape, though!

-Gwen

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

From: Stephen Deyo [mailto:DEYO@ClarkCountyNV.gov]
Sent: Friday, August 21, 2015 7:57 AM

To: YOSHIMURA, GWEN
Cc: Robert Tekniepe; Vasant Rajagopalan; huys@clarkcountynv.gov; hameed@clarkcountynv.gov
Subject: RE: Final Data Requirements Rule for the 2010 1-hour SO2 Standard

Gwen,

From your August 10, 2015 email it is stated that our agency must submit a list of sources subject to the DRR (>2,000 tpy SO2) by January 15, 2016. To whom at EPA do we address this letter to indicate our list of subject sources? We could not find this point of contact in the rule itself.

Thank you,

Stephen Deyo

Assistant Manager

702-455-1675

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Friday, August 14, 2015 8:57 AM
To: Yousaf Hameed
Subject: RE: Final Data Requirements Rule for the 2010 1-hour SO2 Standard

Actuals. And if your source is shut down by, or has permanent and federally enforceable emissions limits by January 13, 2017, then you can give us that documentation and call it good!

Gwen M. Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
Phone: 415.947.4134
Email: yoshimura.gwen@epa.gov

mailing address:
U.S. Environmental Protection Agency
Air Quality Analysis Office (AIR-7)
75 Hawthorne Street
San Francisco, CA 94105

Protecting the air we share
Air Quality
CLARK COUNTY • DEPARTMENT OF AIR QUALITY
4701 W. Russell Road Suite 200 • Las Vegas, NV 89118-2231
(702) 455-5942 • Fax (702) 383-9994
Lewis Wallenmeyer Director

October 1, 2015

Jared Blumenfeld
Regional Administrator
ORA-1, USEPA Region 9
75 Hawthorne Street
San Francisco, California 94105

Re: Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO2) Primary National Ambient Air Quality Standard

Dear Mr. Blumenfeld:

On August 21, 2015 the US Environmental Protection Agency (EPA) promulgated the ***Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS)*** [80 FR 51052]. According to §51.1203(a), *"...The air agency shall submit a list of applicable SO_2 sources identified pursuant to § 51.1202 located in its jurisdiction to the EPA by January 15, 2016..."* This letter satisfies this condition.

The Clark County Department of Air Quality (DAQ) reviewed all sources in its jurisdiction that emit Sulfur Dioxide (SO_2), and found no sources that have actual emissions greater than 2,000 tons per year.

The largest SO_2 source in Clark County is the Reid Gardner power plant in Moapa. However, this source is under the jurisdiction of the Nevada Division of Environmental Protection (NDEP).

Sincerely,

L. Wallenmeyer

Lewis Wallenmeyer, Director
Clark County Department of Air Quality

cc:
Amy Zimpfer, Associate Director, Air Division, USEPA Region IX (AIR-1)
Phillip Shoopman, Nevada Division of Environmental Protection – via email
Gwen Yoshimura, USEPA Region IX – via email
Vijay Limaye, USEPA Region IX – via email

BOARD OF COUNTY COMMISSIONERS
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Susan Brager • Tom Collins • Chris Giunchigliani
Mary Beth Scow • Lawrence Weekly
Don Burnette, County Manager

To: Raju Bisht[rbisht@navajo-nsn.gov]
Cc: Lo, Doris[Lo.Doris@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Bohning, Scott[Bohning.Scott@epa.gov]; McKaughan, Colleen[McKaughan.Colleen@epa.gov]; eugeniaquintana@navajo-nsn.gov[eugeniaquintana@navajo-nsn.gov]; Michael Z. King[mzking@navajo-nsn.gov]; Tennille B. Begay[tbbegay@navajo-nsn.gov]; Withey, Charlotte[Withey.Charlotte@epa.gov]; CHANG, RANDALL (Chang.Randall@epa.gov)[Chang.Randall@epa.gov]
From: LIMAYE, VIJAY
Sent: Tue 7/19/2016 11:50:30 PM
Subject: RE: Implementation of SO2 DRR on Navajo Nation

Hi Raju,

EPA Region 9 does have the modeling protocols for both FCPP and NGS, and we believe that most of the procedures followed would be appropriate for modeling performed for the SO2 DRR, though there would have to be some differences to address emissions and AERMOD model options.

The June 6th draft protocol sent by Gaurav Rajen covered many of the AERMOD inputs, borrowing from the EIS protocol; either an updated version of the draft or an abbreviated version that just cited the EIS protocols would be suitable as the basis for a protocol. However, per our previous conversations (including conference calls on June 9th and June 16th), we believe that the emission scenarios used in the EIS protocols may not be appropriate for the SO2 DRR. Under the SO2 DRR, modeled emissions are required to be either actual emissions for recent years (e.g. 2012-2014, or 2013-2015), or else allowed emissions under federally enforceable limits in place and effective by January 13, 2017. The emissions to be modeled should be spelled out in protocol(s) for the two facilities.

In addition, for the EIS reports, the "adjusted u-star" beta option in AERMOD was used. At this time, until the Guideline on Air Quality Models ("GAQM", 40 CFR Part 51, Appendix W) is updated, the use of the adjusted u-star for modeling for permits or SIPs requires an alternative model demonstration under GAQM 3.2, which must be approved by the EPA Model Clearinghouse. It would be simpler not to go through that procedure, so we recommend that the protocol(s) for the two facilities reflect the standard AERMOD model. This could be revisited at a later date if necessary.

We would like to set up a call with you and your team for next week to discuss the emissions limits, to make sure that we are all on the same page--please let us know a good time to reach you.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Raju Bisht [mailto:rbisht@navajo-nsn.gov]
Sent: Thursday, July 14, 2016 10:03 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Lo, Doris <Lo.Doris@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; Strauss, Alexis <Strauss.Alexis@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; eugeniaquintana@navajo-nsn.gov; Michael Z. King <mzking@navajo-nsn.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Withey, Charlotte <Withey.Charlotte@epa.gov>
Subject: RE: Implementation of SO2 DRR on Navajo Nation

Hello Vijay,

I would like to follow up on our effort to meet the DRR for NGS. The facility has informed us that Region 9 should have the protocol and the final report for the near field modeling conducted for the EIS. I believe Jeanne Geselbracht is the Region 9 contact for the EIS study. If you don't have access to these documents, please let us know and we will provide them to you. Would the protocol and the report done for the EIS be sufficient to make a determination for the SO2 DRR? If not, could you provide us with some guidance on what changes you would like to see be made before running the model again so that we could start having a dialogue with the facility and their consultants to see how they can help us with this moving forward.

Thanks. Raju

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]

Sent: Wednesday, June 29, 2016 12:19 PM
To: Eugenia Quintana <eugeniaquintana@navajo-nsn.gov>; Strauss, Alexis <Strauss.Alexis@epa.gov>
Cc: Lo, Doris <Lo.Doris@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Withey, Charlotte <Withey.Charlotte@epa.gov>
Subject: RE: Implementation of SO2 DRR on Navajo Nation

Hi Eugenia,

Thank you for this communication and for Navajo Nation's continuing efforts on these SO2 sources.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Eugenia Quintana [mailto:eugeniaquintana@navajo-nsn.gov]
Sent: Wednesday, June 29, 2016 11:13 AM
To: Strauss, Alexis <Strauss.Alexis@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Lo, Doris <Lo.Doris@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>
Subject: Implementation of SO2 DRR on Navajo Nation

Hello.

Please find attached a letter informing USEPA of the Navajo Nation's selected approach to meet the DRR for the two SO2 sources on the Navajo Nation.

Thank you.

Eugenia Quintana

Environmental Department Manager

Air & Toxics Department

Navajo Nation Environmental Protection Agency

Box 339

Window Rock, AZ 86515

T: 928-871-7800

F: 928-871-6757

To: Roland Gutierrez[roland.gutierrez@epa.guam.gov]
From: LIMAYE, VIJAY
Sent: Thur 6/16/2016 4:42:09 PM
Subject: RE: Discuss Guam SO2 Modeling Protocol

Hi Roland,

Sorry about that—here are names and the sections, that will be enough:

Kerry Drake (AIR-1)

Doris Lo (AIR-2)

Vijay Limaye (AIR-2)

Gwen Yoshimura (AIR-7)

Carol Bohnenkamp (AIR-7)

Best,

Vijay

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Wednesday, June 15, 2016 10:42 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: Re: Discuss Guam SO2 Modeling Protocol

Mr. Limaye,

I am not familiar with all of the individuals titles or sections you suggested we CC in the letter to Ms. Strauss. Can I have their titles or section so that I may cc them correctly and accordingly.

Thank you,

Roland T. Gutierrez Jr., MPA

EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Thu, Jun 16, 2016 at 6:43 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Conchita,

Just to follow up briefly on the upcoming 7/1/2016 SO2 DRR deadline, we recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here: https://www.epa.gov/airquality/sulfurdioxide/drr.html

In light of this, and to satisfy 40 CFR 51.1203(b), we believe that a letter from Guam EPA to EPA Region 9 Acting Regional Administrator Alexis Strauss (cc'ing Kerry Drake, Doris Lo, Gwen Yoshimura, Carol Bohnenkamp, and myself) listing the Piti-Cabras source and indicating that it will be characterized through modeling is appropriate. Please let me know if you have any questions. We will be responding about the protocol GPA sent shortly.

Thanks for all of your work on this effort!

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Noel P. Cruz [mailto:ncruz1@gpagwa.com]
Sent: Tuesday, June 14, 2016 3:40 PM
To: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; conchita.taitano@epa.guam.gov; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>; Paz A Tison <mtison@gpagwa.com>

Subject: Discuss Guam SO2 Modeling Protocol

Hi Gwen / Roland,

Please see our consultant's reply to the question 2 below.

Question 2: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

Reply: TRC will run the modeling analyses as proposed in the modeling protocol and will determine the appropriate design value resulting from the analyses. The receptor where the design value concentration is predicted to occur will be viewed on a satellite map of the area to determine if the specific point is accessible and appropriate for monitor siting. If it is, the design concentration will be reported as modeled.

In the event that the receptor is located on a water body, inaccessible location, or a point where a monitor cannot physically be located, a new receptor will be placed at the nearest point where a monitor can be located and the concentration at that receptor will be determined consistent with the modeling protocol. TRC will document any receptor determined to be inaccessible and will discuss the receptors in question with GEPA and USEPA before finalizing the modeling report.

With regards to question 1, the Final Modeling Protocol was emailed to you yesterday with Appendices C and D.

Please let us know if you have any comments or further questions.

Noel P. Cruz *CESCO,CWMP*

Engineer II (Environmental)

Planning & Regulatory

Guam Power Authority

Ncruz1@gpagwa.com

Tel: (671) 648-3030

Fax: (671) 648-3167

From: Noel P. Cruz
Sent: Tuesday, June 14, 2016 2:56 PM
To: 'YOSHIMURA, GWEN' <Yoshimura.Gwen@epa.gov>; 'Roland Gutierrez' <roland.gutierrez@epa.guam.gov>
Cc: 'Bohnenkamp, Carol' <Bohnenkamp.Carol@epa.gov>; 'conchita.taitano@epa.guam.gov' <conchita.taitano@epa.guam.gov>; 'Drake, Kerry' <Drake.Kerry@epa.gov>; 'LIMAYE, VIJAY' <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; 'Luong Truong' <luong.truong@epa.guam.gov>
Subject: Discuss Guam SO2 Modeling Protocol

Gwen/Roland,

Appendix D …last email attachment.

-noel

From: Noel P. Cruz
Sent: Tuesday, June 14, 2016 2:46 PM
To: 'YOSHIMURA, GWEN' <Yoshimura.Gwen@epa.gov>; 'Roland Gutierrez' <roland.gutierrez@epa.guam.gov>
Cc: 'Bohnenkamp, Carol' <Bohnenkamp.Carol@epa.gov>; 'conchita.taitano@epa.guam.gov' <conchita.taitano@epa.guam.gov>; 'Drake, Kerry' <Drake.Kerry@epa.gov>; 'LIMAYE, VIJAY' <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; 'Luong Truong' <luong.truong@epa.guam.gov>
Subject: Discuss Guam SO2 Modeling Protocol

Gwen/Roland,

Appendix C attached.

-noel

From: Noel P. Cruz
Sent: Tuesday, June 14, 2016 2:41 PM
To: 'YOSHIMURA, GWEN' <Yoshimura.Gwen@epa.gov>; Roland Gutierrez <roland.gutierrez@epa.guam.gov>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Conchita Taitano (conchita.taitano@epa.guam.gov) <conchita.taitano@epa.guam.gov>; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Roger U. Pabunan <rpabunan@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>
Subject: RE: Discuss Guam SO2 Modeling Protocol

Hafa Adai Gwen/Roland,

Please see attached copy of FINAL Guam SO2 Modeling Protocol. I'm sending 2 more emails with attachment i.e. Appendices C and D, respectively. Let us know if you have other questions or need futher clarification.

Si' Yu'us Ma'ase.

Noel P. Cruz

Engineer II (Environmental)

Planning & Regulatory

Guam Power Authority

Ncruz1@gpagwa.com

Tel: (671) 648-3030

Fax: (671) 648-3167

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Tuesday, June 14, 2016 8:32 AM
To: Roland Gutierrez <roland.gutierrez@epa.guam.gov>; Roger U. Pabunan <rpabunan@gpagwa.com>
Cc: Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Conchita Taitano (conchita.taitano@epa.guam.gov) <conchita.taitano@epa.guam.gov>; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Noel P. Cruz <ncruz1@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>
Subject: RE: Discuss Guam SO2 Modeling Protocol

Hi Roland,

Thanks for checking in. A few comments on the latest Draft Modeling Protocol:

1. We did not receive Appendix C or Appendix D.

2. Section 5: Please clarify how Guam EPA/EPA will be notified of re-located receptors, and whether an explanation of the reasons for relocation (characteristics of the locations, etc) will be included.

3. Section 7: When we receive Appendix D, we can verify the appropriate background concentration.

That's it. Overall, we think the protocol is in good shape. Thanks, and please let Carol know if you have any questions.

-Gwen

From: Roland Gutierrez [mailto:roland.gutierrez@epa.guam.gov]
Sent: Sunday, June 12, 2016 4:17 PM
To: Roger U. Pabunan <rpabunan@gpagwa.com>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohnenkamp, Carol <Bohnenkamp.Carol@epa.gov>; Conchita Taitano (conchita.taitano@epa.guam.gov) <conchita.taitano@epa.guam.gov>; Drake, Kerry <Drake.Kerry@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Sylvia L Ipanag <sipanag@gpagwa.com>; Noel P. Cruz <ncruz1@gpagwa.com>; Norbert M. Madrazo <nmadrazo@gpagwa.com>; Luong Truong <luong.truong@epa.guam.gov>
Subject: Re: Discuss Guam SO2 Modeling Protocol

Gwen,

We are almost halfway through June and we wanted to follow up with USEPA to determine if there were any more comments, questions or concerns on the latest submission (attached) of the Draft Modeling Protocol. Please advise and we look forward to submitting the final Modeling Protocol in a timely manner for the island of Guam.

Sincerely,

Roland T. Gutierrez Jr., MPA
EHS Supervisor, Air Pollution Control Program - Guam EPA
roland.gutierrez@epa.guam.gov
Ph. 1-671-300-4751/2/3
Fax: 1-671-300-4531

epa.guam.gov - facebook.com/Guam EPA - twitter.com/GuamEPA

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On Fri, May 27, 2016 at 9:33 AM, Roger U. Pabunan <rpabunan@gpagwa.com> wrote:

Good day Gwen.

Please see attached current version of the DRR Protocol for Guam. This is Revision 3, which includes responses to comments from Carol Bohnenkamp's May 9th Email.

Regards,

Roger U. Pabunan

Engineer Supervisor

Planning & Regulatory

Guam Power Authority

rpabunan@gpagwa.com

Tel: (671) 648-3032

Fax: (671) 648-3290

I-connect: 671*11*20152

From: YOSHIMURA, GWEN [mailto:Yoshimura.Gwen@epa.gov]
Sent: Friday, May 27, 2016 6:58 AM
To: Conchita San Nicolas Taitano; Sylvia L Ipanag; Roland Gutierrez - Air Program Supervisor
Cc: Bohnenkamp, Carol; Drake, Kerry; LIMAYE, VIJAY

Subject: RE: Discuss Guam SO2 Modeling Protocol

Hello,

We are nearing the end of the month, with about a month to go before the SO2 modeling protocol is due on July 1st. Carol has not received any questions concerning our May 9th modeling protocol comments. As a reminder, should questions arise, please feel free to contact her at the number provided below.

Thanks!

-Gwen

From: Bohnenkamp, Carol
Sent: Tuesday, May 10, 2016 8:11 AM
To: Drake, Kerry <Drake.Kerry@epa.gov>; Conchita San Nicolas Taitano <conchita.taitano@epa.guam.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Sylvia Ipanag <sipanag@gpagwa.com>; Roland Gutierrez - Air Program Supervisor <roland.gutierrez@epa.guam.gov>
Subject: RE: Discuss Guam SO2 Modeling Protocol

Here are the notes from yesterday's call about the SO2 NAAQS Designation Modeling for Guam. Please feel free to call me at (415) 947-4130 if you have any questions.

- 2.0 Emission and Source Data

- Please provide an emission inventory.
- List which sources will be explicitly modeled when you have completed that analysis.

- 5.0 Receptor Array.

- Clarify the process for editing out high concentrations.

- 6.0 Meteorological data

- Please clarify the hierarchy for data use for the surface data.
- Discuss the quality assurance and data completeness for each year.
- Please discuss other available surface data, if any.

- 7.0 Background concentration

- After determining which nearby sources will be explicitly modeled, please select a background concentration at will account for the point sources that are not modeled, as well as ships, etc.

- See SO2 Modeling TAD, page 30, regarding selecting background concentration

- 8.0 Modeling Results

- Explain why " For comparison to the 1 hour SO2 NAAQS, the maximum five year average of the 99th th percentile of the annual distribution of the maximum daily 1-hour predicted concentration determined for each receptor will be reported using three years of meteorological data."

Carol Bohnenkamp

US EPA Region 9 (AIR-7)

75 Hawthorne St.

San Francisco, CA 94105

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From: LIMAYE, VIJAY
Location: R9SF-Room-18324-8-Rincon; R9SF-ConferenceLine-AIR-Card1
Importance: Normal
Subject: Navajo SO2/DRR discussion
Start Date/Time: Thur 6/16/2016 4:00:00 PM
End Date/Time: Thur 6/16/2016 5:00:00 PM

We will use this call to discuss updates on Navajo's SO2 modeling plans.

Call info:
Ex. 6 - Personal Privacy
CONFERENCE CODE: **Ex. 6 - Personal Privacy**

To: Farah Mohammadesmaeili[Mohammadesmaeili.Farah@azdeq.gov]
Cc: Ryan C. Templeton[Templeton.Ryan@azdeq.gov]; Holladay, Cleveland[Holladay.Cleveland@epa.gov]
From: LIMAYE, VIJAY
Sent: Thur 5/12/2016 10:41:27 PM
Subject: RE: SO2 Designation Modeling

Hi Farah,

We are comfortable with the NWS MET data for Cholla. We suggest 2013-2015 (not 2016) data, as it reflects the three most recent complete years. Please see section 5.1 of the TAD: "For the purposes of modeling to characterize air quality for use in SO2 designations, the EPA recommends **using the most recent 3 years of actual emissions data and concurrent meteorological data** (see Section 7) to allow the modeling to simulate what a monitor would observe."

Regarding AEPCO—modeling projected emissions (including projected hourly heat input) are not allowed by the rule. You should use the actual operating level or design capacity, whichever is greater.

Vijay

From: Farah Mohammadesmaeili [mailto:Mohammadesmaeili.Farah@azdeq.gov]
Sent: Thursday, May 12, 2016 3:34 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: SO2 Designation Modeling

Hi Vijay,

Thank you for your email and clarification on using projected emissions for AEPCO SO2 modeling.

Regarding Cholla SO2 modeling, my original question was on using 2012-2014 NWS MET data instead of on-site MET data which are not QA'd/QC'd and if EPA agrees with the methodology

that we submitted on 4/13/2016. Is there any updates on that? Would you also clarify why we should use 2013-2016 data instead of 2012-2014 data?

My last question is on defining the proper heat input data to calculate the SO2 emission rate for AEPCO using SO2 BART limits. As I mentioned in my email on 4/21/2016, we are working on SO2 Data Requirement Rule modeling for AEPCO using 12-05-2016 SO2 BART limits for Unit 2&3. The limits are defined as lb/MMBtu. As stated in SO2 NAAQS Designation Modeling TAD (Feb 2016), 1-hr SO2 emissions inputs may be calculated using the equation in Table 8-1 of Appendix W:

TABLE 8–1.—MODEL EMISSION INPUT DATA FOR POINT SOURCES [1]

Averaging time	Emission limit (#/MMBtu) [2]	×	Operating level (MMBtu/hr) [2]	×	Operating factor (e.g., hr/yr, hr/day)
Stationary Point Source(s) Subject to SIP Emission Limit(s) Evaluation for Compliance with Ambient Standards (Including Areawide Demonstrations)					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition.		Actual operating factor averaged over most recent 2 years.[3]
Short term	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition.[4]		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological data base).[5]

As this table shows, one of the required parameters to calculate the short term emissions input is the "Operating level (MMBtu/hr), which is actual or design capacity (whichever is greater). We are going to use the 2016 SO2 limits (lb/MMBtu), but it is not clear to us which operating level (MMBtu/hr) should be used to calculate the emission inputs. **Is it the maximum actual hourly heat input over 2012-2014, the projected hourly heat input in 2016 for each unit, or the design capacity? I'd appreciate your help to clarify this.**

Thank you,

Farah

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Thursday, May 12, 2016 2:12 PM
To: Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>; Holladay, Cleveland

<Holladay.Cleveland@epa.gov>
Subject: RE: SO2 Designation Modeling

Hi Farah,

We spoke with Marina and Tim yesterday on this topic—as communicated by Scott Bohning via email to you last Thursday, the modeled emissions must be past actual emissions, or else allowable emissions. We would be interested to know the results of your modeling of projected emissions for December 2016 onward, but such modeling will not satisfy the SO2 DRR requirement.

For the Cholla modeling methodology, Cleve suggests you use data for 2013-2015 instead of 2012-2014—will that be possible?

Vijay

From: Farah Mohammadesmaeili [mailto:Mohammadesmaeili.Farah@azdeq.gov]
Sent: Thursday, May 12, 2016 10:56 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: SO2 Designation Modeling

Hi Vijay,

I would like to follow-up with you regarding our questions on Cholla and AEPCO (Heat inputs) SO2 modeling. Is there any updates?

Thank you,

Farah

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To: Ryan C. Templeton[Templeton.Ryan@azdeq.gov]; Balaji Vaidyanathan[Vaidyanathan.Balaji@azdeq.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Marina Mejia[Mejia.Marina@azdeq.gov]
From: LIMAYE, VIJAY
Sent: Wed 3/16/2016 9:00:05 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Ryan,

Thank you for getting back to us so quickly! Do you have information from the annual emission reports on the emissions factors for the kilns the production levels/hours of operation have been for the last few years?

Vijay

From: Ryan C. Templeton [mailto:Templeton.Ryan@azdeq.gov]
Sent: Wednesday, March 16, 2016 1:30 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hey Vijay,

We looked into the point source data reported to SLEIS (Arizona's current point source emission reporting tool and repository) for 2014 and previous year emissions for the Nelson Lime Plant. The kilns utilize a site specific emission factor for estimating emissions. Lhoist did not supply supporting information as to the development of these site specific emission factors in their annual emission reports, which indicates that they should be included in the permit application documentation. For other facility processes, EPA AP-42 emission factors were utilized.

If more information is needed as to how the kiln emission factors were developed, we may need a little more time. Please let us know if you are looking for more detail.

Ryan Templeton

Environmental Program Supervisor

Arizona Department of Environmental Quality

rct@azdeq.gov

(602) 771-4230

From: Balaji Vaidyanathan
Sent: Wednesday, March 16, 2016 1:08 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Ryan C. Templeton <Templeton.Ryan@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Sure Vijay. If possible, we will try to get you the information prior to the call.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, March 16, 2016 10:47 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We'll speak with you in a few hours—but I did want to ask you if you could check on the situation at Lhoist North America-Nelson Lime Plant. We understand that the FIP controls (low sulfur fuels) are now in place there, and you expect SO2 emissions to be below 2,000 tpy moving forward. Can you help us to shed some light no how the emissions for the plant have been calculated for 2014 and prior years (I don't think SO2 CEMS monitoring began until this year?).

Thanks for your help on this!

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Monday, March 14, 2016 9:21 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

Many thanks Vijay. We look forward to the call.

Balaji

On Mar 14, 2016, at 8:30 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Great! 3:30p (AZ time) on Wednesday 3/16 will work well for us. Here's a conference line for you to call, I will follow up with a brief agenda before we all talk on Wednesday.

Ex. 6 - Personal Privacy

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Sunday, March 13, 2016 8:57 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

HI Vijay. How about 3:30 pm AZ time on Wednesday? Please let me know.

Thanks,

Balaji

On Mar 12, 2016, at 11:12 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Thanks for getting back to me so quickly! Would you have any times on Wednesday after 2p, or on Thursday or Friday? I would like for Cleve to be able to join us, and I just got word that he is out until Wednesday afternoon. Please let me know if a later day/time might work, we are looking forward to talking with you and Feng.

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, March 11, 2016 7:19 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Certainly Vijay, how about next Tuesday (3/15) at either 9:00 am or 1:00 pm? Alternately, how about 11:00 am on Wednesday (3/16)? It will be Feng Mao (our senior modeler) and me on the call.

Please let me know. We really appreciate your willingness to guide us.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Thursday, March 10, 2016 10:49 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>; Kay, Rynda <Kay.Rynda@epa.gov>; Lakin, Matt <Lakin.Matthew@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message and for this document. I have shared the summary you shared with our team, and we are definitely interested in talking with you next week about specifics. For now, can you let me know if there's a particularly good time to talk on the phone mid/late next week? We look forward to continuing to work with ADEQ on the SO2 Data Requirements Rule.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Thursday, March 10, 2016 9:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia

<Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Vijay,

Hope things are well. We are getting to a point where our preliminary modeling efforts are concluding. Even as we wrap that up, we want to touch base with you real quick. Attached is a quick summary of our overall modeling methodology. We have outlined some technical issues and our proposed approach to address those. We feel confident that the approach should be defensible but we will feel a whole lot better if we had EPA's general concurrence that we are headed in the right direction. One of our modelers, Feng Mao, discussed some of these issues with Cleve earlier this week. Can I trouble you to take a quick look at this please? If you could provide your feedback in the next week to ten days, it will help us out a ton!

Regards,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, February 29, 2016 9:45 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks for this update, Balaji!
Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, February 26, 2016 3:11 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>

Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Not yet Vijay, we are getting close though. We have completed some preliminary modeling for 2 facilities but have to finish up the background determination process. I look forward to sharing some results in a few weeks.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, February 24, 2016 3:22 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

I hope all is well on your end—I'm checking in to see if there might be any updates on your modeling efforts. If you are considering conducting monitoring to meet the Data Requirements Rule, we would be interested to set up a discussion with you and your team to discuss the details.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Wednesday, January 20, 2016 6:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Definitely Vijay, I will keep you posted once we have some preliminary modeling results. Thanks.

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Tuesday, January 19, 2016 4:43 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We appreciate the timely submission of the SO2 source list from ADEQ, and look forward to any updates on your preliminary modeling and planning for further modeling/monitoring of the sources you mentioned. Please let me know if you'd like to set up a time to talk or if you have any questions on the Data Requirements Rule.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve <Clancy.Maeve@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Marina Mejia <Mejia.Marina@azdeq.gov>; Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for

ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve

Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby

Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)

- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*

- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)

- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing	??	On implementation of proposed changes, emission will reduce to 552 tons/year

		these to aisle caustic scrubber		
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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improper use or further disclosure of the information in this e-mail and its attachments. If you have received this e-mail in error, please immediately notify the person named above by reply e-mail, and then delete the original e-mail. Thank you.

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To: Balaji Vaidyanathan[Vaidyanathan.Balaji@azdeq.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]
From: LIMAYE, VIJAY
Sent: Wed 3/16/2016 5:47:24 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We'll speak with you in a few hours—but I did want to ask you if you could check on the situation at Lhoist North America-Nelson Lime Plant. We understand that the FIP controls (low sulfur fuels) are now in place there, and you expect SO2 emissions to be below 2,000 tpy moving forward. Can you help us to shed some light no how the emissions for the plant have been calculated for 2014 and prior years (I don't think SO2 CEMS monitoring began until this year?).

Thanks for your help on this!

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Monday, March 14, 2016 9:21 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

Many thanks Vijay. We look forward to the call.

Balaji

On Mar 14, 2016, at 8:30 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Great! 3:30p (AZ time) on Wednesday 3/16 will work well for us. Here's a conference line for you to call, I will follow up with a brief agenda before we all talk on Wednesday.

Ex. 6 - Personal Privacy

Ex. 6 - Personal Privacy

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Sunday, March 13, 2016 8:57 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: Re: SO2 Information for the Data Requirements Rule

HI Vijay. How about 3:30 pm AZ time on Wednesday? Please let me know.

Thanks,

Balaji

On Mar 12, 2016, at 11:12 AM, LIMAYE, VIJAY <Limaye.Vijay@epa.gov> wrote:

Hi Balaji,

Thanks for getting back to me so quickly! Would you have any times on Wednesday after 2p, or on Thursday or Friday? I would like for Cleve to be able to join us, and I just got word that he is out until Wednesday afternoon. Please let me know if a later day/time might work, we are looking forward to talking with you and Feng.

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, March 11, 2016 7:19 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Certainly Vijay, how about next Tuesday (3/15) at either 9:00 am or 1:00 pm? Alternately, how about 11:00 am on Wednesday (3/16)? It will be Feng Mao (our senior modeler) and me on the call.

Please let me know. We really appreciate your willingness to guide us.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Thursday, March 10, 2016 10:49 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>; Kay, Rynda <Kay.Rynda@epa.gov>; Lakin, Matt <Lakin.Matthew@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message and for this document. I have shared the summary you shared with our team, and we are definitely interested in talking with you next week about specifics. For now, can you let me know if there's a particularly good time to talk on the phone mid/late next week? We look forward to continuing to work with ADEQ on the SO2 Data Requirements Rule.

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Thursday, March 10, 2016 9:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Farah Mohammadesmaeili <Mohammadesmaeili.Farah@azdeq.gov>; Yi Li <Li.Yi@azdeq.gov>; Holladay, Cleveland <Holladay.Cleveland@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Vijay,

Hope things are well. We are getting to a point where our preliminary modeling efforts are concluding. Even as we wrap that up, we want to touch base with you real quick. Attached is a quick summary of our overall modeling methodology. We have outlined some technical issues and our proposed approach to address those. We feel confident that the approach should be defensible but we will feel a whole lot better if we had EPA's general concurrence that we are headed in the right direction. One of our modelers, Feng Mao, discussed some of these issues with Cleve earlier this week. Can I trouble you to take a quick look at this please? If you could provide your feedback in the next week to ten days, it will help us out a ton!

Regards,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, February 29, 2016 9:45 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>

Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks for this update, Balaji!
Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Friday, February 26, 2016 3:11 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>; Feng Mao <Mao.Feng@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Not yet Vijay, we are getting close though. We have completed some preliminary modeling for 2 facilities but have to finish up the background determination process. I look forward to sharing some results in a few weeks.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Wednesday, February 24, 2016 3:22 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

I hope all is well on your end—I'm checking in to see if there might be any updates on your modeling efforts. If you are considering conducting monitoring to meet the Data Requirements Rule, we would be interested to set up a discussion with you and your team to discuss the details.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Wednesday, January 20, 2016 6:41 AM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Definitely Vijay, I will keep you posted once we have some preliminary modeling results. Thanks.

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Tuesday, January 19, 2016 4:43 PM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Cc: YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Balaji,

We appreciate the timely submission of the SO2 source list from ADEQ, and look forward to any updates on your preliminary modeling and planning for further modeling/monitoring of the sources you mentioned. Please let me know if you'd like to set up a time to talk or if you have any questions on the Data Requirements Rule.

Best,

Vijay

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]

Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve <Clancy.Maeve@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Cc: Marina Mejia <Mejia.Marina@azdeq.gov>; Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the

monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)

- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*

- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)

- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014	UPCOMING	EXPECTED	EMISSIONS AFTER

	SO2 (TONS)	CONTROLS	INSTALLATION/EFFECTIVE DATE	NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system, new tirtiary capture system	??	On implementation of proposed changes, emission will reduce to about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber	??	On implementation of proposed changes, emission will reduce to 552 tons/year
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia

Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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Cc: Marina Mejia[Mejia.Marina@azdeq.gov]; Heather Colson[Colson.Heather@azdeq.gov]; Bradley R. Busby[Busby.Bradley@azdeq.gov]
To: Balaji Vaidyanathan[Vaidyanathan.Balaji@azdeq.gov]; Clancy, Maeve[Clancy.Maeve@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]
From: LIMAYE, VIJAY
Sent: Mon 12/28/2015 4:45:22 PM
Subject: Re: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message on this. EPA is compiling a docket of these submissions from each state, and for those purposes, a letter identifying all SO2 sources within the state that exceeded the 2,000 tons per year annual threshold is preferable to the email chain-- just for a bit more consistency and formality. The list of modeling/monitoring choices for each of the sources is not due to us until July 1, 2016.

Hopefully getting a letter to us before January 15, 2016 won't be too much of a hassle? We appreciate your efforts on this, let me know if you have any more questions.

Best,

Vijay

Vijay Limaye, Ph.D.
US EPA Region IX
Air Planning Office (AIR-2)
75 Hawthorne St. San Francisco, CA 94105
Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>
Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve; LIMAYE, VIJAY
Cc: Marina Mejia; Heather Colson; Bradley R. Busby
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

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2016 deadline? Please advise if anything further needs to be done from our side.

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Cc: Clancy, Maeve <Clancy.Maeve@epa.gov>; Feng Mao <Mao.Feng@azdeq.gov>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

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Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch—is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

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Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all

the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)
- *Catalyst Paper, Snowflake, Navajo County. Has since closed down.*
- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)
- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME	2014 SO2 (TONS)	UPCOMING CONTROLS	EXPECTED INSTALLATION/EFFECTIVE DATE	EMISSIONS AFTER NEW CONTROLS
ASARCO HAYDEN SMELTER	17432.6	3 new converters, improved primary and secondary capture system,	??	On implementation of proposed changes, emission will reduce to

		new tirtiary capture system		about 3,500 tpy
FREEPORT MIAMI SMELTER	4505.016	Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber	??	On implementation of proposed changes, emission will reduce to 552 tons/year
APS - CHOLLA	3806.588	Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025	2016, 2025	Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015
TUCSON ELECTRIC POWER CO.- SPRINGERVILLE GENERATING STATION	6221.036	No changes are planned at the facility	NA	No change in emissions is anticipated
Arizona Electric Power Cooperative - Apache Generating Station	4811	As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.	12/5/2017	Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information

you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov

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To: Adele Malone[amalone@ndep.nv.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]
Cc: Lakin, Matt[Lakin.Matthew@epa.gov]; Danilo Dragoni[ddragoni@ndep.nv.gov]
From: LIMAYE, VIJAY
Sent: Wed 10/21/2015 11:24:26 PM
Subject: RE: 2015 SO2 CEMS data for Reid Gardner Generating Station (RGGS)

Hi Adele,

Thanks for your patience as we checked on your question on SO2 data for RGGS. Your plan for substituting direct data for the final months of 2015 will meet the data requirement, as long as you state that the data has been vetted through established quality assurance/quality control plans.

On that topic--do you plan to submit the same emissions data to the Acid Rain Program at the same time? If so, it will be helpful if you can include a statement with your submission to us that the information submitted for the SO2 DRR will be the same as the information submitted to the Acid Rain Program. This will help to clarify the data situation for RGGS and save us some confusion down the road.

Please let me know if you have any questions on this or would like to discuss further.

Best,

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Adele Malone [mailto:amalone@ndep.nv.gov]
Sent: Monday, October 12, 2015 1:04 PM

To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>
Cc: Lakin, Matt <Lakin.Matthew@epa.gov>; Danilo Dragoni <ddragoni@ndep.nv.gov>
Subject: DRR: 2015 SO2 CEMS data for Reid Gardner Generating Station (RGGS)

Hi Vijay and Gwen,

On our monthly EPA-BAQP Planning Offices' call last Wednesday (10/7), we discussed the SO2 DRR requirements for determining whether or not to include a facility on the January 2016 list of sources to characterize. The DRR requires air agencies to look at the most recently available annual SO2 emissions data, noting that such data may be obtained from EPA regulatory programs (such as the AERR or Acid Rain) or other reliable means. Because the NDEP is considering using 2015 data for RGGS, complete 2015 AERR or Acid Rain Program data will not be available.

The NDEP asked if EPA would consider direct, i.e., from the facility, SO2 CEMS data for unit 4 for the final months of 2015 reliable. The NDEP would use as much 2015 Acid Rain Program data as is available, and supplement that with data from the facility to complete 2015 in order to be able to submit it by January 15, 2016.

This email is to request confirmation that this is an acceptable plan.

Thank you, Adele

Adele King Malone, ES IV, Supervisor
Planning and Modeling Branch

Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701
Phone: (775) 687-9356 Fax: (775) 687-6396
E-mail: amalone@ndep.nv.gov

From: Bohning, Scott
Location: R9SF-Room-18230-4-Ely
Importance: Normal
Subject: SO2 DRR modeling for Navajo sources
Start Date/Time: Thur 9/22/2016 6:00:00 PM
End Date/Time: Thur 9/22/2016 7:00:00 PM

Call to discuss status and roles for modeling of Navajo Nation point sources for SO2 Data Requirements Rule

(Moved to morning to accommodate APS)
11 am PDT, 11 am MST
call-in number: 866/299-3188
code Ex. 6 - Personal Privacy

To: Brenda Harpring[bharprin@ndep.nv.gov]; McKaughan, Colleen[McKaughan.Colleen@epa.gov]; YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Lee, Anita[Lee.Anita@epa.gov]; Strauss, Alexis[Strauss.Alexis@epa.gov]; Bradley Crowell[bcrowell@dcnr.nv.gov]; Danilo Dragoni[ddragoni@ndep.nv.gov]; Sheila Kay Anderson[skanderson@gov.nv.gov]
From: Bohning, Scott
Sent: Tue 1/10/2017 11:50:18 PM
Subject: RE: Nevada's 2010 SO2 NAAQS - updated recommendation letter and Modeling Report (per Data Requirements Rule)

All -

This is just to let you know I received Valmy modeling DVD today, and am able to read the files on it OK.

Thanks again.

- Scott B.

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"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Tuesday, January 03, 2017 11:51 AM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; Strauss, Alexis <Strauss.Alexis@epa.gov>; Bradley Crowell <bcrowell@dcnr.nv.gov>; Danilo Dragoni <ddragoni@ndep.nv.gov>; Sheila Kay Anderson

<skanderson@gov.nv.gov>
Subject: Nevada's 2010 SO2 NAAQS - updated recommendation letter and Modeling Report (per Data Requirements Rule)

Happy New Year to All,

Attached are Nevada's updated recommendation letter for Area Designations for the 2010 SO_2 NAAQS and the Air Dispersion Modeling Report for the 2010 SO_2 NAAQS per the Data Requirements Rule.

1. Letter-to-EPA_UpdateRecommAreaDesig_2010-NAAQS SO_2_Jan 4 2017.pdf

2. Air Dispersion Modeling Report 2010 SO_2 NAAQS Designation North Valmy Generating Station, Nevada.pdf

The original letter and hard copy of the report were sent Certified Mail to Alexis Strauss. The modeling files were sent on DVD by Certified Mail to Scott Bohning. Both were sent out today.

Please let me know if you have any questions.

Thanks,

Brenda

Brenda Harpring

Planning and Modeling Branch
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City NV 89701
Phone: (775) 687-9498

Fax: (775) 687-6396

E-mail; bharprin@ndep.nv.gov

please consider the environment before printing this e-mail

To: Brenda Harpring[bharprin@ndep.nv.gov]; Bradley Crowell[bcrowell@dcnr.nv.gov]; Danilo Dragoni[ddragoni@ndep.nv.gov]; Sheila Kay Anderson[skanderson@gov.nv.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Lee, Anita[Lee.Anita@epa.gov]; McKaughan, Colleen[McKaughan.Colleen@epa.gov]
From: Bohning, Scott
Sent: Wed 1/4/2017 6:48:54 PM
Subject: RE: Nevada's 2010 SO2 NAAQS - updated recommendation letter and Modeling Report (per Data Requirements Rule)

Brenda & others -

This is just to let you know we received this OK. Thanks to you all for your timely work on this.

- Scott B.

P.S. Happy New Year to you guys, too!

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=+=+=+=+=+=+=+=+=+=+=+=+=+=+=

"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Brenda Harpring [mailto:bharprin@ndep.nv.gov]
Sent: Tuesday, January 03, 2017 11:51 AM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Lee, Anita <Lee.Anita@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>; Strauss, Alexis <Strauss.Alexis@epa.gov>; Bradley Crowell <bcrowell@dcnr.nv.gov>; Danilo Dragoni <ddragoni@ndep.nv.gov>; Sheila Kay Anderson <skanderson@gov.nv.gov>

Subject: Nevada's 2010 SO2 NAAQS - updated recommendation letter and Modeling Report (per Data Requirements Rule)

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The original letter and hard copy of the report were sent Certified Mail to Alexis Strauss. The modeling files were sent on DVD by Certified Mail to Scott Bohning. Both were sent out today.

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Thanks,

Brenda

Brenda Harpring

Planning and Modeling Branch
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City NV 89701
Phone: (775) 687-9498

Fax: (775) 687-6396

E-mail; bharprin@ndep.nv.gov

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To: Bates, Rita, NMENV[Rita.Bates@state.nm.us]
Cc: McKaughan, Colleen[McKaughan.Colleen@epa.gov]; Viswanathan, Krishna[Viswanathan.Krishna@epa.gov]
From: Bohning, Scott
Sent: Thur 9/8/2016 3:44:36 AM
Subject: Re: Four Corners Power Plant SO2 Modeling

Rita -

Colleen forwarded this to me... I would be the contact person for this. But I do not have anything I can send you immediately.

FYI, when I spoke to Region 6 about this a few weeks ago (Erik was not on the line), we had thought that the two power plants, San Juan and Four Corners, might not need to include each other (though no harm in doing so). For a recent EIS, a contractor for Four Corners did a "Significant Concentration Gradient" (SCG) analysis showing SJGS was far enough away not to include. I still need to look at that again, and compare to some recent SCG analyses done in other EPA Regional Offices.

We're still a little on clear on whether Navajo Nation is going to undertake the modeling, or possibly the source itself. We had thought to base the modeling on that done for an EIS a few years ago, just replacing the emissions to fit the SO2 DRR. AECOM sent Navajo Nation a link to their SO2 AERMOD modeling archive, but that link has now expired; I will try to get that so that we can see what stack parameters were used. I will let you know when I have that.

Meanwhile, we have a question in to our headquarters about the calculation of Potential To Emit (PTE) for this source, given that the SO2 limit is a percent reduction rather than a mass rate, and also on whether the shutdown of some units counts as a "limit" within the meaning of the DRR. I need to re-ask since answer has not been forthcoming.

On actual emissions, you may as well get from CAMD, I have not done so pending resolution of the other issues. Not clear to us whether actuals or 2017 PTE would be lower.

Sorry we're a bit in disarray on this. I will plan on keeping you in the loop in what I find out.

APS retired FCPP Units 1, 2, and 3 on January 2, 2014 to comply with EPA FIP for Regional Haze

existing FIP SO2 requirements:

40 CFR 49.5512 Federal Implementation Plan Provisions for Four Corners Power Plant, Navajo Nation.

http://www.ecfr.gov/cgi-bin/text-idx?SID=a4c6710e155239c6a60b1f4c33a273cb&mc=true&node=se40.1.49_15512&rgn=div8

(d) Emissions Standards and Control Measures—(1) Sulfur Dioxide. No owner or operator shall discharge or cause the discharge of sulfur dioxide (SO2) into the atmosphere in excess of:

(i) 12.0 percent of the potential combustion concentration assuming all of the sulfur in the coal is converted to SO2. This percent emitted is determined by a daily calculation of the plant-wide heat-input weighted annual average.

(ii) 17,900 pounds of total SO2 emissions per hour averaged over any consecutive three (3) hour period, determined on a plant-wide basis.

From 2013 presentation on proposed modeling for PSD permit (for installation of SCR to meet EPA Regional Haze FIP). May have changed, will check against the actual modeling files when I get them.

Point Sources	X (m)	Y (m)	Base El. (m)	$PM_{2.5}$ emissions (g/s)	Stack Ht.	Stack Temp. (K)	Velocity (m/s)	Diamete (m)

					(m)			
STACK4&5	725350	4063099	1629.3	6.6	115.8	327	20.60	12.28
AUXBOIL	724946	4063358	1624.6	0.28	57.9	422	15.24	1.92
DSI_SILO	725120	4063303	1624.6	0.011	24.4	Ambient	Horizontal	0.24
UREASILO	725378	4062982	1635.9	0.027	9.1	Ambient	16.26	0.39

- Scott B.

--

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=

"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Bates, Rita, NMENV [mailto:Rita.Bates@state.nm.us]
Sent: Wednesday, September 07, 2016 2:10 PM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: Four Corners Power Plant SO2 Modeling

Hi Colleen,

We received comments from Region 6 regarding our modeling protocol for the SO2 modeling for San Juan Generating Station. Erik Snyder’s comment was:

The Four Corners Electric Generating station will also be undergoing DRR attainment modeling. We recommend contacting Region 9 to obtain the hourly emission rate or download actual data from CAMD, if available, the stack parameters to be used for their modeling. This will increase the realism of the simulation for San Juan and make sure that the two proximate sources are treated in a consistent way. If there are any reductions that are enforceable and in place before 2017, those could be potentially modeled but may require updated stack parameters.

Are you able to point us to the EPA Region 9 contact person to obtain this information?

Thanks for your help!

Rita

Rita Bates

Planning Section Chief

Air Quality Bureau – New Mexico Environment Department

525 Camino de los Marquez, Suite 1

Santa Fe, New Mexico 87505

Phone: 505-476-4304

Fax: 505-476-4375

To: McKaughan, Colleen[McKaughan.Colleen@epa.gov]
Cc: Tawnya Cook[Cook.Tawnya@azdeq.gov]; Timothy Franquist Jr.[FranquistJr.Timothy@azdeq.gov]
From: Marina Mejia
Sent: Thur 5/5/2016 2:20:46 PM
Subject: RE: Availability next week

Hi Colleen,

Perfect! Do you have a preferred date next week? I can send everyone a meeting invite.

Thank you!

Marina

From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
Sent: Tuesday, May 03, 2016 1:17 PM
To: Marina Mejia <Mejia.Marina@azdeq.gov>
Cc: Tawnya Cook <Cook.Tawnya@azdeq.gov>; Timothy Franquist Jr. <FranquistJr.Timothy@azdeq.gov>
Subject: Rc: Availability ncxt wcck

Thanks, Marina. Next week would be better. I haven't discussed this with anyone yet but I will! Then we will set up a call. I do understand the issue.

Sent from my iPhone

On May 3, 2016, at 10:44 AM, Marina Mejia <Mejia.Marina@azdeq.gov> wrote:

Hi Colleen,

I apologize for the delay in response, I have been out sick this week. Would you be available sometime on Fri or early next week? The problem we are having is with modeling/monitoring for AEPCO as it relates to the new SO2 monitoring rule. We are currently talking to Vijay to see if we could use projected actuals in our modeling. The problem is, we are being asked to possibly monitor in the area for one year that the facility

will be over 2,000 tpy, please see explanation below:

•□□□□□□□□ Beginning Dec 5, 2016, Steam Unit 2 (new limit .15 lb/MMBtu) and Unit 3 (new limit .15 lb/MMBtu) will each have a PTE of 1,238 tons SO2. Steam Unit1, Gas Turbines 1-4, and the black start engine add about 35 additional tons of SO2 total. **Total = 2,511**

•□□□□□□□□ Beginning Dec 5, 2017, Steam Unit 2 will begin to run on gas (new limit .00064 lb/MMBtu) and will have a PTE of approx. 5 tpy of SO2, The PTE of SO2 for Steam Unit 3 will not change with the installation of SNCR. There will be the same 35 tpy of SO2 from the other sources. **Total = 1,278**

Could we use this justification to not monitor in the area? Our concern is that we place a monitor for no purpose considering the facility will be meeting the standard and be well under 2,000 tpy by the end of 2017.

Thank you in advance for your help,

Marina

From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
Sent: Friday, April 29, 2016 3:17 PM
To: Tawnya Cook <Cook.Tawnya@azdeq.gov>
Subject: RE: Availability next week

If they need to talk next week, and cannot talk to me on Monday, I could try to arrange a meeting with Matt Lakin later in the week.

From: Tawnya Cook [mailto:Cook.Tawnya@azdeq.gov]
Sent: Friday, April 29, 2016 3:14 PM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: RE: Availability next week

Let me get more details from Tim and/or Marina and I will get back to you on Monday.

Thank you!

From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
Sent: Friday, April 29, 2016 3:11 PM
To: Tawnya Cook <Cook.Tawnya@azdeq.gov>
Subject: RE: Availability next week

Unfortunately I'm traveling both of those days and won't be accessible. Can you tell me what the issue is?

From: Tawnya Cook [mailto:Cook.Tawnya@azdeq.gov]
Sent: Friday, April 29, 2016 2:52 PM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: RE: Availability next week

Hi Colleen,

Are you available either Wednesday or Thursday from 1:00-2:00?

From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
Sent: Friday, April 29, 2016 2:32 PM
To: Tawnya Cook <Cook.Tawnya@azdeq.gov>
Subject: RE: Availability next week

Hi, Tawnya,

Unfortunately I'm out of the office all next week except Monday. Would Monday work?

I'm free from 11 AM to 5 PM.

Colleen

From: Tawnya Cook [mailto:Cook.Tawnya@azdeq.gov]
Sent: Friday, April 29, 2016 1:51 PM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: Availability next week

Hi Colleen,

Would you have some time next week to have a phone meeting with Tim and Marina regarding AEPCO? I have tentatively blocked off Thursday from 11:00-12:00, but if this does not work for you we can see what other times they have available.

Thank you!

Tawnya Cook

Assistant to Air Directors

Air Quality Division

Arizona Department of Environment Quality

1110 W. Washington St, 5000A

Phoenix, AZ 85007

602-771-2275

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To: McKaughan, Colleen[McKaughan.Colleen@epa.gov]; Lo, Doris[Lo.Doris@epa.gov]
From: Marina Mejia
Sent: Tue 1/19/2016 5:32:09 PM
Subject: RE: SO2 Information for the Data Requirements Rule

Thank you Colleen and Doris!

The hard copy of the letter will go out today. Thank you for helping me understand the process as well, sorry for the confusion.

Thank you,
Marina

-----Original Message-----
From: McKaughan, Colleen [mailto:McKaughan.Colleen@epa.gov]
Sent: Thursday, January 14, 2016 12:06 PM
To: Marina Mejia <Mejia.Marina@azdeq.gov>; Lo, Doris <Lo.Doris@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Marina,

This was my mistake. Apparently the RA can revise the list so the letter needs to go to him. I was not aware of that requirement so I gave you bad advice. We can show that you met the requirement on time with the existing letter, but to make sure it's legally correct, it probably needs to go to Jared Blumenfeld. I do apologize!

Colleen

-----Original Message-----
From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Thursday, January 14, 2016 11:49 AM
To: Lo, Doris <Lo.Doris@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Doris,

I asked Colleen and Krishna yesterday who to send it to and they mentioned you. Do you really need us to 're send it? It got mailed today. If so, I'll try tomorrow, but I'm out of the office today all day.

Thank you,
Marina

From: Lo, Doris [Lo.Doris@epa.gov]
Sent: Thursday, January 14, 2016 10:49 AM
To: Marina Mejia
Cc: McKaughan, Colleen
Subject: RE: SO2 Information for the Data Requirements Rule

Marina,

I just left you a voicemail message about this letter. We think it needs to be addressed to the Region 9 Regional Administrator, Jared Blumenfeld. Please give me or Colleen a call if you'd like to discuss.

Doris

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Wednesday, January 13, 2016 5:20 PM
To: Lo, Doris <Lo.Doris@epa.gov>
Cc: Heather Colson <Colson.Heather@azdeq.gov>; Bradley R. Busby <Busby.Bradley@azdeq.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov>; Clancy, Maeve <Clancy.Maeve@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>; Kaibah Tsosie <Tsosie.Kaibah@azdeq.gov>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Doris,

I am attaching the signed and scanned copy of the letter (this is what I meant to attach initially, sorry).

Thank you again!
Marina

From: Marina Mejia
Sent: Wednesday, January 13, 2016 6:18 PM
To: 'Lo, Doris' <Lo.Doris@epa.gov<mailto:Lo.Doris@epa.gov>>
Cc: Heather Colson <Colson.Heather@azdeq.gov<mailto:Colson.Heather@azdeq.gov>>; Bradley R. Busby <Busby.Bradley@azdeq.gov<mailto:Busby.Bradley@azdeq.gov>>; 'LIMAYE, VIJAY' <Limaye.Vijay@epa.gov<mailto:Limaye.Vijay@epa.gov>>; Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov<mailto:Vaidyanathan.Balaji@azdeq.gov>>; Clancy, Maeve <Clancy.Maeve@epa.gov<mailto:Clancy.Maeve@epa.gov>>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov<mailto:Yoshimura.Gwen@epa.gov>>; 'McKaughan, Colleen' <McKaughan.Colleen@epa.gov<mailto:McKaughan.Colleen@epa.gov>>; 'Viswanathan, Krishna' <Viswanathan.Krishna@epa.gov<mailto:Viswanathan.Krishna@epa.gov>>; Kaibah Tsosie <Tsosie.Kaibah@azdeq.gov<mailto:Tsosie.Kaibah@azdeq.gov>>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Doris,

Attached, per Vijay's request, is a letter identifying all SO2 sources within Arizona that exceed the 2,000 tons per year annual threshold. We will be mailing the letter tomorrow as well.

Please let us know if you have any questions or need additional information.

Thank you,
Marina

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, December 28, 2015 9:45 AM
To: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov<mailto:Vaidyanathan.Balaji@azdeq.gov>>; Clancy, Maeve <Clancy.Maeve@epa.gov<mailto:Clancy.Maeve@epa.gov>>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov<mailto:Yoshimura.Gwen@epa.gov>>
Cc: Marina Mejia <Mejia.Marina@azdeq.gov<mailto:Mejia.Marina@azdeq.gov>>; Heather Colson <Colson.Heather@azdeq.gov<mailto:Colson.Heather@azdeq.gov>>; Bradley R. Busby <Busby.Bradley@azdeq.gov<mailto:Busby.Bradley@azdeq.gov>>
Subject: Re: SO2 Information for the Data Requirements Rule

Hi Balaji,

Thanks for your message on this. EPA is compiling a docket of these submissions from each state, and for those purposes, a letter identifying all SO2 sources within the state that exceeded the 2,000 tons per

year annual threshold is preferable to the email chain-- just for a bit more consistency and formality. The list of modeling/monitoring choices for each of the sources is not due to us until July 1, 2016.

Hopefully getting a letter to us before January 15, 2016 won't be too much of a hassle? We appreciate your efforts on this, let me know if you have any more questions.

Best,

Vijay

Vijay Limaye, Ph.D.
US EPA Region IX
Air Planning Office (AIR-2)
75 Hawthorne St. San Francisco, CA 94105 Limaye.Vijay@epa.gov<mailto:Limaye.Vijay@epa.gov> / 415.972.3086

From: Balaji Vaidyanathan <Vaidyanathan.Balaji@azdeq.gov<mailto:Vaidyanathan.Balaji@azdeq.gov>>
Sent: Thursday, December 24, 2015 10:22 AM
To: Clancy, Maeve; LIMAYE, VIJAY
Cc: Marina Mejia; Heather Colson; Bradley R. Busby
Subject: FW: SO2 Information for the Data Requirements Rule

Maeve/Vijay:

In the e-mails that we exchanged a couple of months ago, we identified 5 sources for ADEQ that will need to be addressed for the data requirements rule. They are our 2 copper smelters and 3 coal-fired power plants. You will see the names are identified in this e-mail thread. We will be trying the modeling route for the 3 coal-fired power plants and do the monitoring approach for the copper smelters. At this time, is this e-mail information adequate for meeting the January 2016 deadline? Please advise if anything further needs to be done from our side.

Thanks,

Balaji

From: Balaji Vaidyanathan
Sent: Wednesday, October 21, 2015 1:59 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov<mailto:Limaye.Vijay@epa.gov>>; Marina Mejia <Mejia.Marina@azdeq.gov<mailto:Mejia.Marina@azdeq.gov>>
Cc: Clancy, Maeve <Clancy.Maeve@epa.gov<mailto:Clancy.Maeve@epa.gov>>; Feng Mao <Mao.Feng@azdeq.gov<mailto:Mao.Feng@azdeq.gov>>; Pervinder Tandon <Tandon.Pervinder@azdeq.gov<mailto:Tandon.Pervinder@azdeq.gov>>; Vivek Kapur; Naveen D. Savarirayan <Savarirayan.Naveen@azdeq.gov<mailto:Savarirayan.Naveen@azdeq.gov>>
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Vijay. The emission decrease for SRP Coronado was driven by a 2008 EPA consent decree requiring the installation of new flue gas desulfurization systems for both the units with an emission limit of 0.08 pound per million Btu on a 30-day averaging period. The 2 new FGDs were installed in the 2011/2012 time frame. The annual sulfur dioxide emissions for the facility for the years 2012, 2013 and 2014 were all below 1000 tons per year.

We are currently in the process of gathering the relevant stack and emission release data for the 3 utilities (TEP, AEPCO and APS Cholla) and will be embarking on our preliminary modeling in a few weeks with a desire to wrap up the preliminary modeling by early February. That should give us enough time to decide on the "modeling" versus "monitoring" possibility per the timelines in the rule. We will definitely keep you posted as the preliminary modeling results become available.

Hope this helps. Please let us know if there are further questions.

Thanks,

Balaji

From: LIMAYE, VIJAY [mailto:Limaye.Vijay@epa.gov]
Sent: Monday, October 19, 2015 3:35 PM
To: Balaji Vaidyanathan; Marina Mejia
Cc: Clancy, Maeve
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Marina and Balaji,

Just wanted to follow up with you with two quick SO2-related questions:

1) On our call in September, I think you mentioned that the emissions decrease at Coronado was due to a fuel switch-is that correct? My memory and notes are a bit fuzzy on this.

2) We are curious as to when you might target preliminary modeling of your remaining three sources for completion, in order to decide whether to continue with modeling or consider monitoring. Our team is ready to assist in any way useful for you in deciding the path forward.

Thanks for your help in clarifying these points!

Vijay

Vijay Limaye, Ph.D.

US EPA Region IX

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov<mailto:Limaye.Vijay@epa.gov> / 415.972.3086

From: Balaji Vaidyanathan [mailto:Vaidyanathan.Balaji@azdeq.gov]
Sent: Tuesday, September 22, 2015 10:45 AM
To: Marina Mejia <Mejia.Marina@azdeq.gov<mailto:Mejia.Marina@azdeq.gov>>; Clancy, Maeve <Clancy.Maeve@epa.gov<mailto:Clancy.Maeve@epa.gov>>
Cc: LIMAYE, VIJAY <Limaye.Vijay@epa.gov<mailto:Limaye.Vijay@epa.gov>>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov<mailto:Yoshimura.Gwen@epa.gov>>; Bradley R. Busby <Busby.Bradley@azdeq.gov<mailto:Busby.Bradley@azdeq.gov>>
Subject: RE: SO2 Information for the Data Requirements Rule

Maeve,

I just want to add in some information to Marina's response:

Lhoist North America-Nelson Lime Plant- They were previously right below 2000 tons per year but are expected to drop well below when the EPA regional haze FIP decision kicks in and requires them to shift to lower sulfur content fuels.

TEP Irvington- Please see attached emission report for 2014 showing their emissions to be below 2000 tons per year. Driven by RH issues, they are shifting out of coal. They are currently in the process of amending their permit with Pima DEQ reflect this shift.

APS Cholla, APECO and TEP Springerville- We will not be amending their permits to limit their emissions below 2000 tons per year. We will start with the modeling route for each of them. If the modeling does not demonstrate compliance with the NAAQS, we will be using the maximum design concentration location for siting the monitor and operating it per the timelines in the rule.

Hope that helps.

Balaji

From: Marina Mejia
Sent: Tuesday, September 22, 2015 9:07 AM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby; Balaji Vaidyanathan

Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

Here are some answers to your questions, I am also copying Balaji, our permits Section manager, in case I missed anything:

1) The two facilities not included were:

a. Lhoist North America-Nelson Lime Plan was at: 1997 tpy of SO2 in 2014, the reason why I did not include it is because the change in the sulfur content of the fuel blend will reduce SO2 emissions moving forward.

b. Sal River Project- Coronado Generating Stations was at: 908.1209 tpy of SO2 in 2014, as you can see this facility is way below the 2,000 tpy limit and no further change in emissions is anticipated.

2) I am not sure if there will be emissions limits in place for the three facilities mentioned, if there is a limit then we will not need to model or monitor as part of the new data requirement rule? In general we are still trying to determine what path we will follow moving forward with all the facilities (leaning more towards monitoring), but we will keep you updated with what we decide.

Does the information above help? If you have any other questions please feel free to let me know.

Thank you!

Marina

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Monday, September 21, 2015 3:16 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Thanks Marina!

We have a few questions:

1. What are the two sources that are under the threshold? Our old EI includes the following sources

over or near 2,000 tpy, that are not included on the list. Is it any of these?

- Coronado Generating Plant, in St Johns, Apache County. (7,352 tpy SO2, 2011 NEI)
- Catalyst Paper, Snowflake, Navajo County. Has since closed down.
- Irvington, in Tuscon, Pima County (2,193 tpy SO2, 2011 NEI)
- Chemical Lime Nelson Plant in Peach Springs, Yavapai County (1,994 tpy, 2011 NEI)

2. Will APS Cholla, Tucson Power-Springerville, and AEPCO-Apache Generating Station have permanent and enforceable emissions limits in place by January 13, 2017 that limit the source to less than 2,000 tpy SO2 for calendar year 2017 and thereafter? If not, then modeling or monitoring is required for each of these sources.

Feel free to send additional information or we can discuss during the monthly SIP call this Wednesday. Thanks!

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov<mailto:clancy.maeve@epa.gov>

From: Marina Mejia [mailto:Mejia.Marina@azdeq.gov]
Sent: Monday, September 21, 2015 12:49 PM
To: Clancy, Maeve
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN; Bradley R. Busby
Subject: RE: SO2 Information for the Data Requirements Rule

Hi Maeve,

I apologize for the late response, I was hoping to get these to you last week. Below is the information we have on SO2 sources and thresholds. We have two other sources of SO2 but they are both under the 2,000 ton per year threshold. Please let me know if you have any questions or need more information, I hope this helps.

Thank you,

Marina

FACILITY NAME

2014 SO2 (TONS)

UPCOMING CONTROLS

EXPECTED INSTALLATION/EFFECTIVE DATE

EMISSIONS AFTER NEW CONTROLS

ASARCO HAYDEN SMELTER

17432.6

3 new converters, improved primary and secondary capture system, new tirtiary capture system

??

On implementation of proposed changes, emission will reduce to about 3,500 tpy

FREEPORT MIAMI SMELTER

4505.016

Replace Isa furnace with bigger one, reconfigure roofline to capture figitive emissions and capture/routing these to aisle caustic scrubber

??

On implementation of proposed changes, emission will reduce to 552 tons/year

APS - CHOLLA

3806.588

Unit 2 expected to SD in April 2016. Units 1, 3 and 4 conversion to NG in 2025

2016, 2025

Unit 2 will permanently shutdown in April 2016 resulting in emissions reduction by about 1000 tpy. Facilitywide SO2 emissions likely to drop to below 10 tons per year after NG switch in 2015

TUCSON ELECTRIC POWER CO.-SPRINGERVILLE GENERATING STATION

6221.036

No changes are planned at the facility

NA

No change in emissions is anticipated

Arizona Electric Power Cooperative - Apache Generating Station

4811

As part of the BART process the following changes will occur: Unit 2 will switch from coal to natural gas. Unit 2 will install SNCR control technology.

12/5/2017

Based on AEPCO's BART analysis, the changes being made to Unit 2 and Unit 3 will result in SO2 emission reductions of approximately 1,000 tons per year facility-wide.

From: Clancy, Maeve [mailto:Clancy.Maeve@epa.gov]
Sent: Thursday, September 10, 2015 1:59 PM
To: Marina Mejia
Cc: LIMAYE, VIJAY; YOSHIMURA, GWEN
Subject: SO2 Information for the Data Requirements Rule

Hi Marina,

As I mentioned when we spoke just now, we are hoping that ADEQ can share any information you've gathered related to the Data Requirements Rule for the for the 2010 1-Hour SO2 NAAQS.

As you've seen already, the rule requires that agencies characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. The requirement for air quality characterization near a source can be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2 (there's much more on the rule at http://www.epa.gov/airquality/sulfurdioxide/implement.html<https://remoteworkplacedr.epa.gov/airquality/sulfurdioxide/,DanaInfo=.awxyCiugGox5+implement.html>).

As part of planning on our end, we would like to get ADEQ's read on SO2 sources over the 2000 tpy threshold and your current research on this issue. If you could share any information you have right now, including any available details (e.g. date of the inventory, facility names/locations, emissions), that'd be great. If we receive the information before our call on the 17th, I will add this as an agenda item. We can talk about your inventory and discuss any additional information or work you might be doing prior to finalizing the SO2 emissions inventory you will use.

If you or your staff have questions, Vijay Limaye or Gwen Yoshimura (both cc'd on this email, though Vijay is out until Monday), are the best contacts. Thanks!

Maeve

Maeve Clancy

EPA Region 9

Air Planning Office

415-947-4105, clancy.maeve@epa.gov<mailto:clancy.maeve@epa.gov>

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Cc: tmoore@westar.org[tmoore@westar.org]
To: Bates, Rita, NMENV[Rita.Bates@state.nm.us]
From: McKaughan, Colleen
Sent: Mon 9/12/2016 9:18:04 PM
Subject: Meet you in the hotel lobby at 4:30

The bar is on the casino. I have no idea if they allow smoking but we can find out.

Sent from my iPhone

On Sep 8, 2016, at 7:55 AM, Bates, Rita, NMENV <Rita.Bates@state.nm.us> wrote:

Hi Scott,

Thanks for the quick response. As you probably know, our modeling is due in January. We are trying to finalize this by the end of November based on staff leave schedules.

Rita

Rita Bates

Planning Section Chief

Air Quality Bureau – New Mexico Environment Department

525 Camino de los Marquez, Suite 1

Santa Fe, New Mexico 87505

Phone: 505-476-4304

Fax: 505-476-4375

From: Bohning, Scott [mailto:Bohning.Scott@epa.gov]
Sent: Wednesday, September 07, 2016 9:45 PM

To: Bates, Rita, NMENV <Rita.Bates@state.nm.us>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Viswanathan, Krishna <Viswanathan.Krishna@epa.gov>
Subject: Re: Four Corners Power Plant SO2 Modeling

Rita -

Colleen forwarded this to me... I would be the contact person for this. But I do not have anything I can send you immediately.

FYI, when I spoke to Region 6 about this a few weeks ago (Erik was not on the line), we had thought that the two power plants, San Juan and Four Corners, might not need to include each other (though no harm in doing so). For a recent EIS, a contractor for Four Corners did a "Significant Concentration Gradient" (SCG) analysis showing SJGS was far enough away not to include. I still need to look at that again, and compare to some recent SCG analyses done in other EPA Regional Offices.

We're still a little on clear on whether Navajo Nation is going to undertake the modeling, or possibly the source itself. We had thought to base the modeling on that done for an EIS a few years ago, just replacing the emissions to fit the SO2 DRR. AECOM sent Navajo Nation a link to their SO2 AERMOD modeling archive, but that link has now expired; I will try to get that so that we can see what stack parameters were used. I will let you know when I have that.

Meanwhile, we have a question in to our headquarters about the calculation of Potential To Emit (PTE) for this source, given that the SO2 limit is a percent reduction rather than a mass rate, and also on whether the shutdown of some units counts as a "limit" within the meaning of the DRR. I need to re-ask since answer has not been forthcoming.

On actual emissions, you may as well get from CAMD, I have not done so pending resolution of the other issues. Not clear to us whether actuals or 2017 PTE would be lower.

Sorry we're a bit in disarray on this. I will plan on keeping you in the loop in what I find out.

APS retired FCPP Units 1, 2, and 3 on January 2, 2014 to comply with EPA FIP for Regional Haze

existing FIP SO2 requirements:

40 CFR 49.5512 Federal Implementation Plan Provisions for Four Corners Power Plant, Navajo Nation.

http://www.ecfr.gov/cgi-bin/text-idx?SID=a4c6710e155239c6a60b1f4c33a273cb&mc=true&node=se40.1.49_15512&rgn=div8

(d) Emissions Standards and Control Measures—(1) Sulfur Dioxide. No owner or operator shall discharge or cause the discharge of sulfur dioxide (SO2) into the atmosphere in excess of:

(i) 12.0 percent of the potential combustion concentration assuming all of the sulfur in the coal is converted to SO2. This percent emitted is determined by a daily calculation of the plant-wide heat-input weighted annual average.

(ii) 17,900 pounds of total SO2 emissions per hour averaged over any consecutive three (3) hour period, determined on a plant-wide basis.

From 2013 presentation on proposed modeling for PSD permit (for installation of SCR to meet EPA Regional Haze FIP). May have changed, will check against the actual modeling files when I get them.

Point	X (m)	Y (m)	Base	$PM_{2.5}$	Stack	Stack	Velocity	Diamete

Sources			El. (m)	emissions (g/s)	Ht. (m)	Temp. (K)	(m/s)	(m)
STACK4&5	725350	4063099	1629.3	6.6	115.8	327	20.60	12.28
AUXBOIL	724946	4063358	1624.6	0.28	57.9	422	15.24	1.92
DSI_SILO	725120	4063303	1624.6	0.011	24.4	Ambient	Horizontal	0.24
UREASILO	725378	4062982	1635.9	0.027	9.1	Ambient	16.26	0.39

- Scott B.

--

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=

"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Bates, Rita, NMENV [mailto:Rita.Bates@state.nm.us]
Sent: Wednesday, September 07, 2016 2:10 PM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: Four Corners Power Plant SO2 Modeling

Hi Colleen,

We received comments from Region 6 regarding our modeling protocol for the SO2 modeling for San Juan Generating Station. Erik Snyder's comment was:

The Four Corners Electric Generating station will also be undergoing DRR attainment modeling. We recommend contacting Region 9 to obtain the hourly emission rate or download actual data from CAMD, if available, the stack parameters to be used for their modeling. This will increase the realism of the simulation for San Juan and make sure that the two proximate sources are treated in a consistent way. If there are any reductions that are enforceable and in place before 2017, those could be potentially modeled but may require updated stack parameters.

Are you able to point us to the EPA Region 9 contact person to obtain this information?

Thanks for your help!

Rita

Rita Bates

Planning Section Chief

Air Quality Bureau – New Mexico Environment Department

525 Camino de los Marquez, Suite 1

Santa Fe, New Mexico 87505

Phone: 505-476-4304

Fax: 505-476-4375

To: Bates, Rita, NMENV[Rita.Bates@state.nm.us]
From: McKaughan, Colleen
Sent: Wed 9/7/2016 9:25:18 PM
Subject: RE: Four Corners Power Plant SO2 Modeling

Hi, Rita,

I'm checking on your question. We are in a period of movement over here and I need to confirm the new assignments. Region 6 is correct that FCPP will be doing modeling, and I think Navajo EPA has asked for assistance from APS on that modeling. We did receive a modeling protocol but I don't know what specifics it has on stack parameters. At any rate, I will get back to you, and I will see you next week at WRAP/WESTAR.

Colleen

From: Bates, Rita, NMENV [mailto:Rita.Bates@state.nm.us]
Sent: Wednesday, September 07, 2016 2:10 PM
To: McKaughan, Colleen <McKaughan.Colleen@epa.gov>
Subject: Four Corners Power Plant SO2 Modeling

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Rita

Rita Bates

Planning Section Chief

Air Quality Bureau – New Mexico Environment Department

525 Camino de los Marquez, Suite 1

Santa Fe, New Mexico 87505

Phone: 505-476-4304

Fax: 505-476-4375

To: Eugenia Quintana[eugeniaquintana@navajo-nsn.gov]; LIMAYE, VIJAY[Limaye.Vijay@epa.gov]; Gaurav Rajen[rajenwnr@gmail.com]; Raju Bisht[rbisht@navajo-nsn.gov]; Michael Z. King[mzking@navajo-nsn.gov]; Tennille B. Begay[tbbegay@navajo-nsn.gov]
Cc: YOSHIMURA, GWEN[Yoshimura.Gwen@epa.gov]; Bohning, Scott[Bohning.Scott@epa.gov]
From: McKaughan, Colleen
Sent: Wed 6/15/2016 10:36:23 PM
Subject: RE: Requesting letter for July 1 SO2 DRR deadline

Thanks, Eugenia!

From: Eugenia Quintana [mailto:eugeniaquintana@navajo-nsn.gov]
Sent: Wednesday, June 15, 2016 3:29 PM
To: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>; Gaurav Rajen <rajenwnr@gmail.com>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; Tennille B. Begay <tbbegay@navajo-nsn.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; Bohning, Scott <Bohning.Scott@epa.gov>
Subject: RE: Requesting letter for July 1 SO2 DRR deadline

Hello.

Thank you for the information.

We do have a draft letter being finalized on this matter.

From: LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Sent: Wednesday, June 15, 2016 2:20 PM
To: Gaurav Rajen; Raju Bisht; Michael Z. King; Eugenia Quintana; Tennille B. Begay
Cc: McKaughan, Colleen; YOSHIMURA, GWEN; Bohning, Scott
Subject: Requesting letter for July 1 SO2 DRR deadline

Hi Eugenia,

Just to follow up briefly on the upcoming 7/1/2016 SO2 DRR deadline, we recently learned that EPA intends to post the correspondence conveying how the air agencies will be characterizing their DRR sources, similar to how the source list letters & responses were posted here: https://www.epa.gov/airquality/sulfurdioxide/drr.html

In light of this, and to satisfy 40 CFR 51.1203(b), we believe that a letter from NNEPA to EPA Region 9 acting RA Alexis Strauss (cc'ing Doris Lo, Gwen Yoshimura, Scott Bohning, and

myself) listing the two DRR sources for Navajo Nation and indicating that they will both be characterized through modeling is appropriate. We can continue to work through the details of the modeling protocol after 7/1, but it would be helpful for us to have the letter by then.

Please let me know if you have any questions, and thanks for all of your work on this effort!

Best,

Vijay

Vijay Limaye, Ph.D.

U.S. Environmental Protection Agency, Region 9

Air Planning Office (AIR-2)

75 Hawthorne St. San Francisco, CA 94105

Limaye.Vijay@epa.gov / 415.972.3086

From: Gaurav Rajen [mailto:rajenwnr@gmail.com]
Sent: Monday, June 13, 2016 12:40 PM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Withey, Charlotte <Withey.Charlotte@epa.gov>; Chen, Eugene <Chen.Eugene@epa.gov>; YOSHIMURA, GWEN <Yoshimura.Gwen@epa.gov>; LIMAYE, VIJAY <Limaye.Vijay@epa.gov>
Subject: A very balanced approach and eminently fair and reasonable

Thanks Scott:

We all appreciate your responses. These responses will help in framing the letters we send this week to FCPP and NGS, which I am currently drafting. There is an electronic Appendix in the FCPP's EIS that contains all the needed input files; hopefully, NGS will also provide these. Mike King had previously worked with Lakes Environmental while doing his research at Purdue on NOx and SOx transport in the Four Corners region; and they (Lakes Environmental), too, have input files set up.

Your approach seems very balanced, fair, and reasonable.

My take-aways are - 1) the July 1 deadline is met with our having sent in a draft protocol; we will finalize this in coming weeks; 2) we will use federally enforceable limits (from FIPs etc.) and could really benefit from EPA's help in making sure we have the right estimates to set the DRR-specified source terms; 3) we will do a parametric study on the effects of higher emissions, flow rates and changed temperatures to bound any future modeling work and determine if the EIS studies are truly conservative; 4) using the existing AERMET and AERMOD input data files from the existing EISs we will re-run the AERMOD models (if deemed required by (3) above) - re-running to be done using the existing met data, geophysical domain, receptor grids, etc., while changing the source emissions input data based on (2) above.

Best regards,

Gaurav

PS: I am fairly new at this - do we (as a team) have the correct numbers to use for SO2 emissions in lbs/hr that would be the federally enforceable limit in effect before January 2017? I went through several documents and came up with what seemed to be the limits. The EIS numbers are clearly stated and appear higher than the limits being enforced. The right numbers to use for the DRR limits will help in my doing an accurate parametric study as in (3) above.

On Mon, Jun 13, 2016 at 1:10 PM, Bohning, Scott <Bohning.Scott@epa.gov> wrote:

Guarav -

Thanks for the reply... I have to work on some other things today, hopefully we can discuss more Thursday 6/16 call, but here is a response for now.

- It does makes sense to quantitatively assess how much the emission rates change the stack temperature and exit velocity. That helps with the qualitative arguments about how the model reacts and the conservativeness of the EIS modeling. That stack parameter assessment would also help with just going ahead and remodeling. (Assuming we can get the original AERMOD input files and the AERMET output & hopefully input files, that would just be a matter of changing the stack parameter input lines to match what we think they are; changing either a few emission lines to reflect allowable emissions or a lot of emission lines to reflect actual emissions; and running the program. Avoids qualitative arguments on stack effects, ADJ_U* option, AERMOD version.)

- SO2 DRR says to use actual emissions of recent three year period, e.g. 2012-2014 or 2013-2015; or, allowable emissions reflecting federally enforceable emission limits in effect before Jan. 2017. It is not clear to us that the emission rates you stated are the appropriate ones to use for DRR modeling and/or to compare to the EIS; those would need to be spelled out more. (Charlotte noted that FCPP Consent Decree 90% control is not relative to the existing allowable emissions, but instead is relative to other assumptions.)

- On what I think you suggested in 6/10 email, re-running model later since already periodically required: that is not necessarily required under the DRR but instead is just discretionary, so we don't think the remodeling later should substitute for modeling now (if we find that it is needed due to EIS modeling not enough or not allowed to be substituted).

- Scott B.

From: Gaurav Rajen [mailto:rajenwnr@gmail.com]
Sent: Monday, June 13, 2016 11:00 AM
To: Bohning, Scott <Bohning.Scott@epa.gov>
Cc: McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov; Tennille B. Begay <tbbegay@navajo-nsn.gov>; Withey, Charlotte <Withey.Charlotte@epa.gov>
Subject: Further clarifications and many thanks again Re: AERMOD model approaches regarding plume lofting etc.

Dear Scott:

Many thanks for your very helpful and valuable exchanges. It would be good to keep this exchange as informative as possible so we can have as productive a call on Thursday as possible. We all appreciate your help and that of others at the EPA Region 9 very, very much.

I apologize for being unclear - the way I see this is as follows: for selecting the source terms, the DRR does not solely specify a set of years alone - i.e. the past three years; it also specifies that a federally enforceable limit should set the source term - in our case the FIPs and the operating permits. The Table I sent you (re-pasted below) gives the lbs/hr of SO2 assumed in the EISs and what the DRR would require. As you see below, the DRR would require 1722 and 1790 lbs/hr for the NGS and FCPP respectively. The EISs use 2245 lbs/hr and 2816 lbs/hr respectively. The source terms are higher and should lead to higher levels at the maximally-impacted receptor locations. What I was pointing out is that the temperatures

will not change appreciably - however, higher SO2 content in lbs/hr implies higher coal burning rates (though one could also assume higher sulfur content, this content having a maximum allowable being set by the FIP and permits we have to assume higher quantities of coal being burned) which would imply higher gas exit velocities. Therefore, one would have to deal with the possibility of partial plume entry into the Stable Boundary Layer out of the Convective Boundary Layer and later re-entry and the possibility that the higher source emission rate is not automatically conservativen at the maximally-impacted loactions. There are some non-dimensional numbers (Reynold's number, Rayleigh number, Peclet number, Grashof number, etc.) that help us determine which effects predominate. Given the ranges we are dealing with, we can easily show that the higher source terms lead to higher levels at the maximally-impacted receptor locations even with higher stack exit velocities (that are associated with higher emission rates). Perhaps I have misunderstood these issues and am happy to be corrected.

Given the conservative assumptions inherent in the higher source terms used (see table below), I am suggesting that we hold off on re-running the models till we can build a local capability using our existing personnel and resources (e.g. Mike King has tremendous knowledge of modeling and fate and transport, he will be sending you a set of slides of his research at Purdue that you will find informative) and local Navajo colleges that have environmental programs. Getting the resources earmarked is also important and may be best done with more time available. For example, we could seek funding and assistance from EPA HQ and EPA research laboratories (in the Research Triangle Park for instance) - they may like the concept of building local Navajo capability using Navajo colleges to re-run the models. We always have the fall-back option of re-running with the help of the FCPP and the NGS and consultants, such as AECOM.

It just seems to me that as we have existing models and results that use higher conservative source terms and show NAAQS attainment, the fact that we will re-run again as required by the DRR (given the fact that the modeled results are within the %difference to the standards for which the DRR specifies periodic re-runs), we may have more time available to develop local capabilities. So, for the January of 2017 deadline we use the existing model results and further state that the models will be re-run as required by the DRR within a specified time-frame. Just a thought for consideration - again, using the existing modeled results seems justified as the source terms are higher than required by the DRR.

It is good to know that the draft protocol has allowed us to meet our July 1 deadline.

Thank you again,

Gaurav Rajen

Appendix B

B 1.0 Comparisons of input data required by the DRR and used in the EISs (source emissions, stack velocities, temperatures, beta versions of software to convert meteorological low-wind speed data into planetary boundary layer model parameters, and years selected for meteorological data)

The DRR states that –

…Modeling analyses shall characterize air quality based on either actual SO2 emissions from the most recent 3 years, or on any federally enforceable allowable emission limit or limits established by the air agency or the EPA and that are effective and require compliance by January 13, 2017.

Table B.1 provides the major differences between source emissions used as inputs from the requirements of the DRR and the source emissions factors used in the existing modeling studies done for Environmental Impact Statements by the FCPP and the NGS. Attachments provide copies of the text in the DRR, the Federal Implementation Plans and existing compliance documents that describe the applicable federally enforceable limits; as well as copies of the relevant pages from the EISs.

Table B.1

Source emissions data required by the DRR and used in the EISs

Plant	NGS		FCPP	
References from which data are derived	DRR	EIS - NGS	DRR	EIS - FCPP
Years for which data required/ or basis of quantities used	2014, 2015, 2016/ federally enforceable limits	As used in EIS – total SO2 from all sources, burners, boilers, mines, on and off-road equipment,	2014, 2015, 2016/ federally enforceable limit	As used in EIS - emission rates from the Units 4 and 5 stack are derived from consideration of actual hourly

		emergency generators, etc.		data, and the current Title V operating permit for FCPP
Average SO2 lbs/hr over any 1-hour period	**Approximately 1722 lbs/hr** – derived from 7544 tons/year allowed as a federally enforceable limit in the FIP	**2245 lbs/hr**	**1790 lbs/hr** (from draft FIP and federally enforceable limit – 10% of allowable SO2 generated; drops to 5% (i.e. lesser) in 2018	**2816 lbs/hr**

B 2.0 Considerations of stack exit velocities, temperatures and wind speed

When the source term used in the model is varied, there will also be a variation in the assumed stack gases' exit velocity and temperatures of the stack gases. Higher assumed quantities of SO2 released will be linked to higher coal burning rates and hence higher exit stack gas velocities and marginally higher temperatures. The 1-hour concentrations of SO2 at receptor sites in the near-field will be first order dependent on the quantities of SO2 released per hour and with a second to third –order dependence on the exit velocities and temperatures. Higher exit velocities and temperatures may cause some dilution of concentrations at far-field locations, but these effects will be substantially reduced and negligible in comparison to the increase in concentrations from increased SO2 releases in the near-field receptor locations with the maximum SO2 1-hour levels. This leads to the conclusions that the modeling studies conducted in the EISs are conservative in the derived SO2 1-hour concentrations as they use higher SO2 release terms.

Wind speeds will also be critical in determining the concentrations at receptor locations. The FCPP study used a beta version for deriving critical boundary layer parameters for low wind speeds – the following discussion taken from the FCPP EIS describes the rationale for doing so.

[] Low Wind Speed Improvements for AERMOD

In 2010, the results of an evaluation of low wind speed databases for short-range modeling applications were provided to USEPA. The reason for the study was that some of the most restrictive dispersion conditions and the highest model predictions occur under low wind speed conditions, but there had been very little model evaluation for these conditions. The

results of the evaluation indicated that in low wind conditions, the friction velocity formulation in AERMOD results in under-predictions of this important planetary boundary layer parameter. There were multiple outcomes of this under-prediction: mechanical mixing heights that were very low (less than 10 meters), very low effective dilution wind speeds, and very low turbulence in stable conditions. In addition, the evaluation study concluded that the minimum lateral turbulence (as parameterized using sigma-v) was too low by at least a factor of 2. After these issues were once again stated at the 10th USEPA Modeling Conference in March 2012, USEPA made some revisions in late 2012 to the AERMOD11 modeling system to correct the model deficiencies in this area. This culminated in USEPA releasing AERMET and AERMOD Versions 12345, which include "beta" options in AERMET for a revised u* formulation under stable conditions and two different low wind speed options in AERMOD. These updates are included in AERMET and AERMOD versions 13350, as well. During the USEPA webinar12 on January 14, 2014, USEPA staff stated that they are generally in favor of the AERMET beta u* option as it is based on peer-reviewed activities.

B 3.0 Issues related to variations in meteorological data used in the models from that suggested in the DRR

In development – we will trend data from our meteorological station in Shiprock to demonstrate that variations between the years of data used in the EIS and the most current trends are not significant.

On Mon, Jun 13, 2016 at 11:07 AM, Bohning, Scott <Bohning.Scott@epa.gov> wrote:

Gaurav -

I do not follow your argument -- cooler stack temperatures for this source would be same for EIS & new modeling, so that in itself would not tend to make EIS conservative... unless I am misunderstanding altogether.... we can talk more on Thurs. 6/16 call if needed on this.

Meanwhile, on your previous email about what issues need to get resolved in a protocol. Ideally a protocol would spell out pretty much the full procedure to be followed in the modeling, though some narrow issues might be left open. The big issue of what current actual emissions or what will be allowable emissions by the end of 2016 (and how those compare to the EIS emissions) is such a key one that we don't think a protocol can really be considered complete without that issue being decided. The related issue of whether new modeling will be done at all is also certainly important enough that it should be set out in the protocol.

However, I would note that July 1st deadline is mainly to get a decision on choice between modeling and monitoring, so as long as there is *some* form of protocol sent in, like the draft one you have already done, that deadline is met. I do not think EPA is issuing official approval of protocols anyway; approval is relative to the actual submitted modeling later on. So we do still have time to figure out emissions and other issues. Although it's good to get as much agreement as possible early on, we agree that we should take the time to get that issue right.

- Scott B.

--

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"Scott Bohning" <bohning.scott@epa.gov>

U.S. EPA Region 9, AIR-7

415/947-4127 fax-3579

From: Gaurav Rajen [mailto:rajenwnr@gmail.com]
Sent: Friday, June 10, 2016 3:55 PM

To: Bohning, Scott <Bohning.Scott@epa.gov>; McKaughan, Colleen <McKaughan.Colleen@epa.gov>; Raju Bisht <rbisht@navajo-nsn.gov>; Michael Z. King <mzking@navajo-nsn.gov>; eugeniaquintana@navajo-nsn.gov; Tennille B. Begay <tbbegay@navajo-nsn.gov>
Subject: AERMOD model approaches regarding plume lofting etc.

Dear Scott:

Just a quick note to share some more thoughts - I have been reviewing the EPA document (AERMOD: DESCRIPTION OF MODEL FORMULATION) available at - https://www3.epa.gov/scram001/7thconf/aermod/aermod_mfd.pdf

From the document..

"AERMOD is designed to treat the effects on dispersion from vertical variations in wind and turbulence. Consideration of the vertical variation in meteorology is important for properly modeling releases in layers with strong gradients, for capturing the effects of meteorology in layers into which the plume may be vertically dispersing, and to provide a mechanism (in the Convective Boundary Layer, CBL) by which sources that are released into or penetrate into an elevated stable layer can eventually re-enter the mixed layer....

Fundamental to this approach is the concept that **the primary layer of importance, relative to receptor concentration, is the one through which plume material travels directly from source to receptor**."

The model does account for plume lofting and entry out of and back into the CBL Therefore, when the source emissions term changes and the exit gas velocities and temperature change the momentum flux and buoyancy forces also change and the plume averaging over heights could change - I looked closely at the terms used to estimate the stack momentum and buoyancy-induced fluxes in AERMOD. In our case, the stack gases are cooled and scrubbed before exit so temperature increases will be

lessened, hence buoyancy-induced fluxes are not appreciably changed. Exit velocities will be higher, but not sufficient to make a major difference in lessening concentrations at the maximum level receptor location. The last sentence in the quote presented above reinforces that the higher source terms used in the EISs lead to higher concentrations - thus the EIS results being conservative in their level estimates. In this regard it is also important to note that AERMOD does not use coupled equations for fate and transport and so the concentration of SO2 does not modify any of the transport parameters, densities, etc.. or change based on chemical reactions. This is why it seems reasonable (given that we can address momentum and buoyancy-induced fluxes at the stack) that higher emission sources will lead to more conservative and higher levels at receptor sites.

As you suggested, it does make sense to run the model again for various reasons that you laid out - I would like you all to consider the re-running of the model to happen at a later date in 2017, allowing us to develop more in-house capability, seek additional supplemental funding, and work with local universities and colleges to develop programs that bring modeling capabilities to the Navajo Nation and train more of our staff and graduate students. Such options could be Navajo Technical University, and Dine College, both of which have environmental programs. If we award a contract to an outside consultant in a rush to meet a deadline we will remain tied to the use of outside consultants. This is something to think through as we progress farther in this effort. Michael King for example has a master's from Purdue in atmospheric physics and has run versions of AERMOD and even more complex fate and transport models. We also have an opportunity when we run AERMOD to use our data to do model validation. Re-running at a later date of course will require us to accept the EIS models' data and results as a first step. Before this decision is made, however, we should first settle on the modeling protocol we will use.

Many thanks for your thoughts on this matter,

Gaurav

From: Treece, Tricia
Location: be 1-877-411-9748 (Access Code [redacted]
Importance: Normal
Subject: 2010 Threshold SIP Modeling Questions
Start Date/Time: Thur 3/9/2017 8:00:00 PM
End Date/Time: Thur 3/9/2017 9:30:00 PM

;
1. CO Modeling Results Summary – November 2015 document (Page 20) indicates that AERMOD + Background is 0.972 ppm while the 2015 FDV is 1.927 ppm. Please explain the differences between these two values and how they are individually determined.
2. NO2 Modeling Results Summary – November 2015 document (Page 22) indicates that FDVs were calculated based on an approximate average of the current year DVs for the 2 monitors located in Arkansas. Why was the "approximate" average used instead of the true average? (Similar question for SO2 modeling.)
3. PM2.5 Results – September 2015 document (Page 14) states the maximum difference in baseline and hypothetical sources modeling ranges from approximately 0.2 to 0.3 micrograms/m3 on a monthly average basis. Why was the monthly average being considered when the PM2.5 NAAQS have averaging periods of 24-hour and annual?
4. NO2 Statewide Results – September 2015 document (Page 19) states that the average RRF for 2015 PMI modeling does not exceed a value greater than one. However, Figure 9 shows that RRF for 2015 PMI has a maximum value of 1.03 shown on the scale. Please confirm whether or not there are instances of RRF > 1 for NO2.
5. SO2 Modeling Results – September 2015 document (Page 25) states that the emissions used in the 2015 modeling analyses for SO2 reflect CAIR controls. Does ADEQ believe that the emissions included in the 2015 FY modeling analysis continue to be representative of emissions levels in the state and able to be relied upon to support NAAQS protection in the Minor NSR Threshold SIP revision? What, if any, adjustment(s) to the modeling analysis/results should be made?
6. Combined Near-Field/Regional Modeling Summary – September 2015 document (Page 30) indicates that CMAQ predicated concentrations were used to represent background when combined with the AERMOD modeling results. Why did ADEQ choose to use the CMAQ model predicted concentrations instead of existing ambient monitoring concentrations? Has ADEQ completed a comparison of the CMAQ derived "background concentrations" and ambient monitor to see how the values compare?
7. Combined Near-Field/Regional Modeling Meteorological Data – September 15 document (Page 30) states that the AERMOD meteorological inputs were derived from the WRF meteorological data used in the CMAQ simulations for the 2008 base year. Why did ADEQ choose to use the simulated meteorological data in lieu of actual NWS meteorological data? Was any additional AERMOD modeling conducted using actual monitored meteorological data and compared to that using the WRF derived AMEROD inputs?
8. Statewide FDV Determinations –2014 ICF Statewide modeling report (Page 37) indicates that as part of the criteria pollutant assessment in unmonitored areas, the current year DV was set equal to the value for the nearest monitor or an interpolated value based on several neighboring sites. This approach used in the 2014 statewide modeling appears to differ from that used in the more recent 2015 Minor NSR thresholds modeling analyses when determining FDVs. Please explain how these approaches compare and why different approaches were used in the different modeling studies.
9. PM10 Minor NSR Threshold – As part of the Proposed NAAQS SIP, ADEQ provided a summary of historic modeling results for the criteria pollutants (Appendix G). In some cases, modeled emissions in the 10 to 20 tpy range result in modeled impacts within 10% of the 24-hr PM10 NAAQS (e.g., New Millennium: approx. 15 tpy ♌ 98.10%; Skyline Steel: 3.81 tpy ♌ 94%). Please explain how these historic modeling analyses compare to the recently completed hypothetical modeling.

From: Huser, Jennifer
Location: R6-ConfRm-PineTree-06O15
Importance: Normal
Subject: Monthly Louisiana SIP Planning Coordination Call
Start Date/Time: Thur 12/17/2015 4:00:00 PM
End Date/Time: Thur 12/17/2015 5:00:00 PM

Good morning everyone!

We are changing the date of the December call to 12/17, since our regularly scheduled time would have us meeting on the 24th, and I'm assuming very few folks will be around.

Thanks and Happy Thanksgiving!

Call in number:
866-299-3188
Code:
Ex. 6 - Personal Privacy

Louisiana - EPA SIP Planning Monthly Call
December 17, 2015, 10:00 - 11:00 a.m.
Conference Number: 866-299-3188, Access Code 2 Ex. 6 - Personal Privacy

Introductions

Current Actions: Status Update - EPA & LDEQ

- **Clean Power Plan** - *LDEQ: Bryan Johnston; EPA: Kathleen Aisling*
  - ON HOLD UNTIL JANUARY

- **Chapter 15 Withdrawal for portions of AQ271 and MM002** - *LDEQ: Tricia Kelihan; EPA: Alan Shar*
  - EPA published Notice of Proposed Rulemaking on 11/5/15 (80 FR 68481)
  - EPA expects the Final General Rules revisions to be signed by RA late December 2015

- **Sewage Sludge Incinerators** - *LDEQ: Sonya Eastern; EPA: ~~Ken Boyce~~ Randy Pitre*
  - Update to delegation request draft and routed. October 2015 LA Register Notice.
  - Comment period closed 11/24; hearing on 11/24

- **SSM EPA National SIP call** - *LDEQ: Bryan Johnston; EPA: Alan Shar*
  - LDEQ is discussing path forward - possibly through rule and permit revisions.
  - GD voiced concern over affecting 110(l).
  - Bryan was working on drafting; stakeholder meeting for flares (opacity)
  - Working to mirror federal VOC regs (MACT, NSPS)

- **2010 SO_2 NAAQS**
  - **Sierra Club and Natural Resources Defense Council Suit**

- Sierra Club submitted 26 modeling efforts - CLECO in LA
- **SO_2 Data Requirements Rule** - EPA: *Dayana Medina*
  - Does not affect CLECO
  - Working on list and MvsM decision to EPA for January and July 2016
- **SO_2 SIP** - *EPA: Dayana Medina*, *Erik Snyder*
  - **Phase I**: St. Bernard Parish - LDEQ: *Vivian Aucoin* and *Vennetta Hayes*
    - EPA submitted comments; LDEQ is addressing comments
      - Modeling grid EPA: *Tyler Fox*
      - Ambient air EPA: *James Thurman*
  - **Phase II**: Calcasieu Parish (NISCO and Nelson) & De Soto Parish (CLECO) - *LDEQ: Amanda Polito*
    - Recommendations submitted by LDEQ
  - **Modeling**
    - LOWWIND3 option
    - Vennetta to share draft RTC as soon as possible for the modeling portion

- **2012 PM 2.5**
  - **i-SIP** - *EPA: Carl Young*; *LDEQ: Vivian Aucoin & Amanda Polito*
  - **Chapter 2 Fees** *EPA: Tracie Donaldson*
    - LDEQ will public notice this SIP submittal 12/20
  - **Transport SIP** - due on December 14, 2015
    - Emailed copy on 12/11/15
    - Have not seen hard copy yet

- **Ozone**
  - **Does LDEQ have any input regarding the appropriate deadline for EPA action on the interstate transport portion of the 2008 ozone infrastructure SIP submittal?**
    - EPA is negotiating a consent decree date
    - The lawsuit is because we did not act on the submittal by our statutory date
    - The lawsuit covers all four interstate transport elements of CAA 110(a)(2)(D)(i)
  - **2008 NAAQS BRNA Redesignation Request** - *EPA: Carl Young; LDEQ Amanda Polito*
    - 9/22 call:
      - Provide draft response to EPA
      - LDEQ wants to project emissions from 2011 to only 2027
    - Moves2010 timeline - *EPA: Jeff Riley; LDEQ: Vivian Aucoin*
    - MVEB clarification
    - December 2015
  - **2015 Ozone NAAQS**
  - **NOI on 2008 Ozone NAAQS Transport SIP (part of infrastructure submittal)**
  - **2008 Ozone Transport NODA published August 4, 2015**
  - **CSAPR Update Rule**
    http://www2.epa.gov/airmarkets/proposed-cross-state-air-pollution-update-rule

- **Regional Haze:** *LDEQ: Vivian Aucoin/Vennetta Hayes; EPA: Jennifer Huser/Erik Snyder/Colin Schwartz*
    - D.C. Circuit Decision on CSAPR and potential impacts to Louisiana Regional Haze
    - Sierra Club complaint
    - **Non-EGU BART:**
        - A potpourri notice is scheduled to be published on December 20, 2015; the comment period will end at the close of business on January 27, 2016.
        - EPA reviewed the draft SIP revision and Mosaic AOCs
        - Minor comments have been provided to LDEQ regarding the SIP narrative and the Mosaic AOC
    - **EGU BART**
        - BART analyses for all 13 sources have been received
        - Timeline issues
        - Vennetta to check to see if LDEQ received the CAMx modeling files from Entergy
    - **Regional Haze 5-year Report**
        - After non EGU is final

- **2011-2013 Volatile Organic Compound Rules Revision**
    - proposed 5/20/14; LDEQ working on response to EPA comment letter

Other Items/News

- RVP standard requests - LDEQ Amanda Polito

Action Items

Next Call: Thursday January 28, 2015 @ 10-11 am

Invited Participants

EPA:
Guy Donaldson
Mark Hansen
Mary Stanton
Jennifer Huser
Carrie Thomas
Carrie Paige
Carl Young
Alan Shar
Sherry Fuerst
Tracie Donaldson
Nevine Salem
John Walser

Dayana Medina
Erik Snyder
Michael Feldman
Lucinda Watson
Wendy Jacques
Josh Olszewski
Kathleen Aisling
Jim Grady
Robert Todd
Ken Boyce
Randy Pitre
Ashley Mohr

LDEQ:
Cheryl Nolan
Vivian Aucoin
Vennetta Hayes
Sonya Eastern
Gilberto Cuadra
Sandra Hilton
Amanda Polito
John Babin
Maureen Fleming
Tricia Kelihan
Kelly Phillips
Kelly Peterson
Bryan Johnston