Jim Brisco Enterprises, Inc.
Ready-Mix Concrete Batch Plant Project

Air Quality & Greenhouse Gas Impact Assessment
March 2020

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Executive Summary

This Air Quality & Greenhouse Gas Impact Assessment has been prepared for the purpose of identifying potential air quality impacts that may result from the proposed Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project ("Project") in the City of Atwater. The Project consists of the development of a concrete batch plant facility located on +/-10.8 acres also known as Merced County Assessors Parcel Number (APN) 056-241-007. The project will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots.

The City of Atwater is located in one of the most polluted air basins in the country – the San Joaquin Valley Air Basin (SJVAB). The surrounding topography includes foothills and mountains to the east and west. These mountain ranges direct air circulation and dispersion patterns. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Atwater is classified as Mediterranean, with moist cool winters and dry warm summers.

Air quality within the Project area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs.

IMPACTS

Short-Term (Construction) Emissions

Short-term impacts are mainly related to the construction phase of a project and are recognized to be short in duration. Construction air quality impacts are generally attributable to dust generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth moving activities do comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate significant dust emissions. Further, dust generation is dependent on soil type and soil moisture.

PM10 emissions can result from construction activities of the project. The SJVAPCD requires implementation of effective and comprehensive control measures, rather than a detailed quantification of emissions. The SJVAPCD has determined that compliance with Regulation VIII for all sites and other control measures will constitute sufficient mitigation to reduce PM10 impacts to a level considered less-than significant.

Ozone precursor emissions are also an impact of construction activities and can be quantified through calculations. Numerous variables factored into estimating total construction emission include: level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and amount of materials to be transported onsite or offsite. Additional exhaust emissions would be associated with the transport of workers and materials. Because the specific mix of construction equipment is not presently known for this project, construction emissions from equipment were estimated using the CalEEMod Model. Table E-1 shows the estimated construction emissions that would be generated from the Project. Results of the analysis show that emissions generated from the construction phase of the Project will not exceed the SJVAPCD emission thresholds.

Table E-1
Project Construction Emissions (tons/year)

Summary Report	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$	CO2e
Project Site Construction Emissions Per Year	3.60	4.27	0.73	0.01	0.47	0.32	557.57
SJVAPCD Level of Significance	100	10	10	27	15	15	None
Does the Project Exceed Standard?	No	No	No	No	No	No	No

Source: CalEEMod Emissions Model

Long-Term Emissions

Long-Term emissions from the project are generated by mobile source (vehicle) emissions from the Project site and area sources such as water heaters and lawn maintenance equipment.

1. Localized Mobile Source Emissions – Ozone/Particulate Matter

The Merced County area is nonattainment for Federal and State air quality standards for ozone, attainment of Federal standards for PM10 and nonattainment for State standards, and nonattainment for Federal and State standards for PM2.5. Nitrogen oxides and reactive organic gases are regulated as ozone precursors. Significance criteria have been established for criteria pollutant emissions as documented in Section 3.1. Operational emissions have been estimated for the Project using EMFAC 2017. Results of the analysis are shown in Table E-2. Results indicate that the annual operational emissions from the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants.

Table E-2
Project Operational Emissions (tons/year)

Summary Report	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$	CO2e
Project Operational Emissions Per Year	1.33	2.45	0.24	0.01	0.08	0.08	465.62
SJVAPCD Level of Significance	100	10	10	27	15	15	None
Does the Project Exceed Standard?	No	No	No	No	No	No	No

Source: CalEEMod Emissions Model

2. Toxic Air Contaminants (TAC)

The ambient concentration of various TACs at a given location depends on its emission rate, distance from the emission source, local wind speed and direction and local topography, land-use, etc. An air dispersion model that incorporates these variables and parameters was used to calculate the concentration of TACs in the vicinity of the Project. A Health Risk Assessment (HRA) was prepared for the Project and is included in Appendix D of this report.

Results of the HRA indicated that the maximum predicted cancer risk, chronic health hazard, and acute health hazard for off-site workplaces are below the significance threshold of 10 in one million for cancer risks and 1.0 for non-cancer health risks. Therefore, the Projects health risk impacts are considered less than significant.

3. Odors

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. The proposed Concrete Batch Plant is not listed as one of the facilities shown in Table 5. As a result, the Project is not anticipated to generate offensive odors.

4. Naturally Occurring Asbestos (NOA)

Asbestos is hazardous and can cause lung disease and cancer dependent upon the level of exposure. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem. The Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. Compliance with Rule 8021 would limit fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities associated with the Project.

The Dust Control Plan may include the following measures:

- Water wetting of road surfaces
- Rinse vehicles and equipment
- Wet loads of excavated material, and
- Cover loads of excavated material

5. Green House Gas Emissions

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG thresholds may be used to determine impacts. On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD guidance identifies a threshold of 10,000 MTCO2eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the California Public Utilities Commission, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015). Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as Merced County. Though the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table E-3 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 96% less than the threshold identified by the SCAQMD.

Table E-3
Project Operational Greenhouse Gas Emissions

Summary Report	CO_2e
Project Operational Emissions Per Year	356.59 MT/yr

Source: CalEEMod Emissions Model

CEQA ENVIRONMENTAL CHECKLIST

1. Air Quality

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. The significance criteria established by the SJVAPCD is relied upon to make the following determinations. Would the project:

- ✓ Conflict with or obstruct implementation of the applicable air quality plan?

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. MCAG uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then VMT, which are then provided to SJVAPCD to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the City of Atwater's General Plan, which was adopted July 24, 2000. The Project is consistent with the currently adopted General Plan for the City of Atwater and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

- ✓ Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Merced County is nonattainment for Ozone (1 hour and 8 hour) and PM10 (State standards) and PM2.5. The SJVAPCD has prepared the 2016 and 2013 Ozone Plan, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Inconsistency with any of the plans would be considered a cumulatively adverse air quality impact. As discussed in Section 4.1.1, the Project is consistent with the currently adopted General Plan for the City of Atwater and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the 2016 and 2013 Ozone Plan, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan.

Results of the CALINE analysis (Section 3.3.2) show that the intersection of Shaffer Road and Atwater Boulevard is not expected to generate CO concentrations that would exceed the Federal or State 1-hour and 8-hour standards. Further, as indicated in Section 3.3.2, the Project would not create objectionable odors affecting a substantial number of people. The Project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Therefore, no mitigation is needed.

✓ Expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the proposed Project is a Type A Project in that it may potentially place toxic sources in the vicinity of sensitive receptors.

the Project proposes to construct and operate a concrete batch plant facility, which will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots. Results of the HRA indicated that the maximum predicted cancer risk, chronic health hazard, and acute health hazard for off-site work places are below the significance threshold of 10 in one million for cancer risks and 1.0 for non-cancer health risks. Therefore, the Projects health risk impacts are considered less than significant, and no mitigation is needed.

<u>Short-Term Impacts</u>

The annual emissions from the construction phase of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 8. The construction emissions are therefore considered less than significant with the implementation of the SJVAPCD applicable Regulation VIII control measures, which are provided below.

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*

3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*
7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

Naturally Occurring Asbestos (NOA)

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the Project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

- Water wetting of road surfaces
- Rinse vehicles and equipment
- Wet loads of excavated material, and
- Cover loads of excavated material

Long-Term Impacts

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the project site. Emissions from long-term operations generally represent a project's most substantial air quality impact. Table 8 summarizes the Project's operational impacts by pollutant. Results indicate that the annual operational emissions from the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants. Therefore, no mitigation is needed.

✓ Result in other emissions such as those leading to odors adversely affecting a substantial number of people?

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

- Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and

- Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. The proposed Concrete Batch Plant is not listed as one of the facilities shown in Table 5. As a result, the Project is not anticipated to generate offensive odors. Therefore, no mitigation is needed.

2. *Greenhouse Gas Emissions*

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. The significance criteria established by the SJVAPCD is relied upon to make the following determinations. Would the project:

✓ Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG thresholds may be used to determine impacts. On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD guidance identifies a threshold of 10,000 MTCO2eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the California Public Utilities Commission, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015). Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as Merced County. Though the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table E-3 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 96% less than the threshold identified by the SCAQMD.

CARB's California GHG Emissions Inventory provides estimates of anthropogenic GHG emissions within California, as well as emissions associated with imported electricity; natural sources are not included in the inventory. California's GHG emissions for 2017 totaled approximately 424.1 MMTCO2eq. The proposed Project's GHG emissions represents 0.00008% of the total GHG emissions for the state of California when compared to year 2017 emissions data.

Based on the assessment above, the Project will not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, any impacts would be less than significant.

✓ Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. MCAG uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then VMT, which are then provided to SJVAPCD to estimate future emissions in the AQPs. The applicable General Plan for the project is the City of Atwater General Plan, which was adopted in July of 2000.

The Project is consistent with the currently adopted General Plan for the City of Atwater and the adopted 2018 RTP/SCS and is therefore consistent with the population growth and VMT applied in those plan documents. Therefore, the Project is consistent with the growth assumptions used in the applicable AQP. It should also be noted that yearly GHG emissions generated by the Project (Table E-3) are approximately 96% less than the threshold identified by the SCAQMD.

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit. Below is a list of applicable strategies in the Scoping Plan and the Project's consistency with those strategies.

- California Light-Duty Vehicle GHG Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs for long-term climate change goals.
    - The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to light-duty vehicles that would access the site. The Project would not conflict or obstruct this reduction measure.
- Energy Efficiency – Pursuit of comparable investment in energy efficiency from all retail

providers of electricity in California. Maximize energy efficiency building and appliance standards.

  - The Project is consistent with this reduction measure. Though this measure applies to the State to increase its energy standards, the Project would comply with this measure through existing regulation. The Project would not conflict or obstruct this reduction measure.

- Low Carbon Fuel – Development and adoption of the low carbon fuel standard.

  - The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to the fuel used by vehicles that would access the site. The Project would not conflict or obstruct this reduction measure.

Based on the assessment above, the Project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The Project further the achievement of Merced County's greenhouse gas reduction goals. Therefore, any impacts would be less than significant.

1.0 Introduction

1.1 Description of the Region/Project

This Air Quality & Greenhouse Gas Impact Assessment has been prepared for the purpose of identifying potential air quality impacts that may result from the proposed Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project ("Project") in the City of Atwater. The Project consists of the development of a concrete batch plant facility located on +/-10.8 acres also known as Merced County Assessors Parcel Number (APN) 056-241-007. The project will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots.

The Project lies within the San Joaquin Valley, in the City of Atwater. Figures 1 and 2 show the location of the Project along with major roadways and highways. As noted above, the Project proposes to develop a Ready-Mix Concrete Batch Plant facility. Site access will be provided along Industry Way, south of Commerce Avenue.

The City of Atwater is located in one of the most polluted air basins in the country – the San Joaquin Valley Air Basin (SJVAB). The surrounding topography includes foothills and mountains to the east and west. These mountain ranges direct air circulation and dispersion patterns. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Atwater is classified as Mediterranean, with moist cool winters and dry warm summers.

1.2 Regulatory

Air quality within the Project area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the City of Atwater are discussed below along with their individual responsibilities.

1.2.1 *Federal Agencies*

- ✓ **U.S. Environmental Protection Agency (EPA)**

  The Federal Clean Air Bill first adopted in 1967 and periodically amended since then, established federal ambient air quality standards. A 1987 amendment to the Bill set a deadline for the attainment of these standards. That deadline has since passed. The other Clean Air Act (CAA) Bill Amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources. The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the 1990 amendments.

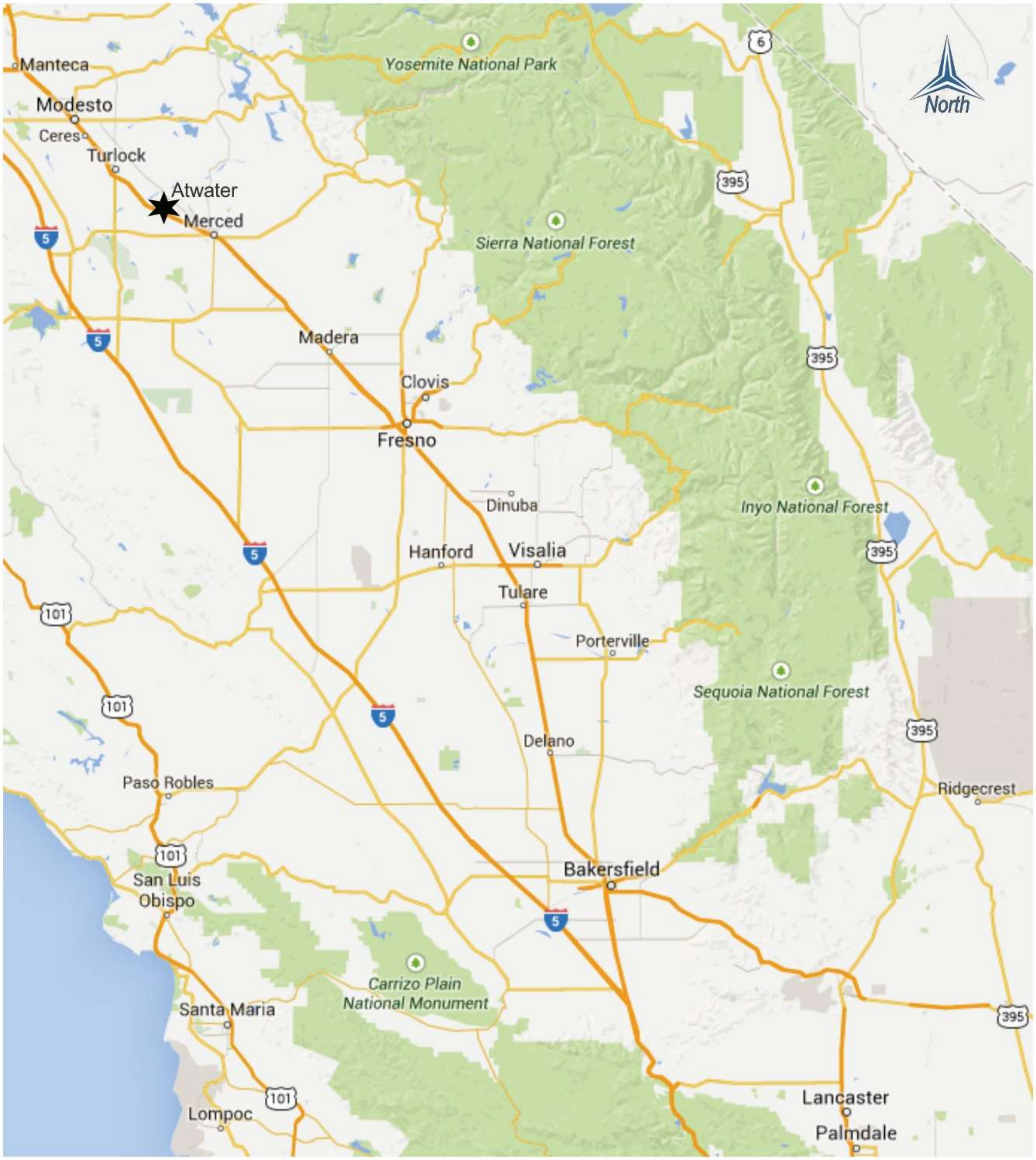
The CAA and the national ambient air quality standards identify levels of air quality for six “criteria” pollutants, which are considered the maximum levels of ambient air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

CAA Section 176(c) (42 U.S.C. 7506(c)) and EPA transportation conformity regulations (40 CFR 93 Subpart A) require that each new RTP and Transportation Improvement Program (TIP) be demonstrated to conform to the State Implementation Plan (SIP) before the RTP and TIP are approved by the Metropolitan planning organization (MPO) or accepted by the U.S. Department of Transportation (DOT). The conformity analysis is a federal requirement designed to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). However, because the State Implementation Plan (SIP) for particulate matter 10 microns or less in diameter (PM10), particulate matter 2.5 microns or less in diameter (PM2.5), and Ozone address attainment of both the State and federal standards, for these pollutants, demonstrating conformity to the federal standards is also an indication of progress toward attainment of the State standards. Compliance with the State air quality standards is provided on the pages following this federal conformity discussion.

The EPA approved San Joaquin Valley reclassification of the ozone (8-hour) designation to extreme nonattainment in the Federal Register on May 5, 2010, even though the San Joaquin Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard. In accordance with the CAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. In the Federal Register on October 26, 2015, the EPA revised the primary and secondary standard to 0.070 parts per million (ppm) to provide increased public health protection against health effects associated with long- and short-term exposures. The previous ozone standard was set in 2010 at 0.075 ppm.

The City of Atwater is located in a nonattainment area for the 8-hour ozone standard, 1997, 2006 and 2012 PM2.5 standards, and has a maintenance plan for PM10 standard.

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project **Figure 1**
Regional Location

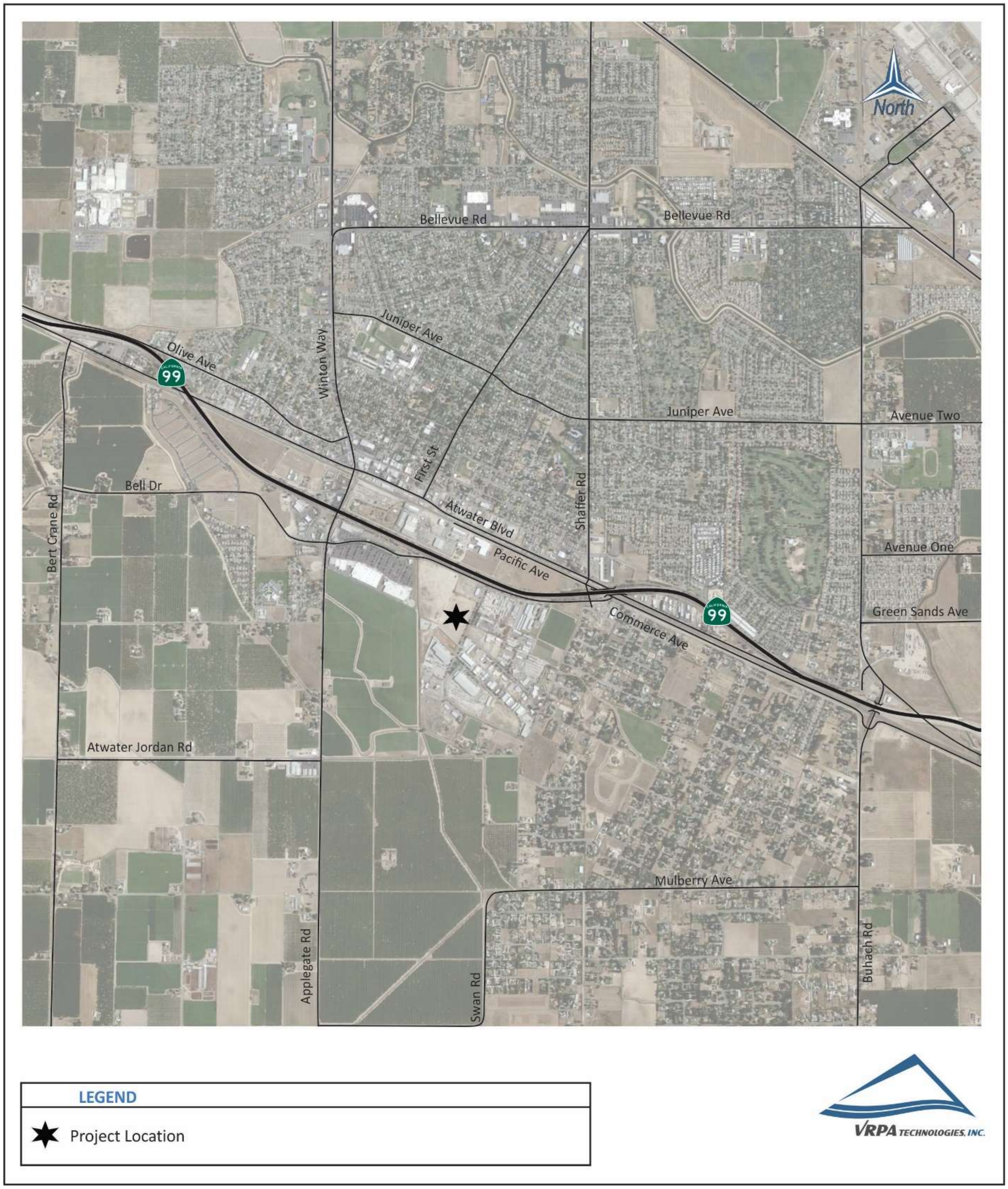


LEGEND

★ Project Location

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project
Project Location

Figure 2



1.2.2 *Federal Regulations*

✓ **National Environmental Policy Act (NEPA)**

NEPA provides general information on the effects of federally funded projects. The Act was implemented by regulations included in the Code of Federal Regulations (40CFR6). The code requires careful consideration concerning environmental impacts of federal actions or plans, including projects that receive federal funds. The regulations address impacts on land uses and conflicts with state, regional, or local plans and policies, among others. They also require that projects requiring NEPA review seek to avoid or minimize adverse effects of proposed actions and to restore and enhance environmental quality as much as possible.

✓ **State Implementation Plan (SIP)/ Air Quality Management Plans (AQMPs)**

To ensure compliance with the NAAQS, EPA requires states to adopt SIP aimed at improving air quality in areas of nonattainment or a Maintenance Plan aimed at maintaining air quality in areas that have attained a given standard. New and previously submitted plans, programs, district rules, state regulations, and federal controls are included in the SIPs. Amendments made in 1990 to the federal CAA established deadlines for attainment based on an area's current air pollution levels. States must enact additional regulatory programs for nonattainment's areas in order to adhere with the CAA Section 172. In California, the SIPs must adhere to both the NAAQS and the California Ambient Air Quality Standards (CAAQS).

To ensure that State and federal air quality regulations are being met, Air Quality Management Plans (AQMPs) are required. AQMPs present scientific information and use analytical tools to identify a pathway towards attainment of NAAQS and CAAQS. The San Joaquin Valley Air Pollution Control District (SJVAPCD) develops the AQMPs for the region where the Merced County Association of Governments (MCAG) operates. The regional air districts begin the SIP process by submitting their AQMPs to the California Air Resources Board (CARB). CARB is responsible for revising the SIP and submitting it to EPA for approval. EPA then acts on the SIP in the Federal Register. The items included in the California SIP are listed in the Code of Federal Regulations Title 40, Chapter 1, Part 52, Subpart 7, Section 52.220.

1.2.3 *State Agencies*

✓ **California Air Resources Board (CARB)**

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing its own air quality legislation called the CCAA, adopted in 1988. CARB was created in 1967 from the merging of the California Motor Vehicle Pollution Control Board and the Bureau of Air Sanitation and its Laboratory.

CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. Whereas CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. CARB combines its data with all local district data and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by CARB, and attainment plans adopted by the Air Pollution Control Districts (APCDs) and Air Quality Management District's (AQMDs) and approved by CARB.

States may establish their own standards, provided the State standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to California Health and Safety Code (CH&SC) [§39606(b)] and its predecessor statutes.

The CH&SC [§39608] requires CARB to "identify" and "classify" each air basin in the State on a pollutant-by-pollutant basis. Subsequently, CARB designated areas in California as nonattainment based on violations of the CAAQSs. Designations and classifications specific to the SJVAB can be found in the next section of this document. Areas in the State were also classified based on severity of air pollution problems. For each nonattainment class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. In addition, air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that lays out a program to attain and maintain the CCAA mandates.

Other CARB duties include monitoring air quality. CARB has established and maintains, in conjunction with local APCDs and AQMDs, a network of sampling stations (called the State and Local Air Monitoring [SLAMS] network), which monitor the present pollutant levels in the ambient air.

Merced County is in the CARB-designated, SJVAB. A map of the SJVAB is provided in Figure 3. In addition to Merced County, the SJVAB includes Fresno, Kern, Kings, Madera, San Joaquin, Stanislaus, and Tulare Counties. Federal and State standards for criteria pollutants are provided in Table 1.

1.2.4 *State Regulations*

✓ **CARB Mobile-Source Regulation**

The State of California is responsible for controlling emissions from the operation of motor vehicles in the State. Rather than mandating the use of specific technology or the reliance on a specific fuel, CARB's motor vehicle standards specify the allowable grams of pollutant per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved.

✓ **California Clean Air Act**

The CCAA was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. The CCAA establishes more stringent ambient air quality standards than those included in the Federal CAA. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the CH&SC [§39606(b)], which are similar to the federal standards. The SJVAPCD is one of 35 AQMDs that have prepared air quality management plans to accomplish a five percent (5%) annual reduction in emissions documenting progress toward the State ambient air quality standards.

✓ **Tanner Air Toxics Act**

California regulates Toxic Air Contaminants (TACs) primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of Hazardous Air Pollutants (HAPs) as TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators).

These rules and standards provide for:

- More stringent emission standards for some new urban bus engines, beginning with 2002 model year engines.
- Zero-emission bus demonstration and purchase requirements applicable to transit agencies
- Reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule.

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project
San Joaquin Valley Air Basin

Figure 3

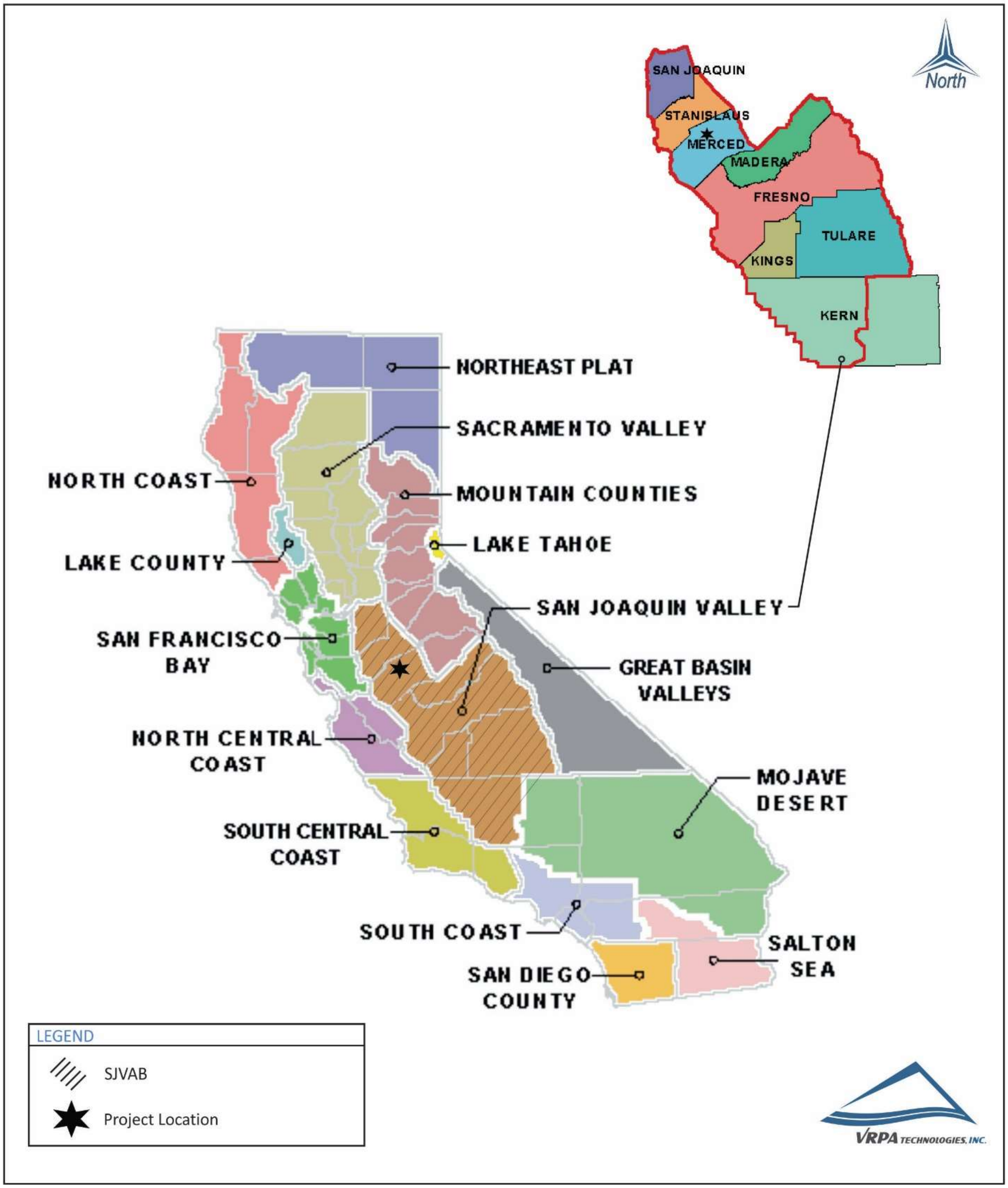


Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3) [8]	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$)		
Respirable Particulate Matter (PM10) [9]	24 Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		--		
Fine Particulate Matter (PM2.5) [9]	24 Hour	--	--	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	12.0 $\mu g/m^3$	15 $\mu g/m^3$	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	
Nitrogen Dioxide (NO_2) [10]	1 Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemiluminescence	100 ppb (188 $\mu g/m^3$)	--	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2) [11]	1 Hour	0.25 ppm (655 $\mu g/m^3$)	Ultraviolet Fluorescence	75 ppb (196 $\mu g/m^3$)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 $\mu g/m^3$)	
	24 Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for cetain areas) [11]	--	
	Annual Arithmetic Mean	--		0.030 ppm (for cetain areas) [11]	--	
Lead [12,13]	30 Day Average	1.5 $\mu g/m^3$	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 $\mu g/m^3$ (for certain areas) [11]	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 $\mu g/m^3$		
Visibility Reducing Particles [14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride [12]	24 Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

See footnotes on next page …

Footnotes:

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

- **California Environmental Quality Act (CEQA)**

CEQA defines a significant impact on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. Land use is a required impact assessment category under CEQA. CEQA documents generally evaluate land use in terms of compatibility with the existing land uses and consistency with local general plans and other local land use controls (zoning, specific plans, etc.).

- **Assembly Bill 32 (California Global Warming Solutions Act of 2006)**

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2020 would represent an approximate 25 to 30 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions.

On December 11, 2008, CARB adopted its initial Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit.

- **Senate Bill 375**

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) that will prescribe land use allocation in that MPO's regional transportation plan. CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the MCAG region, CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005.

This law also extends the minimum time period for the regional housing needs allocation cycle from five years to eight years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA would incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

- ✓ **Executive Order B-30-15**

Executive Order B-30-15, which was signed by Governor Brown in 2016, establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires MPO's to implement measures that will achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.

1.2.5 *Regional Agencies*

- ✓ **San Joaquin Valley Air Pollution Control District**

The SJVAPCD is the agency responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Merced County and throughout the SJVAB. The District also has responsibility for monitoring air quality and setting and enforcing limits for source emissions. CARB is the agency with the legal responsibility for regulating mobile source emissions. The District is precluded from such activities under State law.

The District was formed in mid-1991 and prepared and adopted the San Joaquin Valley Air Quality Attainment Plan (AQAP), dated January 30, 1992, in response to the requirements of the State CCAA. The CCAA requires each non-attainment district to reduce pertinent air contaminants by at least five percent (5%) per year until new, more stringent, 1988 State air quality standards are met.

Activities of the SJVAPCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

The SJVAPCD has prepared the 2016 (8-hour) and 2013 (1-hour) Ozone Plans to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone. The 2016 and 2013 Ozone Plan provides a comprehensive list of regulatory and incentive-based measures to reduce emissions of ozone and particulate matter precursors throughout the SJVAB. The 2016 and 2013 Ozone Plan calls for major advancements in pollution control technologies for mobile and stationary sources of air pollution. The 2013 Ozone Plan calls for a 75-percent reduction in ozone-forming oxides of nitrogen emissions. The 2013 Ozone Plan also addresses the remaining requirement under the 1979 revoked 1-hour ozone NAAQS.

The SJVAPCD has also prepared the *2007 PM10 Maintenance Plan and Request for Redesignation* (2007 PM10 Plan). On April 24, 2006, the SJVAPCD submitted a Request for Determination of PM10 Attainment for the Basin to the CARB. The CARB concurred with the request and submitted the request to the EPA on May 8, 2006. On October 30, 2006, the EPA issued a Final Rule determining that the Basin had attained the NAAQS for PM10. However, the EPA noted that the Final Rule did not constitute a redesignation to attainment until all of the FCAA requirements under Section 107(d)(3) were met.

The SJVAPCD has prepared the *2012 PM.2.5 Plan* to achieve Federal and State standards for improved air quality in the SJVAB. The *2012 PM.2.5 Plan* provides a comprehensive list of regulatory and incentive-based measures to reduce PM2.5.

In addition to the 2016 and *2013 Ozone Plan, the 2012 PM2.5 Plan,* and the *2007 PM10 Plan*, the SJVAPCD prepared the *Guide for Assessing and Mitigation Air Quality Impacts* (GAMAQI), dated March 19, 2015.

The GAMAQI is an advisory document that provides Lead Agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality impacts in environmental documents. Local jurisdictions are not required to utilize the methodology outlined therein. This document describes the criteria that SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether or not projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts.

The SJVAPCD Plans identified above represent that SJVAPCD's plan to achieve both state and federal air quality standards. The regulations and incentives contained in these documents must be legally enforceable and permanent. These plans break emissions reductions and compliance into different emissions source categories.

1.2.6 *Regional Regulations*

The SJVAPCD has adopted numerous rules and regulations to implement its air quality plans. Following, are significant rules that will apply to the Project.

✓ **Regulation VIII – Fugitive PM10 Prohibitions**

Regulation VIII is comprised of District Rules 8011 through 8081, which are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc. The proposed Project will be required to comply with this regulation. Regulation VIII control measures are provided below:

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*
7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

✓ **Rule 8021 – Construction, Demolition, Excavation, and Other Earthmoving Activities**

District Rule 8021 requires owners or operators of construction projects to submit a Dust Control Plan to the District if at any time the project involves non-residential developments of five or more acres of disturbed surface area or moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project. The proposed project will meet these criteria and will be required to submit a Dust Control Plan to the District in order to comply with this rule.

- ✓ **Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations**

If asphalt paving will be used, then paving operations of the proposed project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

- ✓ **Rule 9510 – Indirect Source Review (ISR)**

The purpose of this rule is to fulfill the District's emission reduction commitments in the PM10 and Ozone Attainment Plans, achieve emission reductions from construction activities, and to provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures.

1.2.7 *Local Plans*

- ✓ **Merced County General Plan**

California State Law requires every city and county to adopt a comprehensive General Plan to guide its future development. The General Plan essentially serves as a "constitution for development"— the document that serves as the foundation for all land use decisions. The 2030 Merced County General Plan includes various elements, including air quality and greenhouse gases, that address local concerns and provides goals and policies to achieve its development goals.

2.0 Environmental Setting

This section describes existing air quality within the San Joaquin Valley Air Basin and in Merced County, including the identification of air pollutant standards, meteorological and topological conditions affecting air quality, and current air quality conditions. Air quality is described in relation to ambient air quality standards for criteria pollutants such as, ozone, carbon monoxide, and particulate matter. Air quality can be directly affected by the type and density of land use change and population growth in urban and rural areas.

2.1 Geographical Location

The SJVAB is comprised of eight counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Encompassing 24,840 square miles, the San Joaquin Valley is the second largest air basin in California. Cumulatively, counties within the Air Basin represent approximately 16 percent of the State's geographic area. The Air Basin is bordered by the Sierra Nevada Mountains on the east (8,000 to 14,492 feet in elevation), the Coastal Range on the west (4,500 feet in elevation), and the Tehachapi Mountains on the south (9,000 feet elevation). The San Joaquin Valley is open to the north extending to the Sacramento Valley Air Basin.

2.2 Topographic Conditions

Merced County is located within the San Joaquin Valley Air Basin [as determined by the California Air Resources Board (CARB)]. Air basins are geographic areas sharing a common "air shed." A description of the Air Basin in the County, as designated by CARB, is provided in paragraph below. Air pollution is directly related to the region's topographic features, which impact air movement within the Basin.

Wind patterns within the SJVAB result from marine air that generally flows into the Basin from the San Joaquin River Delta. The Coastal Range hinders wind access into the Valley from the west, the Tehachapi’s prevent southerly passage of airflow, and the high Sierra Nevada Mountain Range provides a significant barrier to the east. These topographic features result in weak airflow that becomes restricted vertically by high barometric pressure over the Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500-3,000 feet).

2.3 Climatic Conditions

Merced County is located in one of the most polluted air basins in the country. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Merced County is classified as Mediterranean, with moist cool winters and dry warm summers.

Ozone, classified as a "regional" pollutant, often afflicts areas downwind of the original source of precursor emissions. Ozone can be easily transported by winds from a source area. Peak ozone levels tend to be higher in the southern portion of the Valley, as the prevailing summer winds sweep precursors downwind of northern source areas before concentrations peak. The separate designations reflect the fact that ozone precursor transport depends on daily meteorological conditions.

Other primary pollutants, carbon monoxide (CO), for example, may form high concentrations when wind speed is low. During the winter, Merced County experiences cold temperatures and calm conditions that increase the likelihood of a climate conducive to high CO concentrations.

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble, so precipitation and fog tends to "reduce" CO concentrations in the atmosphere. PM10 is somewhat "washed" from the atmosphere with precipitation. Precipitation in the San Joaquin Valley is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast. In the winter, this high- pressure system moves southward, allowing Pacific storms to move through the San Joaquin Valley. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Ranges. Significant precipitation also occurs on the western side of the Sierra Nevada. On the valley floor, however, there is some down slope flow from the Coast Ranges and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the San Joaquin Valley is produced by those storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. It is usually associated with an influx of moisture into the San Joaquin Valley through the San Francisco area during an anomalous flow pattern in the lower layers of the atmosphere. Although the hourly rates of precipitation from these storms may be high, their rarity keeps monthly totals low.

Precipitation on the San Joaquin Valley floor and in the Sierra Nevada decreases from north to south. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center, receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. This is primarily because the Pacific storm track often passes through the northern part of the state while the southern part of the state remains protected by the Pacific High. Precipitation in the San Joaquin Valley Air Basin (SJVAB) is confined primarily to the winter months with some also occurring in late summer and fall. Average annual rainfall for the entire San Joaquin Valley is approximately 5 to 16 inches. Snowstorms, hailstorms, and ice storms occur infrequently in the San Joaquin Valley and severe occurrences of any of these are very rare.

The winds and unstable air conditions experienced during the passage of storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates strong low-level temperature inversions and very stable air conditions. This situation leads to the San Joaquin Valley's famous Tule Fogs. The formation of natural fog is caused by local cooling of the atmosphere until it is saturated (dew point temperature). This type of fog, known as radiation fog is more likely to occur inland. Cooling may also be accomplished by heat radiation losses or by horizontal movement of a mass of air over a colder surface. This second type of fog, known as advection fog, generally occurs along the coast.

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM10. Ozone levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large numbers of fireplaces are in use. A secondary peak in CO concentrations occurs during morning commute hours when a large number of motorists are on the road and the surface inversion has not yet broken.

The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NOx), lowering pollutant concentrations. At the same time, fog could help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM10 and PM2.5 standards.

2.4 Anthropogenic (Man-made) Sources

In addition to climatic conditions (wind, lack of rain, etc.), air pollution can be caused by anthropogenic or man-made sources. Air pollution in the SJVAB can be directly attributed to human activities, which cause air pollutant emissions. Human causes of air pollution in the Valley consist of population growth, urbanization (gas-fired appliances, residential wood heaters, etc.), mobile sources (i.e., cars, trucks, airplanes, trains, etc.), oil production, agriculture, and other socioeconomic activities. The most significant factors, which are accelerating the decline of air quality in the SJVAB, are the Valley's rapid population growth and its associated increases in traffic, urbanization, and industrial activity.

Carbon monoxide emissions overwhelmingly come from mobile sources in the San Joaquin Valley; on-road vehicles contributed 34 percent, while other mobile vehicles, such as trains, planes, and off-road vehicles, contribute another 20 percent in 2012 according to emission projections from the CARB. Motor vehicles account for significant portions of regional gaseous and particulate emissions. Local large employers such as industrial plants can also generate substantial regional gaseous and particulate emissions. In addition, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.).

Ozone is the result of a photochemical reaction between Oxides of nitrogen (NOx) and Reactive Organic Gases (ROG). Mobile sources contribute 86 percent of all NOx emitted from anthropogenic sources in 2015 based on data provided in Appendix B of the Air District's 2016 Ozone Plan. In addition, mobile sources contribute 26 percent of all the ROG emitted from sources within the San Joaquin Valley.

The principal factors that affect air quality in and around Merced County are:

1. The sink effect, climatic subsidence and temperature inversions and low wind speeds
2. Automobile and truck travel
3. Increases in mobile and stationary pollutants generated by local urban growth

Automobiles, trucks, buses and other vehicles using hydrocarbon (HC) fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

The primary contributors of PM10 emissions in the San Joaquin Valley are farming activities (22%) and road dust, both paved and unpaved (35%) in 2020 according to emission projections from the CARB. Fugitive windblown dust from "open" fields contributed 14 percent of the PM10.

The four major sources of air pollutant emissions in the SJVAB include industrial plants, motor vehicles, construction activities, and agricultural activities. Industrial plants account for significant portions of regional gaseous and particulate emissions. Motor vehicles, including those from large employers, generate substantial regional gaseous and particulate emissions. Finally, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.). In addition to these primary sources of air pollution, urban areas upwind from Merced County, including areas north and west of the San Joaquin Valley, can cause or generate emissions that are transported into Merced County. All four of the major pollutant sources affect ambient air quality throughout the Air Basin.

2.4.1 *Motor Vehicles*

Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

2.4.2 *Agricultural and Other Miscellaneous Activities*

Other sources that affect air quality in Merced County include agricultural uses, dirt roads, animal shelters, animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. These sources include several agricultural related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities.

2.4.3 *Industrial Plants*

Industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Merced County consist of agricultural production and processing operations, wine production, and marketing operations.

2.5 San Joaquin Valley Air Basin Monitoring

SJVAPCD and the CARB maintain numerous air quality monitoring sites throughout each County in the Air Basin to measure ozone, PM2.5, and PM10. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. The closest monitoring station to the Project is located at Merced's Coffee Avenue and Turlock's Minaret Street monitoring stations. The stations monitor particulates, ozone, and nitrogen dioxide. Monitoring data for the most recent three years on record is summarized in Tables 2a and 2b.

Table 3 identifies Merced County's attainment status. As indicated previously, the SJVAB is nonattainment for Ozone (1 hour and 8 hour) and PM. In accordance with the FCAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. The FCAA contains provisions for changing the classifications using factors such as clean air progress rates and requests from states to move areas to a higher classification.

On April 16, 2004 EPA issued a final rule classifying the SJVAB as extreme nonattainment for Ozone, effective May 17, 2004 (69 FR 20550). The (federal) 1-hour ozone standard was revoked on June 6, 2005. However, many of the requirements in the 1-hour attainment plan (SIP) continue to apply to the SJVAB. The current ozone plan is the (federal) 8-hour ozone plan adopted in 2007. The SJVAB was reclassified from a "serious" nonattainment area for the 8-hour ozone standard to "extreme' effective June 4, 2010.

Table 2a
Maximum Pollutant Levels at Merced's S Coffee Avenue Monitoring Station

Pollutant	Time Averaging	2016 Maximums	2017 Maximums	2018 Maximums	Standards National	Standards State
Ozone (O_3)	1 hour	0.097 ppm	0.093 ppm	0.104 ppm	-	0.09 ppm
Ozone (O_3)	8 hour	0.086 ppm	0.084 ppm	0.083 ppm	0.070 ppm	0.070 ppm
Nitrogen Dioxide (NO_2)	1 hour	35.4 ppb	38.9 ppb	45.8 ppb	100 ppb	0.18 ppm
Nitrogen Dioxide (NO_2)	Annual Average	6.0 ppb	7.0 ppb	7.0 ppb	0.053 ppm	0.030 ppm
Particulates (PM_{10})	24 hour	*	*	*	150 µg/m^3	50 µg/m^3
Particulates (PM_{10})	Federal Annual Arithmetic Mean	*	*	*	-	20 µg/m^3
Particulates ($PM_{2.5}$)	24 hour	43.0 µg/m^3	69.3 µg/m^3	88.2 µg/m^3	35 µg/m^3	-
Particulates ($PM_{2.5}$)	Federal Annual Arithmetic Mean	11.9 µg/m^3	13.2 µg/m^3	15.1 µg/m^3	12 µg/m^3	12 µg/m^3

Source: California Air Resources Board (ADAM) Air Pollution Summaries

* Means there was insufficient data available to determine the value.

Table 2b
Maximum Pollutant Levels at Turlock's S Minaret Street Monitoring Station

Pollutant	Time Averaging	2016 Maximums	2017 Maximums	2018 Maximums	Standards National	Standards State
Ozone (O_3)	1 hour	0.102 ppm	0.114 ppm	0.108 ppm	-	0.09 ppm
Ozone (O_3)	8 hour	0.088 ppm	0.099 ppm	0.095 ppm	0.070 ppm	0.070 ppm
Nitrogen Dioxide (NO_2)	1 hour	47.2 ppb	58.6 ppb	67.2 ppb	100 ppb	0.18 ppm
Nitrogen Dioxide (NO_2)	Annual Average	9.0 ppb	9.0 ppb	9.0 ppb	0.053 ppm	0.030 ppm
Particulates (PM_{10})	24 hour	62.7 µg/m^3	111.7 µg/m^3	250.4 µg/m^3	150 µg/m^3	50 µg/m^3
Particulates (PM_{10})	Federal Annual Arithmetic Mean	29.8 µg/m^3	36.4 µg/m^3	36.8 µg/m^3	-	20 µg/m^3
Particulates ($PM_{2.5}$)	24 hour	53.6 µg/m^3	72.3 µg/m^3	187.3 µg/m^3	35 µg/m^3	-
Particulates ($PM_{2.5}$)	Federal Annual Arithmetic Mean	12.7 µg/m^3	12.7 µg/m^3	17.2 µg/m^3	12 µg/m^3	12 µg/m^3

Source: California Air Resources Board (ADAM) Air Pollution Summaries

Table 3
Merced County Attainment Status

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone - 1 Hour	Revoked in 2005	Nonattainment/Severe
Ozone - 8 Hour	Nonattainment/Extreme [a]	No State Standard
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
Carbon Monoxide	Unclassified/Attainment	Unclassified
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified/Attainment	Attainment
Lead (Particulate)	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

Source: ARB Website, 2020

a. Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

Notes:

National Designation Categories

Non-Attainment Area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Unclassified/Attainment Area: Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant or meets the national primary or secondary ambient air quality standard for the pollutant.

State Designation Categories

Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.

Attainment: A pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a three-year period.

Non-attainment: A pollutant is designated non-attainment if there was at least one violation of a State standard for that pollutant in the area.

Non-Attainment/Transitional: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the standard for the pollutant.

2.6 Air Quality Standards

The FCAA, first adopted in 1963, and periodically amended since then, established National Ambient Air Quality Standards (NAAQS). A set of 1977 amendments determined a deadline for the attainment of these standards. That deadline has since passed. Other CAA amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources.

In 1988, the State of California passed the CCAA (State 1988 Statutes, Chapter 568), which set forth a program for achieving more stringent California Ambient Air Quality Standards. The CARB implements State ambient air quality standards, as required in the CCAA, and cooperates with the federal government in implementing pertinent sections of the FCAA Amendments (FCAAA). Further, CARB regulates vehicular emissions throughout the State. The SJVAPCD regulates stationary sources, as well as some mobile sources. Attainment of the more stringent State PM10 Air Quality Standards is not currently required.

The EPA uses six "criteria pollutants" as indicators of air quality and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called the NAAQS.

The SJVAPCD operates regional air quality monitoring networks that provide information on average concentrations of pollutants for which State or federal agencies have established ambient air quality standards. Descriptions of ten pollutants of importance in Merced County follow.

2.6.1 *Ozone (1-hour and 8-hour)*

The most severe air quality problem in the Air Basin is the high level of ozone. Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level, or "bad" ozone, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up, where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is what is known as a photochemical pollutant. It needs reactive organic gases (ROG), NOx, and sunlight. ROG and NOx are emitted from various sources throughout Tulare County. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically NOx and ROG. Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard in 1994. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the Northeast.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

- ***Health Effects***

  While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

  People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children inhale more air per pound of body weight than adults, and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

The CARB found ozone standards in Merced County nonattainment of Federal and State standards.

2.6.2 *Suspended PM (PM10 and PM2.5)*

Particulate matter pollution consists of very small liquid and solid particles that remain suspended in the air for long periods. Some particles are large or concentrated enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter is emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. PM10 refers to particles less than or equal to 10 microns in aerodynamic diameter. PM2.5 refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM10. Particulates of concern are those that are 10 microns or less in diameter. These are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects.

In the western United States, there are sources of PM10 in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM10 and PM2.5 can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM10 and PM2.5. In addition to those listed previously, secondary particles can also be formed as precipitates from chemical and photochemical reactions of gaseous sulfur dioxide (SO2) and NOx in the atmosphere to create sulfates (SO4) and nitrates (NO3). Secondary particles are of greatest concern during the winter months where low inversion layers tend to trap the precursors of secondary particulates.

The District's 2008 PM2.5 Plan built upon the aggressive emission reduction strategy adopted in the 2007 Ozone Plan and strives to bring the valley into attainment status for the 1997 NAAQS for PM2.5. The District's 2012 PM2.5 Plan provides multiple control strategies to reduce emissions of PM2.5 and other pollutants that form PM2.5. The plan's comprehensive control strategy includes regulatory actions, incentive programs, technology advancement, policy and legislative positions, public outreach, participation and communication, and additional strategies.

- ***Health Effects***

PM10 and PM2.5 particles are small enough—about one-seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings. PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. PM10 and PM2.5 can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM10. These "sensitive populations" include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM10 exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM10 can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

The CARB found PM10 standards in Merced County in attainment of Federal standards and nonattainment for State standards. The CARB found PM2.5 standards in Merced County nonattainment of Federal and State standards.

2.6.3 *Carbon Monoxide (CO)*

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, contributes more than two thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

- ***Health Effects***

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

The CARB found CO standards in Merced County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.4 *Nitrogen Dioxide (NO2)*

Nitrogen oxides (NOx) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NOx is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NOx is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.

- ***Health Effects***

NOx is an ozone precursor that combines with Reactive Organic Gases (ROG) to form ozone. See the ozone section above for a discussion of the health effects of ozone.

Direct inhalation of NOx can also cause a wide range of health effects. NOx can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO2) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO2 may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NOx are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NOx can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NOx can also impair visibility. NOx is a major component of acid deposition in California. NOx may affect both terrestrial and aquatic ecosystems. NOx in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO2 include experimental studies on animals, controlled laboratory studies on humans, and observational studies.

In animals, long-term exposure to NOx increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO2, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NOx contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

The CARB found NO2 standards in Merced County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.5 *Sulfur Dioxide (SO2)*

The major source of sulfur dioxide (SO2) is the combustion of high-sulfur fuels for electricity generation, petroleum refining and shipping. High concentrations of SO2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO2, in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO2 also is a major precursor to PM2.5, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

The CARB found SO2 standards in the Merced County as unclassified/attainment for Federal standards and attainment for State standards.

2.6.6 *Lead (Pb)*

Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels; however, the use of leaded fuel has been mostly phased out. Since this has occurred the ambient concentrations of lead have dropped dramatically.

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

The CARB found Lead standards in Merced County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.7 *Toxic Air Contaminants (TAC)*

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TAC) are another group of pollutants of concern. TAC are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TAC is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TAC are regulated on the basis of risk rather than specification of safe levels of contamination. The ten TAC are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (diesel PM). Caltrans' guidance for transportation studies references the Federal Highway Administration (FHWA) memorandum titled "Interim Guidance on Air Toxic Analysis in NEPA Documents" which discusses emissions quantification of six "priority" compounds of 21 Mobile Source Air Toxics (MSAT) identified by the United States Environmental Protection Agency (USEPA). The six-diesel exhaust (particulate matter and organic gases), benzene, 1,3-butadiene, acetaldehyde, formaldehyde, and acrolein.

Some studies indicate that diesel PM poses the greatest health risk among the TAC listed above. A 10-year research program (California Air Resources Board 1998) demonstrated that diesel PM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to diesel PM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

Diesel PM differs from other TAC in that it is not a single substance but a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TAC, however, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. The CARB has made preliminary concentration estimates based on a diesel PM exposure method. This method uses the CARB emissions inventory's PM10 database, ambient PM10 monitoring data, and the results from several studies to estimate concentrations of diesel PM. Table 4 depicts the CARB Handbook's recommended buffer distances associated with various types of common sources.

Existing air quality concerns within Merced County and the entire SJVAB are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

TABLE 4
Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities*

SOURCE CATEGORY	ADVISORY RECOMMENDATIONS
Freeways and High-Traffic Roads [1]	- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	- Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). - Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. - Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	- Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.
Refineries	- Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	- Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. - Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	- Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

1: The recommendation to avoid siting new sensitive land uses within 500 feet of a freeway was identified in CARB's Air Quality and Land Use Handbook published in 2005. CARB recently published a technical advisory to the Air Quality and Land Use Handbook indicating that new research has demonstrated promising strategies to reduce pollution exposure along transportation corridors.

*Notes:
• These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
• Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
• The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
• These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
• Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
• This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
• A summary of the basis for the distance recommendations can be found in the ARB Handbook: Air Quality and Land Use Handbook: A Community Health Perspective.

Source: SJVAPCD 2020

2.6.8 *Odors*

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor.

Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 5 along with a reasonable distance from the source within which, the degree of odors could possibly be significant. Information presented in Table 5 will be used as a screening level of analysis for potential odor sources for the proposed project.

TABLE 5
Screening Levels for Potential Odor Sources

Type of Facility	Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Compositing Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. auto body shops)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Source: SJVAPCD 2020

2.6.9 *Naturally Occurring Asbestos (NOA)*

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Asbestos is commonly found in ultramafic rock and near fault zones. The amount of asbestos that is typically present in these rocks ranges from less than 1% up to approximately 25% and sometimes more. It is released from ultramafic rock when it is broken or crushed. This can happen when cars drive over unpaved roads or driveways, which are surfaced with these rocks, when land is graded for building purposes, or at quarrying operations. Asbestos is also released naturally through weathering and erosion. Once released from the rock, asbestos can become airborne and may stay in the air for long periods of time. Asbestos is hazardous and can cause lung disease and cancer dependent upon the level of exposure. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem.

The Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be required to submit a Dust Control Plan under the SJVAPCD’s Rule 8021.

2.6.10 *Greenhouse Gas Emissions*

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are:

- **Carbon Dioxide (CO_2):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement, asphalt paving, truck trips). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N_2O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").

Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is occurring. Every nation emits GHGs; therefore, global cooperation will be required to reduce the rate of GHG emissions.

3.0 Air-Quality Impacts

3.1 Methodology

The impact assessment for air quality focuses on potential effects the Project might have on air quality within the Merced County region. The SJVAPCD has established thresholds of significance for determining environmental significance. These thresholds separate a project's short-term emissions from its long-term emissions. The short-term emissions are mainly related to the construction phase of a project, which are recognized to be short in duration. The long-term emissions are primarily related to activities that occur as a result of Project operations. Impacts will be evaluated both on the basis of CEQA Appendix G criteria and SJVAPCD significance criteria. The impacts to be evaluated will be those involving construction emissions of criteria pollutants. The SJVAPCD has established thresholds for certain pollutants shown in Table 6.

Table 6
SJVAPCD Air Quality Thresholds of Significance

Project Type	Ozone Precursor Emissions (tons/year)					
	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$
Construction Emissions	100	10	10	27	15	15
Operational Emissions (Permitted Equipment and Activities)	100	10	10	27	15	15
Operational Emissions (Non-Permitted Equipment and Activities)	100	10	10	27	15	15

Source: SJVAPCD 2020

3.1.1 *CalEEMod*

CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

The model is an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable such as CEQA and NEPA documents, pre-project planning, compliance with local air quality rules and regulations, etc.

3.1.2 *California Line Source Dispersion Model (CALINE)*

CALINE is a dispersion model for predicting air pollutant levels near highways and arterial streets. It is the standard modeling program used by Caltrans to assess carbon monoxide impacts near transportation facilities. The model is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion from automobiles over the roadway.

3.1.3 *Emission Factor Model (EMFAC)*

EMFAC is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources. Recent versions of this model incorporate regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day. Emission factors from EMFAC are expressed in units of grams per vehicle miles traveled (g/VMT) or grams per idle-hour (g/idle-hr), depending on the emission process. EMFAC also generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of temperature, relative humidity, and vehicle speed.

3.2 Short-Term Impacts

Short-term impacts are mainly related to the construction phase of a project and are recognized to be short in duration. Construction air quality impacts are generally attributable to dust and exhaust pollutants generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth moving activities do comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate significant dust emissions. Further, dust generation is dependent on soil type and soil moisture. Exhaust pollutants are the non-useable gaseous waste products produced during the combustion process. Engine exhaust contains CO, HC, and NOx pollutants which are harmful to the environment.

Adverse effects of construction activities cause increased dust-fall and locally elevated levels of total suspended particulate. Dust-fall can be a nuisance to neighboring properties or previously completed developments surrounding or within the Project area and may require frequent washing during the construction period.

PM10 emissions can result from construction activities of the project. The SJVAPCD requires implementation of effective and comprehensive control measures, rather than a detailed quantification of emissions. The SJVAPCD has determined that compliance with Regulation VIII for all sites and other control measures will constitute sufficient mitigation to reduce PM10 impacts to a level considered less-than significant.

Ozone precursor emissions are also an impact of construction activities and can be quantified through calculations. Numerous variables factored into estimating total construction emission include: level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and amount of materials to be transported onsite or offsite. Additional exhaust emissions would be associated with the transport of workers and materials. Because the specific mix of construction equipment is not presently known for this project, construction emissions from equipment were estimated using the CalEEMod Model.

Table 7 shows the CalEEMod-estimated construction emissions that would be generated from development of the Project. Results of the analysis show that emissions generated from construction of the Project will not exceed the SJVAPCD emission thresholds. Detailed results are included in Appendix A of this report.

Table 7
Project Construction Emissions (tons/year)

Summary Report	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$	CO2e
Project Site Construction Emissions Per Year	3.60	4.27	0.73	0.01	0.47	0.32	557.57
SJVAPCD Level of Significance	100	10	10	27	15	15	None
Does the Project Exceed Standard?	No	No	No	No	No	No	No

Source: CalEEMod Emissions Model

3.3 Long-Term Emissions

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the Project and stationary sources such as the impact crusher concrete reclaimer.

3.3.1 *Localized Operational Emissions – Ozone/Particulate Matter*

The Merced County area is nonattainment for Federal and State air quality standards for ozone, attainment of Federal standards for PM10 and nonattainment for State standards, and nonattainment for Federal and State standards for PM2.5. Nitrogen oxides and reactive organic gases are regulated as ozone precursors. Significance criteria have been established for criteria pollutant emissions as documented in Section 3.1. Operational emissions have been estimated for the Project using EMFAC 2017. Detailed results are included in Appendix B of this report.

Results of the EMFAC 2017 analysis are shown in Table 8. Results indicate that the annual operational emissions from the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants.

Table 8
Project Operational Emissions (tons/year)

Summary Report	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$	CO2e
Project Operational Emissions Per Year	1.33	2.45	0.24	0.01	0.08	0.08	465.62
SJVAPCD Level of Significance	100	10	10	27	15	15	None
Does the Project Exceed Standard?	No	No	No	No	No	No	No

Source: CalEEMod Emissions Model

3.3.2 *Localized Operational Emissions*

✓ **Carbon Monoxide**

The SJVAPCD is currently in unclassified/attainment for Federal standards and attainment for State standards for CO. An analysis of localized CO concentrations is warranted to ensure that standards are maintained. Also, an analysis is required to ensure that localized concentrations don't reach potentially unhealthful levels that could affect sensitive receptors (residents, school children, hospital patients, the elderly, etc.).

Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the project will reduce the LOS on one or more streets to E or F or if the project will worsen an existing LOS F. The traffic study prepared for the Project indicates that the intersection of Shaffer Road and Atwater Boulevard will operate at unacceptable levels of service despite recommended improvements.

To analyze the Cumulative Plus Project "worst case" CO concentrations at study roadway segments, the analysis methodology considered the highest annual maximum CO concentration reported in 2013, using 1.45 PPM as an estimate of the background concentration for the 8-hour standard and 2.1 PPM for the 1-hour standard (source: CARB annual publications). Other modeling assumptions include a wind speed of .5 m/s, flat topography, 1,000-meter mixing height, and a 5-degree wind deviation.

Traffic forecasts for the Cumulative Plus Project conditions were used in the CALINE analysis to determine CO concentrations under worst case conditions. Results of the CALINE analysis are shown in Table 9. Detailed CALINE analysis worksheets are included in Appendix C of this report. Results of the Analysis show that the intersection of Shaffer Road and Atwater Boulevard is not expected to generate CO concentrations that would exceed the Federal or State 1-hour and 8-hour standards.

Table 9
Cumulative Plus Project
Local Roadway Air Quality Segment Analysis
(1 Hour and 8 Hour CO Concentration – PPM)

Air Quality Standard	Cumulative Year Plus Project	
	Shaffer Road / Atwater Boulevard	
	1 hr	8 hr
	4.9	2.2
Federal	35.0	9.0
Exceedance? (Y/N)	N	N
State	20.0	9.0
Exceedance? (Y/N)	N	N

✓ **Toxic Air Contaminants (TAC)**

The SJVAPCD's Guidance Document, Guidance for Assessing and Mitigating Air Quality Impacts – 2015, identifies the need for projects to analyze the potential for adverse air quality impacts to sensitive receptors. Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the proposed Project is a Type A Project in that it may potentially place toxic sources in the vicinity of sensitive receptors.

As stated previously, the Project proposes to construct and operate a concrete batch plant facility, which will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots. The principal sources or processes that have the potential to emit various TACs are as follows:

- Concrete Recycling
    - Material Transport
    - Tertiary Crushing
    - Conveyor Transfer point
    - Recycled Base Pile

- Concrete Batch Plant
    - Material Transport
    - Cement unloading to storage silo
    - Mixer loading
    - Aggregate Stock Pile
- Miscellaneous
    - Pickup and delivery of finished product
    - Onsite equipment usage
    - Truck delivery of raw material

Cancer and non-cancer health risks are related to the exposure concentration, for example in grams/cubic meter, of various toxic air contaminants that will be generated on the Project site. Exposure occurs primarily via inhalation and to a smaller extent via ingestion, dermal exposure, etc.

The ambient concentration of various TACs at a given location depends on its emission rate, distance from the emission source, local wind speed and direction and local topography, land-use, etc. An air dispersion model that incorporates these variables and parameters was used to calculate the concentration of TACs in the vicinity of the Project. A Health Risk Assessment (HRA) was prepared for the Project and is included in Appendix D.

Results of the HRA indicated that the maximum predicted cancer risk, chronic health hazard, and acute health hazard for off-site workplaces are below the significance threshold of 10 in one million for cancer risks and 1.0 for non-cancer health risks. Therefore, the Projects health risk impacts are considered less than significant.

✓ **Odors**

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SJVAPCD. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

- Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and

- Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. The proposed Concrete Batch Plant is not listed as one of the facilities shown in Table 5. As a result, the Project is not anticipated to generate offensive odors.

✓ **Naturally Occurring Asbestos (NOA)**

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Construction of the Project may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. Compliance with Rule 8021 would limit fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities associated with the Project.

The Dust Control Plan may include the following measures:

- Water wetting of road surfaces
- Rinse vehicles and equipment
- Wet loads of excavated material, and

- Cover loads of excavated material

✓ **Green House Gas Emissions**

CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the MCAG, CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005. MCAG's 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) projects that the Merced County region would achieve the prescribed emissions targets.

In 2009, the SJVAPCD adopted the following guidance documents applicable to projects within the San Joaquin Valley:

- Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009), and
- District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009).

This guidance and policy are the reference documents referenced in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). Consistent with the District Guidance and District Policy above, SJVAPCD (2015) acknowledges the current absence of numerical thresholds, and recommends a tiered approach to establish the significance of the GHG impacts on the environment:

i. If a project complies with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, then the project would be determined to have a less than significant individual and cumulative impact for GHG emissions;
ii. If a project does not comply with an approved GHG emission reduction plan or mitigation program, then it would be required to implement Best Performance Standards (BPS); and
iii. If a project is not implementing BPS, then it should demonstrate that its GHG emissions would be reduced or mitigated by at least 29 percent compared to Business as Usual (BAU).

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG thresholds may be used to determine impacts. On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD guidance identifies a threshold of 10,000 MTCO2eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the California Public Utilities Commission, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015). Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as Merced County. Though the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 96% less than the threshold identified by the SCAQMD.

Table 10
Project Operational Greenhouse Gas Emissions

Summary Report	CO_2e
Project Operational Emissions Per Year	356.59 MT/yr

Source: CalEEMod Emissions Model

3.3.3 *Indirect Source Review*

The proposed Project is subject to the SJVAPCD's ISR program, which is also known as Rule 9510. Rule 9510 and the Administrative ISR Fee Rule (Rule 3180) are the result of state requirements outlined in the California Health and Safety Code, Section 40604 and the State Implementation Plan (SIP). The purpose of the SJVAPCD's ISR program is to reduce emissions of NOx and PM10 from new projects. In general, new development contributes to the air-pollution problem in the Valley by increasing the number of vehicles and vehicle miles traveled.

Utilizing the ISR Fee Estimator calculator available on the SJVAPCD website, it was determined that the Project's total cost for emission reductions is $73,603.92. The ISR Fee Estimator worksheets are included in Appendix E.

4.0 Impact Determinations and Recommended Mitigation

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impacts on the environment. The criteria used to determine the significance of an air quality or greenhouse gas impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, air quality or greenhouse gas impacts resulting from the Project are considered significant if the Project would result in:

Air Quality

a) Conflict with or obstruct implementation of the applicable air quality plan?
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
c) Expose sensitive receptors to substantial pollutant concentrations?
d) Result in other emissions such as those leading to odors adversely affecting a substantial number of people?

Greenhouse Gas Emissions

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

4.1 Air Quality

4.1.1 *Conflict with or obstruct implementation of the applicable air quality plan*

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. MCAG uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then VMT, which are then provided to SJVAPCD to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the City of Atwater's General Plan, which was adopted July 24, 2000. The Project is consistent with the currently adopted General Plan for the City of Atwater and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

4.1.2 *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard*

Merced County is nonattainment for Ozone (1 hour and 8 hour) and PM10 (State standards) and PM2.5. The SJVAPCD has prepared the 2016 and 2013 Ozone Plan, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Inconsistency with any of the plans would be considered a cumulatively adverse air quality impact. As discussed in Section 4.1.1, the Project is consistent with the currently adopted General Plan for the City of Atwater and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the 2016 and 2013 Ozone Plan, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan.

Results of the CALINE analysis (Section 3.3.2) show that the intersection of Shaffer Road and Atwater Boulevard is not expected to generate CO concentrations that would exceed the Federal or State 1-hour and 8-hour standards. Further, as indicated in Section 3.3.2, the Project would not create objectionable odors affecting a substantial number of people. The Project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Therefore, no mitigation is needed.

4.1.3 *Expose sensitive receptors to substantial pollutant concentrations*

Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the proposed Project is a Type A Project in that it may potentially place toxic sources in the vicinity of sensitive receptors.

the Project proposes to construct and operate a concrete batch plant facility, which will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots. Results of the HRA indicated that the maximum predicted cancer risk, chronic health hazard, and acute health hazard for off-site work places are below the significance threshold of 10 in one million for cancer risks and 1.0 for non-cancer health risks. Therefore, the Projects health risk impacts are considered less than significant, and no mitigation is needed.

Short-Term Impacts

The annual emissions from the construction phase of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 8. The construction emissions are therefore considered less than significant with the implementation of the SJVAPCD applicable Regulation VIII control measures, which are provided below.

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*
7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

Naturally Occurring Asbestos (NOA)

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the Project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

- ✓ Water wetting of road surfaces
- ✓ Rinse vehicles and equipment
- ✓ Wet loads of excavated material, and
- ✓ Cover loads of excavated material

Long-Term Impacts

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the project site. Emissions from long-term operations generally represent a project's most substantial air quality impact. Table 8 summarizes the Project's operational impacts by pollutant. Results indicate that the annual operational emissions from the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants. Therefore, no mitigation is needed.

4.1.4 *Result in other emissions such as those leading to odors adversely affecting a substantial number of people*

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

- ✓ Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and

- ✓ Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. The proposed Concrete Batch Plant is not listed as one of the facilities shown in Table 5. As a result, the Project is not anticipated to generate offensive odors. Therefore, no mitigation is needed.

4.2 Greenhouse Gas Emissions

4.2.1 *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment*

In 2009, the SJVAPCD adopted the following guidance documents applicable to projects within the San Joaquin Valley:

- Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009), and
- District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009).

This guidance and policy are the reference documents referenced in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). Consistent with the District Guidance and District Policy above, SJVAPCD (2015) acknowledges the current absence of numerical thresholds and recommends a tiered approach to establish the significance of the GHG impacts on the environment.

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG thresholds may be used to determine impacts. On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD guidance identifies a threshold of 10,000 MTCO2eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the California Public Utilities Commission, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015). Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as Merced County. Though the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 96% less than the threshold identified by the SCAQMD.

CARB's California GHG Emissions Inventory provides estimates of anthropogenic GHG emissions within California, as well as emissions associated with imported electricity; natural sources are not included in the inventory. California's GHG emissions for 2017 totaled approximately 424.1 MMTCO2eq. The proposed Project's GHG emissions represents 0.00008% of the total GHG emissions for the state of California when compared to year 2017 emissions data.

Based on the assessment above, the Project will not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, any impacts would be less than significant.

4.2.2 *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases*

As noted previously, California passed the California Global Warming Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. Under AB 32, CARB must adopt regulations by January 1, 2011 to achieve reductions in GHGs to meet the 1990 emission cap by 2020. On December 11, 2008, CARB adopted its initial Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan.

SB 375 requires MPOs to adopt a SCS or APS that will prescribe land use allocation in that MPO's regional transportation plan. CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the MCAG region, CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005. MCAG's 2018 RTP/SCS, which was adopted in August 2018, projects that the Merced County region would achieve the prescribed emissions targets.

Executive Order B-30-15 establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires MPO's to implement measures that will achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. MCAG uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then VMT, which are then provided to SJVAPCD to estimate future emissions in the AQPs. The applicable General Plan for the project is the City of Atwater General Plan, which was adopted in July of 2000.

The Project is consistent with the currently adopted General Plan for the City of Atwater and the adopted 2018 RTP/SCS and is therefore consistent with the population growth and VMT applied in those plan documents. Therefore, the Project is consistent with the growth assumptions used in the applicable AQP. It should also be noted that yearly GHG emissions generated by the Project (Table 10) are approximately 96% less than the threshold identified by the SCAQMD (see the discussion for Impact 4.2.1 above).

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit. Below is a list of applicable strategies in the Scoping Plan and the Project's consistency with those strategies.

- ✓ California Light-Duty Vehicle GHG Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs for long-term climate change goals.

- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to light-duty vehicles that would access the site. The Project would not conflict or obstruct this reduction measure.

✓ Energy Efficiency – Pursuit of comparable investment in energy efficiency from all retail providers of electricity in California. Maximize energy efficiency building and appliance standards.

- The Project is consistent with this reduction measure. Though this measure applies to the State to increase its energy standards, the Project would comply with this measure through existing regulation. The Project would not conflict or obstruct this reduction measure.

✓ Low Carbon Fuel – Development and adoption of the low carbon fuel standard.

- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to the fuel used by vehicles that would access the site. The Project would not conflict or obstruct this reduction measure.

Based on the assessment above, the Project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The Project further the achievement of Merced County's greenhouse gas reduction goals. Therefore, any impacts would be less than significant.

APPENDIX A

CalEEMod Emissions Worksheets

Jim Brisco Enterprises, Inc.

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	41.00	1000sqft	10.76	41,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Site Information

Construction Phase -

Vehicle Trips - Project Information

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	0.94	10.76
tblProjectCharacteristics	OperationalYear	2018	2022
tblVehicleTrips	ST_TR	1.50	1.83
tblVehicleTrips	SU_TR	1.50	0.50
tblVehicleTrips	WD_TR	1.50	1.83

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2274	2.2431	1.6498	2.9800e-003	0.2333	0.1130	0.3463	0.1071	0.1052	0.2123	0.0000	259.9676	259.9676	0.0692	0.0000	261.6976
2021	0.5062	2.0254	1.9472	3.3900e-003	0.0202	0.1068	0.1270	5.4700e-003	0.1004	0.1058	0.0000	294.2064	294.2064	0.0665	0.0000	295.8690
Total	**0.7336**	**4.2685**	**3.5970**	**6.3700e-003**	**0.2535**	**0.2198**	**0.4733**	**0.1125**	**0.2055**	**0.3181**	**0.0000**	**554.1740**	**554.1740**	**0.1357**	**0.0000**	**557.5667**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2274	2.2431	1.6498	2.9800e-003	0.2333	0.1130	0.3463	0.1071	0.1052	0.2123	0.0000	259.9673	259.9673	0.0692	0.0000	261.6973
2021	0.5062	2.0254	1.9472	3.3900e-003	0.0202	0.1068	0.1270	5.4700e-003	0.1004	0.1058	0.0000	294.2061	294.2061	0.0665	0.0000	295.8687
Total	**0.7336**	**4.2685**	**3.5970**	**6.3700e-003**	**0.2535**	**0.2198**	**0.4733**	**0.1125**	**0.2055**	**0.3181**	**0.0000**	**554.1734**	**554.1734**	**0.1357**	**0.0000**	**557.5661**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1887	0.0000	3.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Energy	4.6300e-003	0.0421	0.0354	2.5000e-004		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003	0.0000	153.0639	153.0639	5.7300e-003	1.8400e-003	153.7564
Mobile	0.0274	0.3406	0.2720	1.4000e-003	0.0752	1.2400e-003	0.0764	0.0203	1.1700e-003	0.0214	0.0000	130.4970	130.4970	0.0115	0.0000	130.7854
Waste						0.0000	0.0000		0.0000	0.0000	10.3201	0.0000	10.3201	0.6099	0.0000	25.5675
Water						0.0000	0.0000		0.0000	0.0000	3.0080	14.9246	17.9326	0.3096	7.4300e-003	27.8886
Total	**0.2207**	**0.3827**	**0.3077**	**1.6500e-003**	**0.0752**	**4.4400e-003**	**0.0796**	**0.0203**	**4.3700e-003**	**0.0246**	**13.3280**	**298.4863**	**311.8143**	**0.9368**	**9.2700e-003**	**337.9987**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1887	0.0000	3.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Energy	4.6300e-003	0.0421	0.0354	2.5000e-004		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003	0.0000	153.0639	153.0639	5.7300e-003	1.8400e-003	153.7564
Mobile	0.0274	0.3406	0.2720	1.4000e-003	0.0752	1.2400e-003	0.0764	0.0203	1.1700e-003	0.0214	0.0000	130.4970	130.4970	0.0115	0.0000	130.7854
Waste						0.0000	0.0000		0.0000	0.0000	10.3201	0.0000	10.3201	0.6099	0.0000	25.5675
Water						0.0000	0.0000		0.0000	0.0000	3.0080	14.9246	17.9326	0.3096	7.4300e-003	27.8886
Total	**0.2207**	**0.3827**	**0.3077**	**1.6500e-003**	**0.0752**	**4.4400e-003**	**0.0796**	**0.0203**	**4.3700e-003**	**0.0246**	**13.3280**	**298.4863**	**311.8143**	**0.9368**	**9.2700e-003**	**337.9987**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2020	6/26/2020	5	20	
2	Site Preparation	Site Preparation	6/27/2020	7/10/2020	5	10	
3	Grading	Grading	7/11/2020	8/21/2020	5	30	
4	Building Construction	Building Construction	8/22/2020	10/15/2021	5	300	
5	Paving	Paving	10/16/2021	11/12/2021	5	20	
6	Architectural Coating	Architectural Coating	11/13/2021	12/10/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 61,500; Non-Residential Outdoor: 20,500; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	7.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2386
Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**		**0.0166**	**0.0166**		**0.0154**	**0.0154**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2386**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0000e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0884	1.0884	4.0000e-005	0.0000	1.0893
Total	**6.8000e-004**	**4.8000e-004**	**5.0000e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0884**	**1.0884**	**4.0000e-005**	**0.0000**	**1.0893**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2385
Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**		**0.0166**	**0.0166**		**0.0154**	**0.0154**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2385**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0000e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0884	1.0884	4.0000e-005	0.0000	1.0893
Total	**6.8000e-004**	**4.8000e-004**	**5.0000e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0884**	**1.0884**	**4.0000e-005**	**0.0000**	**1.0893**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0903**	**0.0110**	**0.1013**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	2.9000e-004	3.0000e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6530	0.6530	2.0000e-005	0.0000	0.6536
Total	**4.1000e-004**	**2.9000e-004**	**3.0000e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6530**	**0.6530**	**2.0000e-005**	**0.0000**	**0.6536**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0903**	**0.0110**	**0.1013**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	2.9000e-004	3.0000e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6530	0.6530	2.0000e-005	0.0000	0.6536
Total	**4.1000e-004**	**2.9000e-004**	**3.0000e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6530**	**0.6530**	**2.0000e-005**	**0.0000**	**0.6536**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0668	0.7530	0.4794	9.3000e-004		0.0326	0.0326		0.0300	0.0300	0.0000	81.7264	81.7264	0.0264	0.0000	82.3872
Total	**0.0668**	**0.7530**	**0.4794**	**9.3000e-004**	**0.1301**	**0.0326**	**0.1627**	**0.0540**	**0.0300**	**0.0840**	**0.0000**	**81.7264**	**81.7264**	**0.0264**	**0.0000**	**82.3872**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3700e-003	9.7000e-004	0.0100	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1768	2.1768	7.0000e-005	0.0000	2.1786
Total	**1.3700e-003**	**9.7000e-004**	**0.0100**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1768**	**2.1768**	**7.0000e-005**	**0.0000**	**2.1786**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0668	0.7530	0.4794	9.3000e-004		0.0326	0.0326		0.0300	0.0300	0.0000	81.7263	81.7263	0.0264	0.0000	82.3871
Total	**0.0668**	**0.7530**	**0.4794**	**9.3000e-004**	**0.1301**	**0.0326**	**0.1627**	**0.0540**	**0.0300**	**0.0840**	**0.0000**	**81.7263**	**81.7263**	**0.0264**	**0.0000**	**82.3871**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3700e-003	9.7000e-004	0.0100	2.0000e-005	2.3900e-003	2.0000e-005	2.4100e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1768	2.1768	7.0000e-005	0.0000	2.1786
Total	**1.3700e-003**	**9.7000e-004**	**0.0100**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1768**	**2.1768**	**7.0000e-005**	**0.0000**	**2.1786**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0996	0.9017	0.7919	1.2600e-003		0.0525	0.0525		0.0494	0.0494	0.0000	108.8567	108.8567	0.0266	0.0000	109.5206
Total	**0.0996**	**0.9017**	**0.7919**	**1.2600e-003**		**0.0525**	**0.0525**		**0.0494**	**0.0494**	**0.0000**	**108.8567**	**108.8567**	**0.0266**	**0.0000**	**109.5206**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3900e-003	0.0400	8.7400e-003	9.0000e-005	2.1800e-003	2.2000e-004	2.4000e-003	6.3000e-004	2.1000e-004	8.4000e-004	0.0000	8.9547	8.9547	8.9000e-004	0.0000	8.9769
Worker	3.6400e-003	2.5800e-003	0.0266	6.0000e-005	6.3700e-003	5.0000e-005	6.4200e-003	1.6900e-003	5.0000e-005	1.7400e-003	0.0000	5.7976	5.7976	1.9000e-004	0.0000	5.8023
Total	**5.0300e-003**	**0.0426**	**0.0354**	**1.5000e-004**	**8.5500e-003**	**2.7000e-004**	**8.8200e-003**	**2.3200e-003**	**2.6000e-004**	**2.5800e-003**	**0.0000**	**14.7523**	**14.7523**	**1.0800e-003**	**0.0000**	**14.7792**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0996	0.9017	0.7919	1.2600e-003		0.0525	0.0525		0.0494	0.0494	0.0000	108.8566	108.8566	0.0266	0.0000	109.5205
Total	**0.0996**	**0.9017**	**0.7919**	**1.2600e-003**		**0.0525**	**0.0525**		**0.0494**	**0.0494**	**0.0000**	**108.8566**	**108.8566**	**0.0266**	**0.0000**	**109.5205**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3900e-003	0.0400	8.7400e-003	9.0000e-005	2.1800e-003	2.2000e-004	2.4000e-003	6.3000e-004	2.1000e-004	8.4000e-004	0.0000	8.9547	8.9547	8.9000e-004	0.0000	8.9769
Worker	3.6400e-003	2.5800e-003	0.0266	6.0000e-005	6.3700e-003	5.0000e-005	6.4200e-003	1.6900e-003	5.0000e-005	1.7400e-003	0.0000	5.7976	5.7976	1.9000e-004	0.0000	5.8023
Total	**5.0300e-003**	**0.0426**	**0.0354**	**1.5000e-004**	**8.5500e-003**	**2.7000e-004**	**8.8200e-003**	**2.3200e-003**	**2.6000e-004**	**2.5800e-003**	**0.0000**	**14.7523**	**14.7523**	**1.0800e-003**	**0.0000**	**14.7792**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1958	1.7955	1.7073	2.7700e-003		0.0987	0.0987		0.0928	0.0928	0.0000	238.5864	238.5864	0.0576	0.0000	240.0254
Total	**0.1958**	**1.7955**	**1.7073**	**2.7700e-003**		**0.0987**	**0.0987**		**0.0928**	**0.0928**	**0.0000**	**238.5864**	**238.5864**	**0.0576**	**0.0000**	**240.0254**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5300e-003	0.0799	0.0167	2.0000e-004	4.7700e-003	2.5000e-004	5.0200e-003	1.3800e-003	2.4000e-004	1.6100e-003	0.0000	19.4395	19.4395	1.8800e-003	0.0000	19.4865
Worker	7.3300e-003	5.0200e-003	0.0532	1.4000e-004	0.0140	1.1000e-004	0.0141	3.7100e-003	1.0000e-004	3.8100e-003	0.0000	12.3357	12.3357	3.8000e-004	0.0000	12.3451
Total	**9.8600e-003**	**0.0849**	**0.0698**	**3.4000e-004**	**0.0187**	**3.6000e-004**	**0.0191**	**5.0900e-003**	**3.4000e-004**	**5.4200e-003**	**0.0000**	**31.7752**	**31.7752**	**2.2600e-003**	**0.0000**	**31.8316**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1958	1.7955	1.7072	2.7700e-003		0.0987	0.0987		0.0928	0.0928	0.0000	238.5861	238.5861	0.0576	0.0000	240.0251
Total	**0.1958**	**1.7955**	**1.7072**	**2.7700e-003**		**0.0987**	**0.0987**		**0.0928**	**0.0928**	**0.0000**	**238.5861**	**238.5861**	**0.0576**	**0.0000**	**240.0251**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5300e-003	0.0799	0.0167	2.0000e-004	4.7700e-003	2.5000e-004	5.0200e-003	1.3800e-003	2.4000e-004	1.6100e-003	0.0000	19.4395	19.4395	1.8800e-003	0.0000	19.4865
Worker	7.3300e-003	5.0200e-003	0.0532	1.4000e-004	0.0140	1.1000e-004	0.0141	3.7100e-003	1.0000e-004	3.8100e-003	0.0000	12.3357	12.3357	3.8000e-004	0.0000	12.3451
Total	**9.8600e-003**	**0.0849**	**0.0698**	**3.4000e-004**	**0.0187**	**3.6000e-004**	**0.0191**	**5.0900e-003**	**3.4000e-004**	**5.4200e-003**	**0.0000**	**31.7752**	**31.7752**	**2.2600e-003**	**0.0000**	**31.8316**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	4.3000e-004	4.5500e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0567	1.0567	3.0000e-005	0.0000	1.0576
Total	**6.3000e-004**	**4.3000e-004**	**4.5500e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0567**	**1.0567**	**3.0000e-005**	**0.0000**	**1.0576**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	4.3000e-004	4.5500e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0567	1.0567	3.0000e-005	0.0000	1.0576
Total	**6.3000e-004**	**4.3000e-004**	**4.5500e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0567**	**1.0567**	**3.0000e-005**	**0.0000**	**1.0576**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.2872**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.1000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2114	0.2114	1.0000e-005	0.0000	0.2115
Total	**1.3000e-004**	**9.0000e-005**	**9.1000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2114**	**0.2114**	**1.0000e-005**	**0.0000**	**0.2115**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.2872**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.1000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2114	0.2114	1.0000e-005	0.0000	0.2115
Total	**1.3000e-004**	**9.0000e-005**	**9.1000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2114**	**0.2114**	**1.0000e-005**	**0.0000**	**0.2115**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0274	0.3406	0.2720	1.4000e-003	0.0752	1.2400e-003	0.0764	0.0203	1.1700e-003	0.0214	0.0000	130.4970	130.4970	0.0115	0.0000	130.7854
Unmitigated	0.0274	0.3406	0.2720	1.4000e-003	0.0752	1.2400e-003	0.0764	0.0203	1.1700e-003	0.0214	0.0000	130.4970	130.4970	0.0115	0.0000	130.7854

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	75.03	75.03	20.50	196,308	196,308
Total	75.03	75.03	20.50	196,308	196,308

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.498498	0.030090	0.155509	0.109662	0.018147	0.004601	0.015536	0.154991	0.002397	0.002156	0.006230	0.001554	0.000628

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	107.2271	107.2271	4.8500e-003	1.0000e-003	107.6472
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	107.2271	107.2271	4.8500e-003	1.0000e-003	107.6472
NaturalGas Mitigated	4.6300e-003	0.0421	0.0354	2.5000e-004		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003	0.0000	45.8368	45.8368	8.8000e-004	8.4000e-004	46.1092
NaturalGas Unmitigated	4.6300e-003	0.0421	0.0354	2.5000e-004		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003	0.0000	45.8368	45.8368	8.8000e-004	8.4000e-004	46.1092

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	858950	4.6300e-003	0.0421	0.0354	2.5000e-004		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003	0.0000	45.8368	45.8368	8.8000e-004	8.4000e-004	46.1092
Total		**4.6300e-003**	**0.0421**	**0.0354**	**2.5000e-004**		**3.2000e-003**	**3.2000e-003**		**3.2000e-003**	**3.2000e-003**	**0.0000**	**45.8368**	**45.8368**	**8.8000e-004**	**8.4000e-004**	**46.1092**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	858950	4.6300e-003	0.0421	0.0354	2.5000e-004		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003	0.0000	45.8368	45.8368	8.8000e-004	8.4000e-004	46.1092
Total		**4.6300e-003**	**0.0421**	**0.0354**	**2.5000e-004**		**3.2000e-003**	**3.2000e-003**		**3.2000e-003**	**3.2000e-003**	**0.0000**	**45.8368**	**45.8368**	**8.8000e-004**	**8.4000e-004**	**46.1092**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	368590	107.2271	4.8500e-003	1.0000e-003	107.6472
Total		**107.2271**	**4.8500e-003**	**1.0000e-003**	**107.6472**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	368590	107.2271	4.8500e-003	1.0000e-003	107.6472
Total		**107.2271**	**4.8500e-003**	**1.0000e-003**	**107.6472**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1887	0.0000	3.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Unmitigated	0.1887	0.0000	3.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0285					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1601					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	3.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Total	**0.1887**	**0.0000**	**3.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.3000e-004**	**7.3000e-004**	**0.0000**	**0.0000**	**7.8000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Consumer Products	0.1601					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	3.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Architectural Coating	0.0285					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1887**	**0.0000**	**3.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.3000e-004**	**7.3000e-004**	**0.0000**	**0.0000**	**7.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	17.9326	0.3096	7.4300e-003	27.8886
Unmitigated	17.9326	0.3096	7.4300e-003	27.8886

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	9.48125 / 0	17.9326	0.3096	7.4300e-003	27.8886
Total		**17.9326**	**0.3096**	**7.4300e-003**	**27.8886**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	9.48125 / 0	17.9326	0.3096	7.4300e-003	27.8886
Total		**17.9326**	**0.3096**	**7.4300e-003**	**27.8886**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.3201	0.6099	0.0000	25.5675
Unmitigated	10.3201	0.6099	0.0000	25.5675

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	50.84	10.3201	0.6099	0.0000	25.5675
Total		**10.3201**	**0.6099**	**0.0000**	**25.5675**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	50.84	10.3201	0.6099	0.0000	25.5675
Total		**10.3201**	**0.6099**	**0.0000**	**25.5675**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

APPENDIX B

EMFAC 2017 Worksheets

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	ROG_RUNE	ROG_IDLEX	ROG_STREX	ROG_HOTS
MERCED	2021	T7 single cc	Aggregated	Aggregated	DSL	596.8317	41965.14	2698.253	0.426037	1.578025	0	0

. and DIURN

ROG_RUNL	ROG_RESTI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_RESTI	TOG_DIURI	CO_RUNEX	CO_IDLEX	CO_STREX
0	0	0	0.48501	1.796461	0	0	0	0	0	1.137284	20.04249	0

NOx_RUNE	NOx_IDLEX	NOx_STREX	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM
6.5165	22.67283	3.516605	1859.783	3917.792	0	0.019788	0.073295	0	0.115259	0.032354	0	0.036

PM10_PMI	PM2_5_RU	PM2_5_IDI	PM2_5_STI	PM2_5_PN	PM2_5_PN	SOx_RUNE:	SOx_IDLEX	SOx_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX
0.06174	0.110273	0.030955	0	0.009	0.02646	0.01757	0.037013	0	0.292332	0.615822	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	VMT	ROG_RUNE	TOG_RUNE	CO_RUNEX	NOx_RUNE	SOx_RUNE	CO2_RUNE
MERCED	2021	T7 single c	Aggregatec	10	DSL	3504.199	1.280288	1.45751	2.78909	12.66441	0.029112	3081.442

CH4_RUNE	PM10_RUN	PM2_5_RU	N2O_RUNEX
0.059466	0.179757	0.171981	0.48436

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	VMT	ROG_RUNI	TOG_RUNI	CO_RUNEX	NOx_RUNI	SOx_RUNE	CO2_RUNE	CH4_RUNE	PM10_RUI	PM2_5_RU	N2O_RUNEX
MERCED	2021	All Other B	Aggregatec	10	DSL	187.4601	1.215526	1.383784	1.965226	7.962873	0.019438	2057.46	0.056458	0.27321	0.261392	0.323404
MERCED	2021	LDA	Aggregatec	10	DSL	274.6394	0.154842	0.176277	2.581363	0.171851	0.004175	441.6344	0.007192	0.022522	0.021548	0.069419
MERCED	2021	LDT1	Aggregatec	10	DSL	1.785284	0.495188	0.563738	2.784231	0.809782	0.008898	941.2522	0.023001	0.308397	0.295055	0.147952
MERCED	2021	LDT2	Aggregatec	10	DSL	41.02449	0.210934	0.240135	1.645316	0.170063	0.005604	592.817	0.009797	0.031107	0.029761	0.093183
MERCED	2021	LHD1	Aggregatec	10	DSL	8288.812	0.578849	0.658981	2.485623	2.812867	0.010116	1070.078	0.026886	0.073229	0.070061	0.168201
MERCED	2021	LHD2	Aggregatec	10	DSL	2559.305	0.570734	0.649742	2.474437	2.272742	0.011235	1188.489	0.026509	0.062789	0.060073	0.186814
MERCED	2021	MDV	Aggregatec	10	DSL	180.2418	0.160327	0.182522	2.827246	0.159584	0.007356	778.1184	0.007447	0.020243	0.019367	0.122309
MERCED	2021	MH	Aggregatec	10	DSL	70.45982	0.903048	1.02806	2.097861	13.51574	0.017892	1892.659	0.041945	0.354474	0.339139	0.2975
MERCED	2021	Motor Coa	Aggregatec	10	DSL	71.40586	1.321196	1.504082	3.009239	11.71906	0.029671	3140.586	0.061366	0.178978	0.171236	0.493656
MERCED	2021	SBUS	Aggregatec	10	DSL	474.5548	0.629993	0.717199	1.039409	15.43218	0.020225	2140.807	0.029262	0.134433	0.128618	0.336505
MERCED	2021	T6 Ag	Aggregatec	10	DSL	7.257662	5.201756	5.921803	6.658009	18.11278	0.021048	2227.9	0.241608	1.400412	1.339831	0.350195
MERCED	2021	T6 CAIRP h	Aggregatec	10	DSL	191.5263	0.216454	0.246417	0.726868	5.054234	0.018124	1918.362	0.010054	0.028387	0.027159	0.30154
MERCED	2021	T6 CAIRP sı	Aggregatec	10	DSL	27.07472	0.370298	0.421556	0.957931	5.436931	0.018765	1986.282	0.017199	0.049828	0.047672	0.312216
MERCED	2021	T6 instate (	Aggregatec	10	DSL	2074.041	1.212775	1.380652	2.131319	9.049293	0.019503	2064.324	0.05633	0.192402	0.184079	0.324483
MERCED	2021	T6 instate (	Aggregatec	10	DSL	3645.564	1.107732	1.261068	2.020816	7.764023	0.019446	2058.372	0.051451	0.168028	0.16076	0.323547
MERCED	2021	T6 instate I	Aggregatec	10	DSL	1664.849	1.39977	1.593532	2.379941	9.105786	0.019576	2072.044	0.065016	0.23777	0.227484	0.325696
MERCED	2021	T6 instate :	Aggregatec	10	DSL	1242.75	1.191613	1.356561	2.138168	8.024955	0.019663	2081.262	0.055347	0.186037	0.177989	0.327145
MERCED	2021	T6 OOS hea	Aggregatec	10	DSL	112.5736	0.157121	0.17887	0.652221	4.855763	0.018092	1914.998	0.007298	0.01538	0.014714	0.301011
MERCED	2021	T6 OOS sm	Aggregatec	10	DSL	16.14569	0.375624	0.42762	0.963668	5.43823	0.018751	1984.808	0.017447	0.051044	0.048836	0.311984
MERCED	2021	T6 Public	Aggregatec	10	DSL	263.0314	0.298517	0.339839	0.637503	10.247	0.019592	2073.763	0.013865	0.071793	0.068687	0.325967
MERCED	2021	T6 utility	Aggregatec	10	DSL	34.49989	0.026324	0.029968	0.39244	3.271431	0.019206	2032.898	0.001223	0.002306	0.002207	0.319543
MERCED	2021	T7 Ag	Aggregatec	10	DSL	10.97702	7.113221	8.09786	11.57982	26.1337	0.03249	3439.012	0.330391	1.50597	1.440822	0.540565
MERCED	2021	T7 CAIRP	Aggregatec	10	DSL	5817.202	0.361093	0.411077	1.827866	11.36456	0.027315	2891.221	0.016772	0.038902	0.037219	0.45446
MERCED	2021	T7 CAIRP c	Aggregatec	10	DSL	1412.518	0.347476	0.395575	1.790921	11.1411	0.027647	2926.338	0.016139	0.036561	0.034979	0.45998
MERCED	2021	T7 NNOOS	Aggregatec	10	DSL	7091.624	0.287525	0.327325	1.573754	9.869896	0.025911	2742.591	0.013355	0.02552	0.024416	0.431097
MERCED	2021	T7 NOOS	Aggregatec	10	DSL	2285.506	0.269887	0.307246	1.711906	11.15732	0.027299	2889.59	0.012536	0.022459	0.021487	0.454203
MERCED	2021	T7 other pc	Aggregatec	10	DSL	440.9896	0.722518	0.822532	2.78934	12.3576	0.029734	3147.271	0.033559	0.03892	0.037236	0.494707
MERCED	2021	T7 POAK	Aggregatec	10	DSL	1696.732	0.882419	1.004567	3.158654	13.08989	0.030211	3197.754	0.040986	0.046375	0.044369	0.502642
MERCED	2021	T7 POLA	Aggregatec	10	DSL	1682.012	0.882411	1.004558	3.15853	13.08843	0.030211	3197.754	0.040986	0.046373	0.044367	0.502642
MERCED	2021	T7 Public	Aggregatec	10	DSL	318.0788	0.583792	0.664603	1.376343	21.35052	0.030181	3194.57	0.027116	0.141816	0.135681	0.502142
MERCED	2021	T7 Single	Aggregatec	10	DSL	546.5855	1.189671	1.354349	2.688142	11.37107	0.029243	3095.323	0.055257	0.16833	0.161048	0.486542
MERCED	2021	T7 single c	Aggregatec	10	DSL	3504.199	1.280288	1.45751	2.78909	12.66441	0.029112	3081.442	0.059466	0.179757	0.171981	0.48436
MERCED	2021	T7 SWCV	Aggregatec	10	DSL	191.362	0.079014	0.089951	0.244131	14.63938	0.064537	6831.163	0.00367	0.019232	0.0184	1.073764
MERCED	2021	T7 tractor	Aggregatec	10	DSL	3919.157	1.052203	1.197853	2.861168	12.58967	0.028341	2999.795	0.048872	0.126267	0.120804	0.471526
MERCED	2021	T7 tractor (	Aggregatec	10	DSL	2890.655	1.283639	1.461325	3.24664	13.63057	0.029261	3097.248	0.059622	0.14697	0.140612	0.486844
MERCED	2021	T7 utility	Aggregatec	10	DSL	25.95205	0.055069	0.062692	0.920969	5.343095	0.030817	3261.876	0.002558	0.004083	0.003906	0.512721
MERCED	2021	UBUS	Aggregatec	10	DSL	155.3134	0.001459	0.104246	0.199867	1.367701	0.019699	2083.778	0.102144	0.005344	0.005112	0.327541

APPENDIX C

CALINE Worksheets

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: BEI Int 1 1HR
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
         U=    .5 M/S             Z0= 100. CM            ALT=    46. (M)
       BRG= WORST CASE            VD=    .0 CM/S
      CLAS=     7 (G)             VS=    .0 CM/S
      MIXH= 1000. M              AMB=  2.1 PPM
     SIGTH=    5. DEGREES       TEMP=  4.4 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. SB In	-2	750	-2	150	AG	723	24.1	.0	10.4
B. SB In	-2	150	-2	0	AG	723	24.1	.0	10.4
C. SB Out	-2	0	-2	-150	AG	745	24.1	.0	10.4
D. SB Out	-2	-150	-2	-750	AG	745	24.1	.0	10.4
E. NB In	2	-750	2	-150	AG	740	24.1	.0	10.4
F. NB In	2	-150	2	0	AG	740	24.1	.0	10.4
G. NB Out	2	0	2	150	AG	846	24.1	.0	10.4
H. NB Out	2	150	2	750	AG	846	24.1	.0	10.4
I. WB In	750	2	150	2	AG	789	24.1	.0	10.4
J. WB In	150	2	0	2	AG	789	24.1	.0	10.4
K. WB Out	0	2	-150	2	AG	474	24.1	.0	10.4
L. WB Out	-150	2	-750	2	AG	474	24.1	.0	10.4
M. EB In	-750	-2	-150	-2	AG	517	24.1	.0	10.4
N. EB In	-150	-2	0	-2	AG	517	24.1	.0	10.4
O. EB Out	0	-2	150	-2	AG	704	24.1	.0	10.4
P. EB Out	150	-2	750	-2	AG	704	24.1	.0	10.4
Q. WB L	150	1	0	0	AG	188	24.1	.0	10.4
R. EB L	0	0	-150	-1	AG	103	24.1	.0	10.4
S. NB L	1	-150	0	0	AG	141	24.1	.0	10.4
T. SB L	0	0	-1	150	AG	297	24.1	.0	10.4

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: BEI Int 1 1HR
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	50	50	1.8
2. Recpt 2	52	52	1.8
3. Recpt 3	53	53	1.8

4. Recpt 4	*	-50	-50	1.8
5. Recpt 5	*	-52	-52	1.8
6. Recpt 6	*	-53	-53	1.8
7. Recpt 7	*	-50	50	1.8
8. Recpt 8	*	-52	52	1.8
9. Recpt 9	*	-53	53	1.8
10. Recpt 10	*	50	-50	1.8
11. Recpt 11	*	52	-52	1.8
12. Recpt 12	*	53	-53	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	189.	4.8	.0	.0	.0	.9	.9	.0	.0	.0
2. Recpt 2	189.	4.8	.0	.0	.0	.8	.9	.0	.0	.0
3. Recpt 3	189.	4.7	.0	.0	.0	.8	.9	.0	.0	.0
4. Recpt 4	81.	4.8	.0	.0	.4	.0	.0	.4	.0	.0
5. Recpt 5	81.	4.7	.0	.0	.4	.0	.0	.4	.0	.0
6. Recpt 6	81.	4.7	.0	.0	.4	.0	.0	.4	.0	.0
7. Recpt 7	99.	4.9	.0	.4	.0	.0	.0	.0	.4	.0
8. Recpt 8	99.	4.9	.0	.4	.0	.0	.0	.0	.4	.0
9. Recpt 9	99.	4.8	.0	.4	.0	.0	.0	.0	.4	.0
10. Recpt 10	351.	4.9	.8	.0	.0	.0	.0	.0	.0	1.0
11. Recpt 11	351.	4.8	.8	.0	.0	.0	.0	.0	.0	1.0
12. Recpt 12	351.	4.8	.8	.0	.0	.0	.0	.0	.0	.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BEI Int 1 1HR
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Recpt 1	.0	.4	.0	.0	.0	.0	.4	.0	.1	.0	.0	.0
2. Recpt 2	.0	.4	.0	.0	.0	.0	.4	.0	.1	.0	.0	.0
3. Recpt 3	.0	.4	.0	.0	.0	.0	.4	.0	.1	.0	.0	.0
4. Recpt 4	.9	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0
5. Recpt 5	.9	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0
6. Recpt 6	.9	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0
7. Recpt 7	.9	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.2
8. Recpt 8	.9	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.2
9. Recpt 9	.9	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.2
10. Recpt 10	.0	.4	.0	.0	.0	.0	.4	.0	.1	.0	.0	.0
11. Recpt 11	.0	.4	.0	.0	.0	.0	.4	.0	.1	.0	.0	.0
12. Recpt 12	.0	.4	.0	.0	.0	.0	.4	.0	.1	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: BEI Int 1 8HR
RUN: (MULTI-RUN)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

VD= .0 CM/S   Z0= 100. CM   ALT= 46. (M)
VS= .0 CM/S

II. METEOROLOGICAL CONDITIONS

RUN	U (M/S)	BRG (DEG)	CLASS	AMB (PPM)	MIXH (M)	SIGTH (DEG)	TEMP (C)
1. Hour 1	.5	0.	7 (G)	1.5	1000.	5.00	4.4
2. Hour 2	.5	0.	7 (G)	1.5	1000.	5.00	4.4
3. Hour 3	.5	0.	7 (G)	1.5	1000.	5.00	4.4
4. Hour 4	.5	0.	7 (G)	1.5	1000.	5.00	4.4
5. Hour 5	.5	0.	7 (G)	1.5	1000.	5.00	4.4
6. Hour 6	.5	0.	7 (G)	1.5	1000.	5.00	4.4
7. Hour 7	.5	0.	7 (G)	1.5	1000.	5.00	4.4
8. Hour 8	.5	0.	7 (G)	1.5	1000.	5.00	4.4

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BEI Int 1 8HR
RUN: (MULTI-RUN)
POLLUTANT: Carbon Monoxide

III. LINK GEOMETRY

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	H (M)	W (M)
A. SB In	-2	750	-2	150	AG	.0	10.4
B. SB In	-2	150	-2	0	AG	.0	10.4
C. SB Out	-2	0	-2	-150	AG	.0	10.4
D. SB Out	-2	-150	-2	-750	AG	.0	10.4
E. NB In	2	-750	2	-150	AG	.0	10.4
F. NB In	2	-150	2	0	AG	.0	10.4
G. NB Out	2	0	2	150	AG	.0	10.4
H. NB Out	2	150	2	750	AG	.0	10.4
I. WB In	750	2	150	2	AG	.0	10.4
J. WB In	150	2	0	2	AG	.0	10.4
K. WB Out	0	2	-150	2	AG	.0	10.4
L. WB Out	-150	2	-750	2	AG	.0	10.4
M. EB In	-750	-2	-150	-2	AG	.0	10.4
N. EB In	-150	-2	0	-2	AG	.0	10.4
O. EB Out	0	-2	150	-2	AG	.0	10.4
P. EB Out	150	-2	750	-2	AG	.0	10.4
Q. WB L	150	1	0	0	AG	.0	10.4
R. EB L	0	0	-150	-1	AG	.0	10.4

S. NB L	*	1	-150	0	0 *	AG	.0	10.4
T. SB L	*	0	0	-1	150 *	AG	.0	10.4

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BEI Int 1 8HR
RUN: (MULTI-RUN)
POLLUTANT: Carbon Monoxide

IV. EMISSIONS AND VEHICLE VOLUMES

RUN	LINK A	B	C	D	E	F	G	H	I	J
1 VPH	723	723	745	745	740	740	846	846	789	789
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
2 VPH	615	615	633	633	629	629	719	719	671	671
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
3 VPH	522	522	538	538	535	535	611	611	570	570
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
4 VPH	444	444	458	48	454	454	520	520	485	485
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
5 VPH	377	377	389	389	386	386	442	442	412	412
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
6 VPH	321	321	331	331	328	328	375	375	350	350
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
7 VPH	273	273	281	281	279	279	319	319	298	298
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
8 VPH	232	232	239	239	237	237	271	271	253	253
EF	24.	24.	24.	24.	24.	24.	24.	24.	24.	24.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BEI Int 1 8HR
RUN: (MULTI-RUN)
POLLUTANT: Carbon Monoxide

IV. EMISSIONS AND VEHICLE VOLUMES (CONT.)

RUN	LINK K	L	M	N	O	P	Q	R	S	T
1 VPH	474	474	517	517	704	704	188	103	141	297

```
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 2 VPH *   403   403   439   439   598   598   160    88   120   252
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 3 VPH *   342   342   374   374   509   509   136    74   102   215
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 4 VPH *   291   291   318   318   432   432   115    63    87   182
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 5 VPH *   247   247   270   270   367   367    98    54    74   155
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 6 VPH *   210   210   229   229   312   312    83    46    63   132
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 7 VPH *   179   179   195   195   266   266    71    39    53   112
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
       *
 8 VPH *   152   152   166   166   226   226    60    33    45    95
   EF  *   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.
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           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   5

               JOB: BEI Int 1 8HR
               RUN: (MULTI-RUN)
         POLLUTANT: Carbon Monoxide


   V.  RECEPTOR LOCATIONS AND MULTI-RUN AVERAGE CONCENTRATIONS

               *     COORDINATES (M)    *  AVG
   RECEPTOR    *     X      Y      Z    * (PPM)
 ------------*------------------------*-------
 1. Recpt 1  *      50     50    1.8   *   1.6
 2. Recpt 2  *      52     52    1.8   *   1.6
 3. Recpt 3  *      53     53    1.8   *   1.6
 4. Recpt 4  *     -50    -50    1.8   *   2.0
 5. Recpt 5  *     -52    -52    1.8   *   2.0
 6. Recpt 6  *     -53    -53    1.8   *   2.0
 7. Recpt 7  *     -50     50    1.8   *   1.6
 8. Recpt 8  *     -52     52    1.8   *   1.6
 9. Recpt 9  *     -53     53    1.8   *   1.6
10. Recpt 10 *      50    -50    1.8   *   2.2
11. Recpt 11 *      52    -52    1.8   *   2.2
12. Recpt 12 *      53    -53    1.8   *   2.2
```

APPENDIX D

Health Risk Assessment (HRA)

Jim Brisco Enterprises, Inc.
Ready-Mix Concrete Batch Plant Project

Health Risk Assessment
March 2020

Prepared by:
VRPA Technologies, Inc.
4630 W. Jennifer, Suite 105
Fresno, CA 93722
Project Manager: Jason Ellard

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project
Health Risk Assessment

Study Team

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- ✓ Jason Ellard, Transportation Engineer, VRPA Technologies, Inc., jellard@vrpatechnologies.com, (559) 271-1200

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1.0 Introduction

1.1 Description of the Region/Project

This Health Risk Assessment (HRA) has been prepared for the purpose of identifying potential air impacts that may result from the proposed Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project ("Project") in the City of Atwater. The Project consists of the development of a concrete batch plant facility located on +/-10.8 acres also known as Merced County Assessors Parcel Number (APN) 056-241-007. The project will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots.

Jim Brisco Enterprises, INC. is a construction and building materials group that currently operates a concrete batch plant in Livingston California. They wish to construct a new concrete batch plant and materials yard in the City of Atwater. This will allow them to offer the sale of concrete and landscaping material to the construction industry and homeowners in the City of Atwater. Normal hours of operation will be Monday thru Friday from 6am to 5pm with the occasional need to open prior to and close after those hours. Saturday and Sunday hours will be on an as needed basis but to contractor and delivery requirements these hours of operation will be extended or altered as needed. Figures 1 and 2 show the location of the Project along with major roadways and highways. The components of the Project include:

- ✓ **Recycling Operation**

  Broken concrete is dropped off from customers and stockpiled for periodic recycling. The material is sized down with the pulverizer then crushed in the impact crusher. The impact crusher sizes the material to meet state specifications for base rock and the base rock is moved from the impact crusher to the stockpile via a 60-foot-long radial stacker (conveyor). The stockpile area will have a volume of approximately 5,153 yards.

- ✓ **Concrete Reclaimer Operation**

  Concrete mixer trucks and equipment returning to the site with wet material will be washed out in the concrete reclaimer. The concrete reclaimer washes the Portland cement off the rock and sand, the rock and sand are then stockpiled for reuse. The Portland cement slurry is put in a settling pond. The slurry settles out of the water and the water is recycled for use in the batch plant operation and the slurry is dried and recycled for base rock.

- ✓ **Concrete Batch Plant**

  The batch plant is made up of several pieces of individual equipment, the tallest being the silos for Portland cement and fly ash. These silos can be as tall as 80 feet. The batch plant is a dry plant or Transit mix plant. Sand and gravel are stored in bins and Portland cement and fly ash are stored in air tight silos. These silos are used to reduce the impact to air quality. The sand, gravel, Portland cement and fly ash are then loaded on a conveyor and discharged into the mixer truck along with water. The trucks then transport the concrete mix to job sites. When the Mixer returns to the plant it is washed out at the Concrete Reclaimer.

✓ **Shop Buildings**

Each shop will be 12,000 square feet and have approximately 1,600 square feet of storage and 400 square feet of office space. These buildings will be used for equipment maintenance and repair, and fabrication. The storage space will be for storage of parts and tools used to repair, maintain and fabricate.

✓ **Office, Showroom and Warehouse**

The office/showroom will be 5,000 square feet and will include offices for operations of the business and a showroom are for sales of tools, equipment and materials. The warehouse building will be adjacent to the office/showroom and will be 12,000 square feet. This building will warehouse tools, equipment and materials for sale.

Adjacent to these building will be customer parking areas with Cal Green and ADA designated parking stalls meeting all building condes applicable to such. The parking area will be paved include concrete sidewalks and landscape areas between the parking area and Industry Way. Ingress/Egress will be onto Industry Way.

✓ **Bulk Material Area**

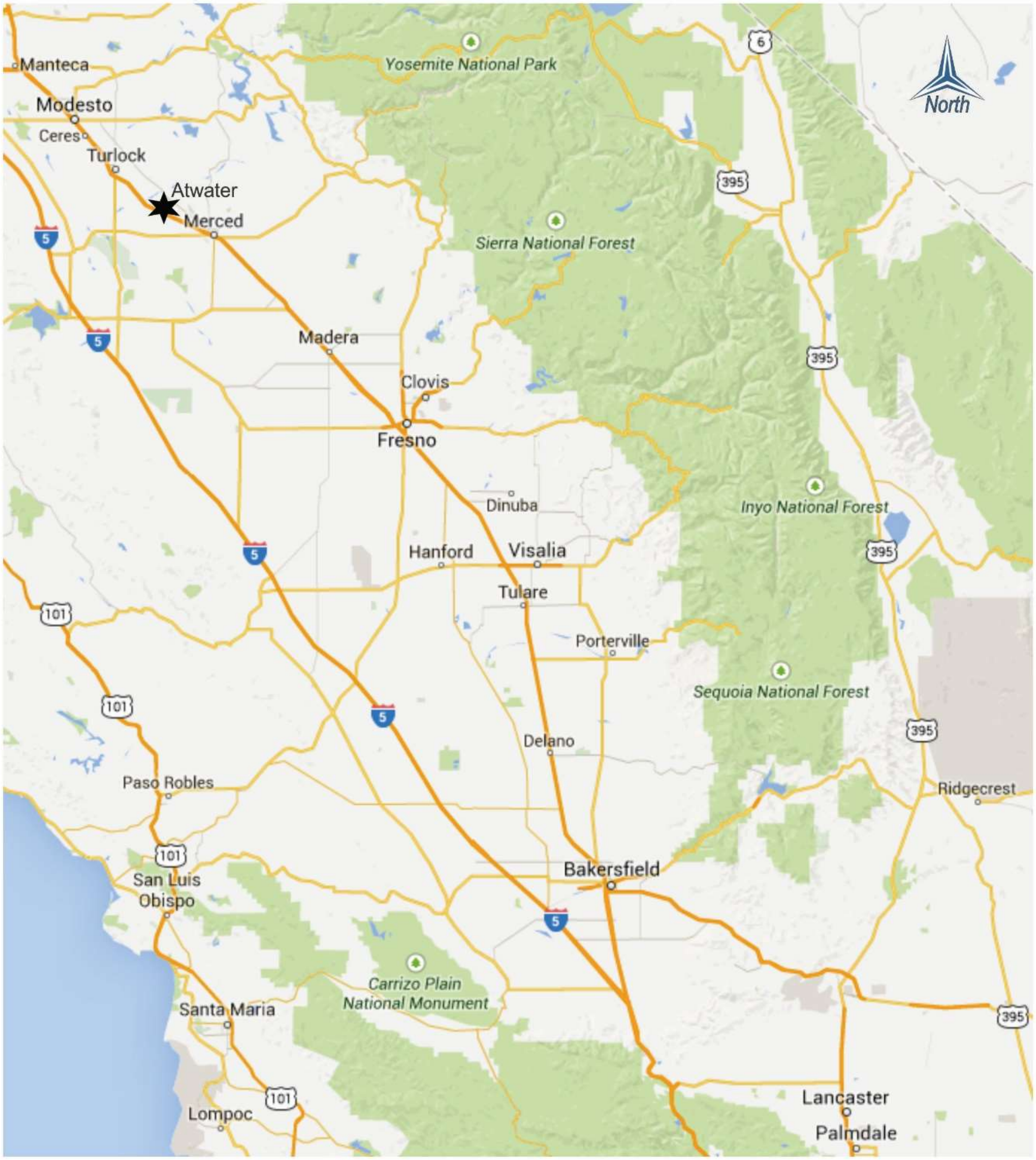
The bulk materials area will be paved in concrete and include 26 24’x10’ bins and 6 rental equipment parking spaces. The bins will be constructed of concrete wall and hold bulk materials such as, bark, rocks, fill dirt, potting soil, etc. These materials will be loaded into customer vehicles and trailers. This area will have 2 points of ingress/egress and they will be gated.

✓ **Scale and Truck Parking**

The site will include a truck parking area that will provide 21 parking spaces. The area will be paved, and the spaces are 15 feet wide and 75 feet deep. This area will be paved in asphalt concrete. Adjacent to the truck parking spaces will be a scale used for weighing trucks in and out.

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project
Regional Location

Figure 1

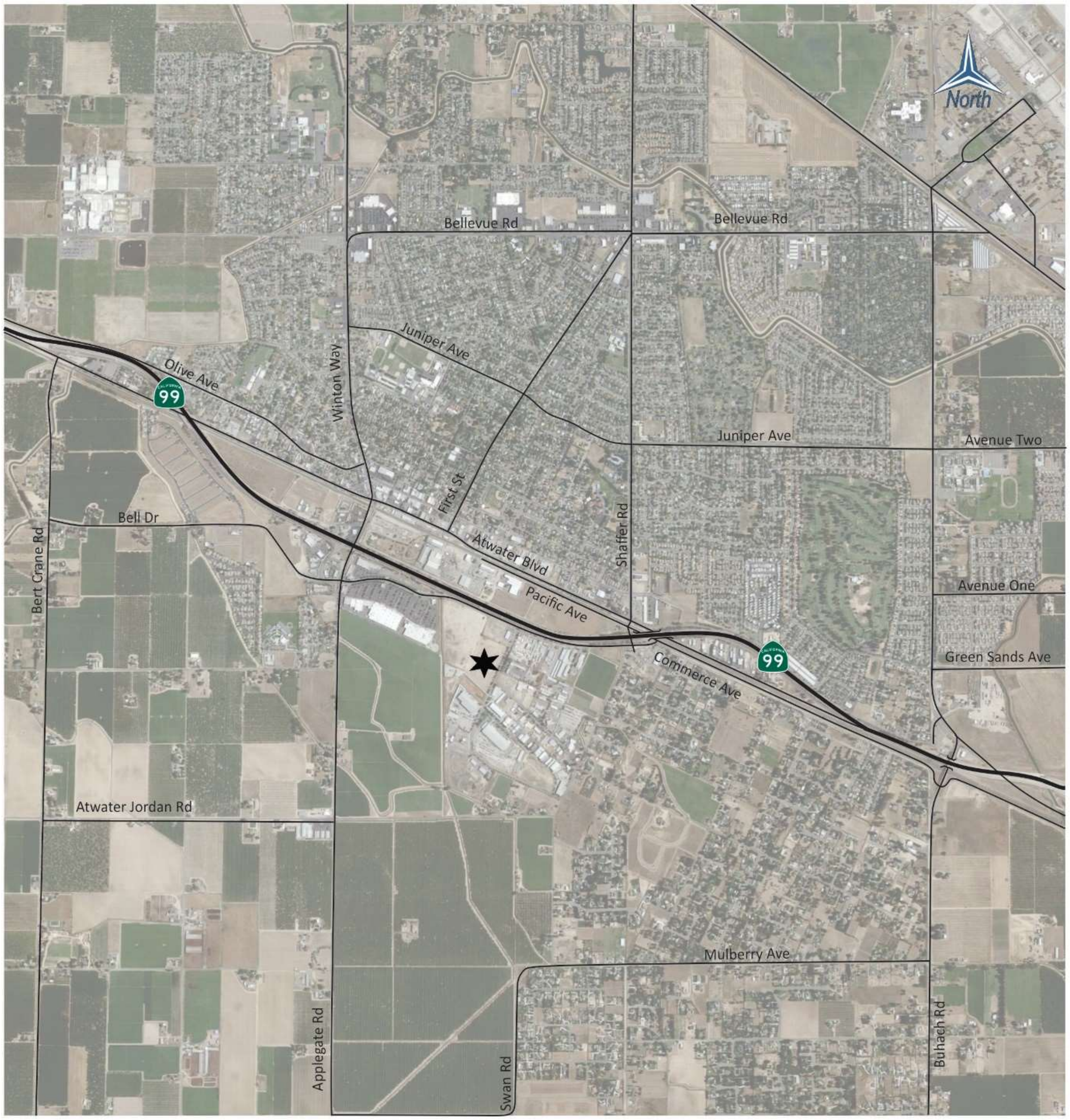


LEGEND

★ Project Location

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project **Figure 2**

Project Location



LEGEND

★ Project Location

1.2 Regulatory

Air quality within the Project area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the City of Atwater are discussed below along with their individual responsibilities.

1.2.1 *Federal Agencies*

✓ **U.S. Environmental Protection Agency (EPA)**

The Federal Clean Air Bill first adopted in 1967 and periodically amended since then, established federal ambient air quality standards. A 1987 amendment to the Bill set a deadline for the attainment of these standards. That deadline has since passed. The other Clean Air Act (CAA) Bill Amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources. The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the 1990 amendments.

The CAA and the national ambient air quality standards identify levels of air quality for six "criteria" pollutants, which are considered the maximum levels of ambient air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

The City of Atwater is located in a nonattainment area for the 8-hour ozone standard, 1997, 2006 and 2012 PM2.5 standards, and has a maintenance plan for PM10 standard.

1.2.2 *Federal Regulations*

✓ **National Environmental Policy Act (NEPA)**

NEPA provides general information on the effects of federally funded projects. The Act was implemented by regulations included in the Code of Federal Regulations (40CFR6). The code requires careful consideration concerning environmental impacts of federal actions or plans, including projects that receive federal funds. The regulations address impacts on land uses and conflicts with state, regional, or local plans and policies, among others. They also require that projects requiring NEPA review seek to avoid or minimize adverse effects of proposed actions and to restore and enhance environmental quality as much as possible.

✓ **State Implementation Plan (SIP)/ Air Quality Management Plans (AQMPs)**

To ensure compliance with the NAAQS, EPA requires states to adopt SIP aimed at improving air quality in areas of nonattainment or a Maintenance Plan aimed at maintaining air quality in areas that have attained a given standard. New and previously submitted plans, programs, district rules, state regulations, and federal controls are included in the SIPs. Amendments made in 1990 to the federal CAA established deadlines for attainment based on an area's current air pollution levels. States must enact additional regulatory programs for nonattainment's areas in order to adhere with the CAA Section 172. In California, the SIPs must adhere to both the NAAQS and the California Ambient Air Quality Standards (CAAQS).

To ensure that State and federal air quality regulations are being met, Air Quality Management Plans (AQMPs) are required. AQMPs present scientific information and use analytical tools to identify a pathway towards attainment of NAAQS and CAAQS. The San Joaquin Valley Air Pollution Control District (SJVAPCD) develops the AQMPs for the region where the Merced County Association of Governments (MCAG) operates. The regional air districts begin the SIP process by submitting their AQMPs to the California Air Resources Board (CARB). CARB is responsible for revising the SIP and submitting it to EPA for approval. EPA then acts on the SIP in the Federal Register. The items included in the California SIP are listed in the Code of Federal Regulations Title 40, Chapter 1, Part 52, Subpart 7, Section 52.220.

1.2.3 *State Agencies*

✓ **California Air Resources Board (CARB)**

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing its own air quality legislation called the CCAA, adopted in 1988. CARB was created in 1967 from the merging of the California Motor Vehicle Pollution Control Board and the Bureau of Air Sanitation and its Laboratory.

CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. Whereas CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. CARB combines its data with all local district data and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by CARB, and attainment plans adopted by the Air Pollution Control Districts (APCDs) and Air Quality Management District's (AQMDs) and approved by CARB.

States may establish their own standards, provided the State standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to California Health and Safety Code (CH&SC) [§39606(b)] and its predecessor statutes.

The CH&SC [§39608] requires CARB to "identify" and "classify" each air basin in the State on a pollutant-by-pollutant basis. Subsequently, CARB designated areas in California as nonattainment based on violations of the CAAQSs. Designations and classifications specific to the SJVAB can be found in the next section of this document. Areas in the State were also classified based on severity of air pollution problems. For each nonattainment class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. In addition, air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that lays out a program to attain and maintain the CCAA mandates.

1.2.4 *State Regulations*

- ✓ **CARB Mobile-Source Regulation**

The State of California is responsible for controlling emissions from the operation of motor vehicles in the State. Rather than mandating the use of specific technology or the reliance on a specific fuel, CARB's motor vehicle standards specify the allowable grams of pollutant per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved.

- ✓ **California Clean Air Act**

The CCAA was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. The CCAA establishes more stringent ambient air quality standards than those included in the Federal CAA. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the CH&SC [§39606(b)], which are similar to the federal standards. The SJVAPCD is one of 35 AQMDs that have prepared air quality management plans to accomplish a five percent (5%) annual reduction in emissions documenting progress toward the State ambient air quality standards.

- ✓ **Tanner Air Toxics Act**

California regulates Toxic Air Contaminants (TACs) primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of Hazardous Air Pollutants (HAPs) as TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators).

These rules and standards provide for:

- More stringent emission standards for some new urban bus engines, beginning with 2002 model year engines.
- Zero-emission bus demonstration and purchase requirements applicable to transit agencies
- Reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule.

✓ **California Environmental Quality Act (CEQA)**

CEQA defines a significant impact on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. Land use is a required impact assessment category under CEQA. CEQA documents generally evaluate land use in terms of compatibility with the existing land uses and consistency with local general plans and other local land use controls (zoning, specific plans, etc.).

1.2.5 *Regional Agencies*

✓ **San Joaquin Valley Air Pollution Control District**

The SJVAPCD is the agency responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Merced County and throughout the SJVAB. The District also has responsibility for monitoring air quality and setting and enforcing limits for source emissions. CARB is the agency with the legal responsibility for regulating mobile source emissions. The District is precluded from such activities under State law.

The District was formed in mid-1991 and prepared and adopted the San Joaquin Valley Air Quality Attainment Plan (AQAP), dated January 30, 1992, in response to the requirements of the State CCAA. The CCAA requires each non-attainment district to reduce pertinent air contaminants by at least five percent (5%) per year until new, more stringent, 1988 State air quality standards are met.

Activities of the SJVAPCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

The SJVAPCD has prepared the *Guide for Assessing and Mitigation Air Quality Impacts* (GAMAQI), dated March 19, 2015. The GAMAQI is an advisory document that provides Lead Agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality impacts in environmental documents. Local jurisdictions are not required to utilize the methodology outlined therein. This document describes the criteria that SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether or not projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts.

1.2.6 *Regional Regulations*

The SJVAPCD has adopted numerous rules and regulations to implement its air quality plans. Following, are significant rules that will apply to the Project.

✓ **Regulation VIII – Fugitive PM10 Prohibitions**

Regulation VIII is comprised of District Rules 8011 through 8081, which are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc. The proposed Project will be required to comply with this regulation. Regulation VIII control measures are provided below:

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from*

adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.

6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*
7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

✓ **Rule 8021 – Construction, Demolition, Excavation, and Other Earthmoving Activities**

District Rule 8021 requires owners or operators of construction projects to submit a Dust Control Plan to the District if at any time the project involves non-residential developments of five or more acres of disturbed surface area or moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project. The proposed project will meet these criteria and will be required to submit a Dust Control Plan to the District in order to comply with this rule.

✓ **Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations**

If asphalt paving will be used, then paving operations of the proposed project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

✓ **Rule 9510 – Indirect Source Review (ISR)**

The purpose of this rule is to fulfill the District's emission reduction commitments in the PM10 and Ozone Attainment Plans, achieve emission reductions from construction activities, and to provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures.

1.2.7 *Local Plans*

✓ **Merced County General Plan**

California State Law requires every city and county to adopt a comprehensive General Plan to guide its future development. The General Plan essentially serves as a "constitution for development"— the document that serves as the foundation for all land use decisions. The 2030 Merced County General Plan includes various elements, including air quality and greenhouse gases, that address local concerns and provides goals and policies to achieve its development goals.

2.0 Environmental Setting

This section describes existing air quality within the San Joaquin Valley Air Basin and in Merced County, including the identification of air pollutant standards, meteorological and topological conditions affecting air quality, and current air quality conditions. Air quality is described in relation to ambient air quality standards for criteria pollutants such as, ozone, carbon monoxide, and particulate matter. Air quality can be directly affected by the type and density of land use change and population growth in urban and rural areas.

2.1 Geographical Location

The SJVAB is comprised of eight counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Encompassing 24,840 square miles, the San Joaquin Valley is the second largest air basin in California. Cumulatively, counties within the Air Basin represent approximately 16 percent of the State's geographic area. The Air Basin is bordered by the Sierra Nevada Mountains on the east (8,000 to 14,492 feet in elevation), the Coastal Range on the west (4,500 feet in elevation), and the Tehachapi Mountains on the south (9,000 feet elevation). The San Joaquin Valley is open to the north extending to the Sacramento Valley Air Basin.

2.2 Topographic Conditions

Merced County is located within the San Joaquin Valley Air Basin [as determined by the California Air Resources Board (CARB)]. Air basins are geographic areas sharing a common "air shed." A description of the Air Basin in the County, as designated by CARB, is provided in paragraph below. Air pollution is directly related to the region's topographic features, which impact air movement within the Basin.

Wind patterns within the SJVAB result from marine air that generally flows into the Basin from the San Joaquin River Delta. The Coastal Range hinders wind access into the Valley from the west, the Tehachapi's prevent southerly passage of airflow, and the high Sierra Nevada Mountain Range provides a significant barrier to the east. These topographic features result in weak airflow that becomes restricted vertically by high barometric pressure over the Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500-3,000 feet).

2.3 Climatic Conditions

Merced County is located in one of the most polluted air basins in the country. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Merced County is classified as Mediterranean, with moist cool winters and dry warm summers.

Ozone, classified as a "regional" pollutant, often afflicts areas downwind of the original source of precursor emissions. Ozone can be easily transported by winds from a source area. Peak ozone levels tend to be higher in the southern portion of the Valley, as the prevailing summer winds sweep precursors downwind of northern source areas before concentrations peak. The separate designations reflect the fact that ozone precursor transport depends on daily meteorological conditions.

Other primary pollutants, carbon monoxide (CO), for example, may form high concentrations when wind speed is low. During the winter, Merced County experiences cold temperatures and calm conditions that increase the likelihood of a climate conducive to high CO concentrations.

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble, so precipitation and fog tends to "reduce" CO concentrations in the atmosphere. PM10 is somewhat "washed" from the atmosphere with precipitation. Precipitation in the San Joaquin Valley is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast. In the winter, this high- pressure system moves southward, allowing Pacific storms to move through the San Joaquin Valley. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Ranges. Significant precipitation also occurs on the western side of the Sierra Nevada. On the valley floor, however, there is some down slope flow from the Coast Ranges and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the San Joaquin Valley is produced by those storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. It is usually associated with an influx of moisture into the San Joaquin Valley through the San Francisco area during an anomalous flow pattern in the lower layers of the atmosphere. Although the hourly rates of precipitation from these storms may be high, their rarity keeps monthly totals low.

Precipitation on the San Joaquin Valley floor and in the Sierra Nevada decreases from north to south. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center, receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. This is primarily because the Pacific storm track often passes through the northern part of the state while the southern part of the state remains protected by the Pacific High. Precipitation in the San Joaquin Valley Air Basin (SJVAB) is confined primarily to the winter months with some also occurring in late summer and fall. Average annual rainfall for the entire San Joaquin Valley is approximately 5 to 16 inches. Snowstorms, hailstorms, and ice storms occur infrequently in the San Joaquin Valley and severe occurrences of any of these are very rare.

The winds and unstable air conditions experienced during the passage of storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates strong low-level temperature inversions and very stable air conditions. This situation leads to the San Joaquin Valley's famous Tule Fogs. The formation of natural fog is caused by local cooling of the atmosphere until it is saturated (dew point temperature). This type of fog, known as radiation fog is more likely to occur inland. Cooling may also be accomplished by heat radiation losses or by horizontal movement of a mass of air over a colder surface. This second type of fog, known as advection fog, generally occurs along the coast.

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM10. Ozone levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large numbers of fireplaces are in use. A secondary peak in CO concentrations occurs during morning commute hours when a large number of motorists are on the road and the surface inversion has not yet broken.

The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NOx), lowering pollutant concentrations. At the same time, fog could help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM10 and PM2.5 standards.

2.4 Anthropogenic (Man-made) Sources

In addition to climatic conditions (wind, lack of rain, etc.), air pollution can be caused by anthropogenic or man-made sources. Air pollution in the SJVAB can be directly attributed to human activities, which cause air pollutant emissions. Human causes of air pollution in the Valley consist of population growth, urbanization (gas-fired appliances, residential wood heaters, etc.), mobile sources (i.e., cars, trucks, airplanes, trains, etc.), oil production, agriculture, and other socioeconomic activities. The most significant factors, which are accelerating the decline of air quality in the SJVAB, are the Valley's rapid population growth and its associated increases in traffic, urbanization, and industrial activity.

Carbon monoxide emissions overwhelmingly come from mobile sources in the San Joaquin Valley; on-road vehicles contributed 34 percent, while other mobile vehicles, such as trains, planes, and off-road vehicles, contribute another 20 percent in 2012 according to emission projections from the CARB. Motor vehicles account for significant portions of regional gaseous and particulate emissions. Local large employers such as industrial plants can also generate substantial regional gaseous and particulate emissions. In addition, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.).

Ozone is the result of a photochemical reaction between Oxides of nitrogen (NOx) and Reactive Organic Gases (ROG). Mobile sources contribute 86 percent of all NOx emitted from anthropogenic sources in 2015 based on data provided in Appendix B of the Air District's 2016 Ozone Plan. In addition, mobile sources contribute 26 percent of all the ROG emitted from sources within the San Joaquin Valley.

The principal factors that affect air quality in and around Merced County are:

1. The sink effect, climatic subsidence and temperature inversions and low wind speeds
2. Automobile and truck travel
3. Increases in mobile and stationary pollutants generated by local urban growth

Automobiles, trucks, buses and other vehicles using hydrocarbon (HC) fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

The primary contributors of PM10 emissions in the San Joaquin Valley are farming activities (22%) and road dust, both paved and unpaved (35%) in 2020 according to emission projections from the CARB. Fugitive windblown dust from “open” fields contributed 14 percent of the PM10.

The four major sources of air pollutant emissions in the SJVAB include industrial plants, motor vehicles, construction activities, and agricultural activities. Industrial plants account for significant portions of regional gaseous and particulate emissions. Motor vehicles, including those from large employers, generate substantial regional gaseous and particulate emissions. Finally, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.). In addition to these primary sources of air pollution, urban areas upwind from Merced County, including areas north and west of the San Joaquin Valley, can cause or generate emissions that are transported into Merced County. All four of the major pollutant sources affect ambient air quality throughout the Air Basin.

2.4.1 *Motor Vehicles*

Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

2.4.2 *Agricultural and Other Miscellaneous Activities*

Other sources that affect air quality in Merced County include agricultural uses, dirt roads, animal shelters, animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. These sources include several agricultural related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities.

2.4.3 *Industrial Plants*

Industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Merced County consist of agricultural production and processing operations, wine production, and marketing operations.

2.5 San Joaquin Valley Air Basin Monitoring

SJVAPCD and the CARB maintain numerous air quality monitoring sites throughout each County in the Air Basin to measure ozone, PM2.5, and PM10. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. The closest monitoring station to the Project is located at Merced's Coffee Avenue and Turlock's Minaret Street monitoring stations. The stations monitor particulates, ozone, and nitrogen dioxide. Monitoring data for the most recent three years on record is summarized in Tables 1a and 1b.

Table 2 identifies Merced County's attainment status. As indicated previously, the SJVAB is nonattainment for Ozone (1 hour and 8 hour) and PM. In accordance with the FCAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. The FCAA contains provisions for changing the classifications using factors such as clean air progress rates and requests from states to move areas to a higher classification.

On April 16, 2004 EPA issued a final rule classifying the SJVAB as extreme nonattainment for Ozone, effective May 17, 2004 (69 FR 20550). The (federal) 1-hour ozone standard was revoked on June 6, 2005. However, many of the requirements in the 1-hour attainment plan (SIP) continue to apply to the SJVAB. The current ozone plan is the (federal) 8-hour ozone plan adopted in 2007. The SJVAB was reclassified from a "serious" nonattainment area for the 8-hour ozone standard to "extreme' effective June 4, 2010.

Table 1a
Maximum Pollutant Levels at Merced's S Coffee Avenue Monitoring Station

Pollutant	Time Averaging	2016 Maximums	2017 Maximums	2018 Maximums	Standards National	Standards State
Ozone (O_3)	1 hour	0.097 ppm	0.093 ppm	0.104 ppm	-	0.09 ppm
Ozone (O_3)	8 hour	0.086 ppm	0.084 ppm	0.083 ppm	0.070 ppm	0.070 ppm
Nitrogen Dioxide (NO_2)	1 hour	35.4 ppb	38.9 ppb	45.8 ppb	100 ppb	0.18 ppm
Nitrogen Dioxide (NO_2)	Annual Average	6.0 ppb	7.0 ppb	7.0 ppb	0.053 ppm	0.030 ppm
Particulates (PM_{10})	24 hour	*	*	*	150 μg/m^3	50 μg/m^3
Particulates (PM_{10})	Federal Annual Arithmetic Mean	*	*	*	-	20 μg/m^3
Particulates ($PM_{2.5}$)	24 hour	43.0 μg/m^3	69.3 μg/m^3	88.2 μg/m^3	35 μg/m^3	-
Particulates ($PM_{2.5}$)	Federal Annual Arithmetic Mean	11.9 μg/m^3	13.2 μg/m^3	15.1 μg/m^3	12 μg/m^3	12 μg/m^3

Source: California Air Resources Board (ADAM) Air Pollution Summaries

* Means there was insufficient data available to determine the value.

Table 1b
Maximum Pollutant Levels at Turlock's S Minaret Street Monitoring Station

Pollutant	Time Averaging	2016 Maximums	2017 Maximums	2018 Maximums	Standards National	Standards State
Ozone (O_3)	1 hour	0.102 ppm	0.114 ppm	0.108 ppm	-	0.09 ppm
Ozone (O_3)	8 hour	0.088 ppm	0.099 ppm	0.095 ppm	0.070 ppm	0.070 ppm
Nitrogen Dioxide (NO_2)	1 hour	47.2 ppb	58.6 ppb	67.2 ppb	100 ppb	0.18 ppm
Nitrogen Dioxide (NO_2)	Annual Average	9.0 ppb	9.0 ppb	9.0 ppb	0.053 ppm	0.030 ppm
Particulates (PM_{10})	24 hour	62.7 μg/m^3	111.7 μg/m^3	250.4 μg/m^3	150 μg/m^3	50 μg/m^3
Particulates (PM_{10})	Federal Annual Arithmetic Mean	29.8 μg/m^3	36.4 μg/m^3	36.8 μg/m^3	-	20 μg/m^3
Particulates ($PM_{2.5}$)	24 hour	53.6 μg/m^3	72.3 μg/m^3	187.3 μg/m^3	35 μg/m^3	-
Particulates ($PM_{2.5}$)	Federal Annual Arithmetic Mean	12.7 μg/m^3	12.7 μg/m^3	17.2 μg/m^3	12 μg/m^3	12 μg/m^3

Source: California Air Resources Board (ADAM) Air Pollution Summaries

Table 2
Merced County Attainment Status

Pollutant	Federal Standards	State Standards
Ozone - 1 Hour	Revoked in 2005	Nonattainment/Severe
Ozone - 8 Hour	Nonattainment/Extreme [a]	No State Standard
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
Carbon Monoxide	Unclassified/Attainment	Unclassified
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified/Attainment	Attainment
Lead (Particulate)	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

Source: ARB Website, 2020

a. Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

Notes:

National Designation Categories

Non-Attainment Area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Unclassified/Attainment Area: Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant or meets the national primary or secondary ambient air quality standard for the pollutant.

State Designation Categories

Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.

Attainment: A pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a three-year period.

Non-attainment: A pollutant is designated non-attainment if there was at least one violation of a State standard for that pollutant in the area.

Non-Attainment/Transitional: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the standard for the pollutant.

2.6 Air Quality Standards

The FCAA, first adopted in 1963, and periodically amended since then, established National Ambient Air Quality Standards (NAAQS). A set of 1977 amendments determined a deadline for the attainment of these standards. That deadline has since passed. Other CAA amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources.

In 1988, the State of California passed the CCAA (State 1988 Statutes, Chapter 568), which set forth a program for achieving more stringent California Ambient Air Quality Standards. The CARB implements State ambient air quality standards, as required in the CCAA, and cooperates with the federal government in implementing pertinent sections of the FCAA Amendments (FCAAA). Further, CARB regulates vehicular emissions throughout the State. The SJVAPCD regulates stationary sources, as well as some mobile sources. Attainment of the more stringent State PM10 Air Quality Standards is not currently required.

The EPA uses six "criteria pollutants" as indicators of air quality and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called the NAAQS.

The SJVAPCD operates regional air quality monitoring networks that provide information on average concentrations of pollutants for which State or federal agencies have established ambient air quality standards. Descriptions of ten pollutants of importance in Merced County follow.

2.6.1 *Ozone (1-hour and 8-hour)*

The most severe air quality problem in the Air Basin is the high level of ozone. Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level, or "bad" ozone, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up, where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is what is known as a photochemical pollutant. It needs reactive organic gases (ROG), NOx, and sunlight. ROG and NOx are emitted from various sources throughout Tulare County. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically NOx and ROG. Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard in 1994. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the Northeast.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

✓ ***Health Effects***

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children inhale more air per pound of body weight than adults, and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

The CARB found ozone standards in Merced County nonattainment of Federal and State standards.

2.6.2 *Suspended PM (PM10 and PM2.5)*

Particulate matter pollution consists of very small liquid and solid particles that remain suspended in the air for long periods. Some particles are large or concentrated enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter is emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. PM10 refers to particles less than or equal to 10 microns in aerodynamic diameter. PM2.5 refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM10. Particulates of concern are those that are 10 microns or less in diameter. These are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects.

In the western United States, there are sources of PM10 in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM10 and PM2.5 can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM10 and PM2.5. In addition to those listed previously, secondary particles can also be formed as precipitates from chemical and photochemical reactions of gaseous sulfur dioxide (SO2) and NOx in the atmosphere to create sulfates (SO4) and nitrates (NO3). Secondary particles are of greatest concern during the winter months where low inversion layers tend to trap the precursors of secondary particulates.

The District's 2008 PM2.5 Plan built upon the aggressive emission reduction strategy adopted in the 2007 Ozone Plan and strives to bring the valley into attainment status for the 1997 NAAQS for PM2.5. The District's 2012 PM2.5 Plan provides multiple control strategies to reduce emissions of PM2.5 and other pollutants that form PM2.5. The plan's comprehensive control strategy includes regulatory actions, incentive programs, technology advancement, policy and legislative positions, public outreach, participation and communication, and additional strategies.

✓ ***Health Effects***

PM10 and PM2.5 particles are small enough—about one-seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings. PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. PM10 and PM2.5 can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM10. These "sensitive populations" include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM10 exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM10 can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

The CARB found PM10 standards in Merced County in attainment of Federal standards and nonattainment for State standards. The CARB found PM2.5 standards in Merced County nonattainment of Federal and State standards.

2.6.3 *Carbon Monoxide (CO)*

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, contributes more than two thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

✓ ***Health Effects***

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

The CARB found CO standards in Merced County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.4 *Nitrogen Dioxide (NO2)*

Nitrogen oxides (NOx) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NOx is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NOx is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.

✓ ***Health Effects***

NOx is an ozone precursor that combines with Reactive Organic Gases (ROG) to form ozone. See the ozone section above for a discussion of the health effects of ozone.

Direct inhalation of NOx can also cause a wide range of health effects. NOx can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO2) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO2 may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NOx are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NOx can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NOx can also impair visibility. NOx is a major component of acid deposition in California. NOx may affect both terrestrial and aquatic ecosystems. NOx in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO2 include experimental studies on animals, controlled laboratory studies on humans, and observational studies.

In animals, long-term exposure to NOx increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO2, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NOx contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

The CARB found NO2 standards in Merced County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.5 *Sulfur Dioxide (SO2)*

The major source of sulfur dioxide (SO2) is the combustion of high-sulfur fuels for electricity generation, petroleum refining and shipping. High concentrations of SO2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO2, in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO2 also is a major precursor to PM2.5, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

The CARB found SO2 standards in the Merced County as unclassified/attainment for Federal standards and attainment for State standards.

2.6.6 *Lead (Pb)*

Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels; however, the use of leaded fuel has been mostly phased out. Since this has occurred the ambient concentrations of lead have dropped dramatically.

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

The CARB found Lead standards in Merced County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.7 *Toxic Air Contaminants (TAC)*

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TAC) are another group of pollutants of concern. TAC are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TAC is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TAC are regulated on the basis of risk rather than specification of safe levels of contamination. The ten TAC are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (diesel PM). Caltrans' guidance for transportation studies references the Federal Highway Administration (FHWA) memorandum titled "Interim Guidance on Air Toxic Analysis in NEPA Documents" which discusses emissions quantification of six "priority" compounds of 21 Mobile Source Air Toxics (MSAT) identified by the United States Environmental Protection Agency (USEPA). The six-diesel exhaust (particulate matter and organic gases), benzene, 1,3-butadiene, acetaldehyde, formaldehyde, and acrolein.

Some studies indicate that diesel PM poses the greatest health risk among the TAC listed above. A 10-year research program (California Air Resources Board 1998) demonstrated that diesel PM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to diesel PM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

Diesel PM differs from other TAC in that it is not a single substance but a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TAC, however, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. The CARB has made preliminary concentration estimates based on a diesel PM exposure method. This method uses the CARB emissions inventory's PM10 database, ambient PM10 monitoring data, and the results from several studies to estimate concentrations of diesel PM. Table 3 depicts the CARB Handbook's recommended buffer distances associated with various types of common sources.

In addition to DPM, the operation of the Project would also release amounts of fugitive dust that contain several TACs through the various stages of the concrete batch plant process. These TACs include aluminum, arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, zinc, and crystalline silica.

✓ **Aluminum**

Exposure to aluminum can occur through inhalation, ingestion, and eye or skin contact. Symptoms of exposure may include the following:

- Acute exposure: Acute exposure to aluminum dust has resulted in eye irritation.
- Chronic exposure: The signs and symptoms of chronic exposure to aluminum metal dust include shortness of breath, weakness, and cough.

TABLE 3
Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities*

SOURCE CATEGORY	ADVISORY RECOMMENDATIONS
Freeways and High-Traffic Roads [1]	- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	- Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). - Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. - Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	- Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.
Refineries	- Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	- Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. - Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	- Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

1: The recommendation to avoid siting new sensitive land uses within 500 feet of a freeway was identified in CARB's Air Quality and Land Use Handbook published in 2005. CARB recently published a technical advisory to the Air Quality and Land Use Handbook indicating that new research has demonstrated promising strategies to reduce pollution exposure along transportation corridors.

*Notes:
- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
- Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
- A summary of the basis for the distance recommendations can be found in the ARB Handbook: Air Quality and Land Use Handbook: A Community Health Perspective.

Source: SJVAPCD 2020

- ✓ **Arsenic**

Arsenic occurs naturally in the environment as an element of the earth's crust. Arsenic is combined with other elements such as oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Exposure to high levels of arsenic can cause death. Exposure to arsenic at low levels for extended periods of time can cause a discoloration of the skin and the appearance of small corns or warts.

- ✓ **Beryllium**

Beryllium is a metal that is found in nature, especially in beryl and bertrandite rock. It is extremely lightweight and hard, is a good conductor of electricity and heat, and is nonmagnetic. Exposure happens when a person breathes in beryllium mists, dusts, or fumes. Beryllium can then travel to the lungs where it can cause damage. Beryllium-related granulomas (non-cancerous tumors or growths) can also develop in other body tissues but these do not usually result in a loss of function. Beryllium disease is caused primarily by breathing air with beryllium mists, dusts, and fumes. Both acute (abrupt, short-term) and chronic (long-term) health problems can occur.

The acute disease starts soon after exposure and resembles pneumonia or bronchitis. It requires relatively high levels of exposure to occur and is now quite rare because protective measures to reduce exposure are usually in place. The chronic form—chronic beryllium disease—takes longer to develop than the acute form. Onset may occur from several months to decades after exposure. This disease can occur after much lower levels of exposure than the acute form. In chronic beryllium disease, inflammation and scarring of the lungs make it more difficult for the lungs to get oxygen to the bloodstream and body. A special type of scarring called granuloma is very typical of this disease. These noncancerous growths look like scars or tumors present in another disease called sarcoidosis. Most people exposed to beryllium will not develop chronic beryllium disease. Chronic beryllium disease can be either mild or severe.

For some, it can be a relatively minor condition, while for others it can be a very serious, even fatal, disease. The amount of length of exposure necessary to cause a specific individual to develop the disease is not known. As with many workplace hazards, it is believed that higher exposures cause more people to become sensitized. In a few people, exposure to even very small amounts of beryllium can pose a problem. In these people, their bodies react and begin the disease process even when exposed to only small amounts of the metal. The reason for this is not well understood.

Beryllium is identified by the International Agency for Research on Cancer and the National Toxicology Program as a human carcinogen. Persons exposures to beryllium are at increased risk of developing lung cancer.

- **Cadmium**

Cadmium (Cd) is a soft, malleable, bluish white metal found in zinc ores, and to a much lesser extent, in the cadmium mineral greenockite. Cadmium and its compounds are highly toxic and exposure to this metal is known to cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems.

- **Chromium**

Chromium occurs in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI). Exposure may occur from natural or industrial sources of chromium. Chromium III is much less toxic than chromium (VI). The respiratory tract is also the major target organ for chromium (III) toxicity, similar to chromium (VI). Chromium (III) is an essential element in humans. The body can detoxify some amount of chromium (VI) to chromium (III).

The respiratory tract is the major target organ for chromium (VI) toxicity, for acute (short-term) and chronic (long-term) inhalation exposures. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to chromium (VI), while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled chromium (VI) is a human carcinogen, resulting in an increased risk of lung cancer. Animal studies have shown chromium (VI) to cause lung tumors via inhalation exposure.

- **Cobalt**

Cobalt (Co) is a metal that can be stable (non-radioactive, as found in nature), or unstable (radioactive, man-made). The most common radioactive isotope of cobalt is cobalt-60. All ionizing radiation, including that of cobalt-60, is known to cause cancer. Therefore, exposures to gamma radiation from cobalt-60 result in an increased risk of cancer. Because it emits such strong gamma rays, external exposure to cobalt-60 is considered a significant threat. The magnitude of the health risk depends on the quantity of cobalt-60 involved and on exposure conditions: length of exposure, distance from the source (for external exposure), whether the cobalt-60 was ingested or inhaled.

- **Copper**

Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at a higher risk of health effects due to copper than the general public. There is inadequate evidence to state whether copper has the potential to cause cancer from a lifetime exposure in drinking water.

- ✓ **Manganese**

Manganese is a naturally occurring metal that, in pure form, is silver-colored with no taste or smell. Manganese is normally encountered in the environment as a compound with oxygen, sulfur, or chlorine. Manganese is an essential nutrient, required in trace amounts for human health. Intake is normally sufficient with a balanced diet. The primary targets of manganese toxicity are the brain and central nervous system. Manganese has been shown to be deposited in certain regions of the brain, and exposure to high concentrations in occupational studies was associated with permanent damage, with symptoms of impaired neurological and neuromuscular control, mental and emotional disturbances, muscle stiffness, lack of coordination, tremors, difficulties with breathing or swallowing, and other neuromuscular problems. Exposure to very high doses of manganese in experimental animal studies has resulted in impaired male fertility, and birth defects in offspring including cleft palate, impaired bone development, and other effects.

- ✓ **Nickel**

Nickel occurs naturally in the environment at low levels. Nickel is an essential element in some animal species, and it has been suggested it may be essential for human nutrition. Nickel dermatitis—consisting of itching of the fingers, hands, and forearms—is the most common effect in humans from chronic (long-term) skin contact with nickel. Respiratory effects have also been reported in humans from inhalation exposure to nickel. Human and animal studies have reported an increased risk of lung and nasal cancers from exposure to nickel refinery dusts and nickel subsulfide. Animal studies of soluble nickel compounds (e.g., nickel carbonyl) have reported lung tumors. The EPA has classified nickel refinery dust and nickel subsulfide as Group A, human carcinogens, and nickel carbonyl as a Group B2, probable human carcinogen.

- ✓ **Selenium**

Selenium is a naturally occurring substance that is toxic at high concentrations but is also a nutritionally essential element. Hydrogen selenide is the most acutely toxic selenium compound. Acute (short-term) exposure to elemental selenium, hydrogen selenide, and selenium dioxide by inhalation results primarily in respiratory effects, such as irritation of the mucous membranes, pulmonary edema, severe bronchitis, and bronchial pneumonia. Epidemiological studies of humans chronically (long-term) exposed to high levels of selenium in food and water have reported discoloration of the skin, pathological deformation and loss of nails, loss of hair, excessive tooth decay and discoloration, lack of mental alertness, and listlessness. Epidemiological studies have reported an inverse association between selenium levels in the blood and cancer occurrence and animal studies have reported that selenium supplementation, as sodium selenate, sodium selenite, and organic forms of selenium, results in a reduced incidence of several tumor types. The only selenium compound that has been shown to be carcinogenic in animals is selenium sulfide, which resulted in an increase in liver tumors from oral exposure. The EPA has classified elemental selenium as a Group D, not classifiable as to human carcinogenicity, and selenium sulfide as a Group B2, probable human carcinogen.

✓ **Zinc**

Although zinc is an essential requirement for good health, excess zinc can be harmful. Excessive absorption of zinc suppresses copper and iron absorption. The free zinc ion in solution is highly toxic to plants, invertebrates, and even vertebrate fish.

✓ **Crystalline Silica**

The following excerpt is from the United States Occupational Safety & Health Administration (OSHA 2002).

- Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are two other forms of crystalline silica. All three forms may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica.

  Silica exposure remains a serious threat to nearly 2 million U.S. workers, including more than 100,000 workers in high risk jobs such as abrasive blasting, foundry work, stonecutting, rock drilling, quarry work and tunneling. The seriousness of the health hazards associated with silica exposure is demonstrated by the fatalities and disabling illnesses that continue to occur in sandblasters and rockdrillers. Crystalline silica has been classified as a human lung carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. The respirable silica dust enters the lungs and causes the formation of scar tissue, thus reducing the lungs' ability to take in oxygen. There is no cure for silicosis. Since silicosis affects lung function, it makes one more susceptible to lung infections like tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust.

  Silicosis is classified into three types: chronic /classic, accelerated, and acute. Chronic/classic silicosis, the most common, occurs after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.

  Accelerated silicosis can occur after 5–10 years of high exposures to respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.

Acute silicosis occurs after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

OSHA has an established Permissible Exposure Limit, or PEL, which is the maximum amount of crystalline silica to which workers may be exposed during an 8-hour work shift (29 CFR 1926.55, 1910.1000). OSHA also requires hazard communication training for workers exposed to crystalline silica, and requires a respirator protection program until engineering controls are implemented. Additionally, OSHA has a National Emphasis Program for Crystalline Silica exposure to identify, reduce, and eliminate health hazards associated with occupational exposures.

2.6.8 *Odors*

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor.

Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 4 along with a reasonable distance from the source within which, the degree of odors could possibly be significant. Information presented in Table 4 will be used as a screening level of analysis for potential odor sources for the proposed project.

TABLE 4
Screening Levels for Potential Odor Sources

Type of Facility	Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Compositing Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. auto body shops)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Source: SJVAPCD 2020

2.6.9 *Naturally Occurring Asbestos (NOA)*

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Asbestos is commonly found in ultramafic rock and near fault zones. The amount of asbestos that is typically present in these rocks ranges from less than 1% up to approximately 25% and sometimes more. It is released from ultramafic rock when it is broken or crushed. This can happen when cars drive over unpaved roads or driveways, which are surfaced with these rocks, when land is graded for building purposes, or at quarrying operations. Asbestos is also released naturally through weathering and erosion. Once released from the rock, asbestos can become airborne and may stay in the air for long periods of time. Asbestos is hazardous and can cause lung disease and cancer dependent upon the level of exposure. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem.

The Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021.

2.6.10 *Greenhouse Gas Emissions*

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are:

- **Carbon Dioxide (CO2):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement, asphalt paving, truck trips). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH4):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N2O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").

Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is occurring. Every nation emits GHGs; therefore, global cooperation will be required to reduce the rate of GHG emissions.

3.0 Significance Criteria

The SJVAPCD's current thresholds of significance for TAC emissions from the operations of both permitted and non-permitted sources are presented below:

- ✓ **Carcinogens**: Maximally Exposed Individual risk equals or exceeds 10 in one million
- ✓ **Chronic:** Hazard Index equals or exceeds 1 for the Maximally Exposed Individual
- ✓ **Acute**: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual

Carcinogenic (cancer) risk is expressed as cancer cases per one million. Noncarcinogenic (acute and chronic) hazard indices (HI) are expressed as a ratio of expected exposure levels to acceptable exposure levels.

These metrics are generally applied to the maximally exposed individual (MEI). There are separate MEIs for residential exposure (i.e., residential areas) and for worker exposure (i.e., off-site workplaces). Residential exposure is for a worst-case exposure duration of 24 hours a day, 350 days a year for 70 years. For off-site workplaces, the exposure is 8 hours a day, 245 days a year for 40 years.

3.1 Cancer Risk

Cancer risk is defined as the lifetime probability (chance) of developing cancer from exposure to a carcinogen, typically expressed as chances per million. Exposure to cancer-causing substances can be through direct inhalation or other pathway. The cancer risk associated with inhalation of a carcinogen can be estimated by multiplying the inhalation dose in units of milligram per kilogram-day (mg/kg-day) by an inhalation cancer potency factor [(mg/kg/day)-1].

For particulate-bound pollutants, exposure may be possible from indirect environmental pathways (non-inhalation pathways), such as deposition on the soil, followed by exposure through soil ingestion or absorption of the pollutant from soil adhered to the skin. Other ingestion pathways may be possible such as ingestion of crops grown in soil potentially affected by deposited air pollutants and transmittal of a dose to an infant by breast milk due to the mother's cumulative exposure. Non-inhalation cancer risk is calculated from cancer toxicity factors and exposure assumptions.

3.2 Non-cancer Risk

Non-cancer health risk refers to both acute (short-term) and chronic (long-term) adverse health effects other than cancer that may be associated with exposure to air toxics. The commonly employed regulatory metric for assessing noncancer effects is the hazard index (HI), the ratio of the estimated exposure level of an air toxic compound to a scientifically derived reference exposure level (REL) for the same compound. RELs generally represent the highest exposure level where no adverse effect has been observed or the lowest exposure level where the onset of an adverse effect has been observed, with the inclusion of a safety factor ranging from 10 to 1000, depending on the source and quality of the scientific data.

If the reported concentration or dose of a given chemical is less than its REL, then the hazard index will be less than 1.0. When more than one chemical is considered, it is assumed that the effects are additive provided the associated chemicals are expected to have an adverse impact on the same target organ system (respiratory system, liver, etc). Thus, chemicalspecific hazard indices are summed to arrive at a hazard index for each target organ. For any organ system, a total hazard index exceeding 1.0 indicates a potential health effect.

3.3 Significance for Criteria Pollutants

The SJVAPCD has established thresholds of significance for determining environmental significance. These thresholds separate a project's short-term emissions from its long-term emissions. The short-term emissions are mainly related to the construction phase of a project, which are recognized to be short in duration. The long-term emissions are primarily related to activities that occur as a result of Project operations. Impacts will be evaluated both on the basis of CEQA Appendix G criteria and SJVAPCD significance criteria. The impacts to be evaluated will be those involving construction emissions of criteria pollutants. The SJVAPCD has established thresholds for certain pollutants shown in Table 5. Results of the Project's impact considering criteria pollutants are included in the Air Quality Impact Assessment prepared for the Project.

Table 5
SJVAPCD Air Quality Thresholds of Significance

Project Type	Ozone Precursor Emissions (tons/year)					
	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$
Construction Emissions	100	10	10	27	15	15
Operational Emissions (Permitted Equipment and Activities)	100	10	10	27	15	15
Operational Emissions (Non-Permitted Equipment and Activities)	100	10	10	27	15	15

Source: SJVAPCD 2020

4.0 Estimate of Toxic Emissions

As stated previously, the Project proposes to construct and operate a concrete batch plant facility, which will include a ready-mix batch plant, concrete reclaimer, concrete recycling plant, truck and equipment maintenance building with wash rack, truck scale, concrete product warehouse building, office/showroom building, and customer/employee parking lots. The principal sources or processes that have the potential to emit various TACs are as follows:

- ✓ **Concrete Recycling**
  - Material Transport
  - Tertiary Crushing
  - Conveyor Transfer point
  - Recycled Base Pile
- ✓ **Concrete Batch Plant**
  - Material Transport
  - Cement unloading to storage silo
  - Mixer loading
  - Aggregate Stock Pile
- ✓ **Miscellaneous**
  - Pickup and delivery of finished product
  - Onsite equipment usage
  - Truck delivery of raw material

Cancer and non-cancer health risks are related to the exposure concentration, for example in grams/cubic meter, of various toxic air contaminants that will be generated on the Project site. Exposure occurs primarily via inhalation and to a smaller extent via ingestion, dermal exposure, etc.

The ambient concentration of various TACs at a given location depends on its emission rate, distance from the emission source, local wind speed and direction and local topography, land-use, etc. An air dispersion model that incorporates these variables and parameters was used to calculate the concentration of TACs in the vicinity of the Project.

4.1 Diesel Particulate Matter Emissions

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10µm in diameter (PM10) generated with the 2017 version of the Emission Factor model (EMFAC) developed by the ARB. EMFAC 2017 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources. The most recent version of this model, EMFAC 2017, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

Several distinct emission processes are included in EMFAC 2017. Emission factors calculated using EMFAC 2017 are expressed in units of grams per vehicle miles traveled (g/VMT) or grams per idle-hour (g/idle-hr), depending on the emission process. The emission processes and corresponding emission factor units associated with diesel particulate exhaust for this Project are presented below.

For this Project, annual average PM10 emission factors were generated by running EMFAC 2017 in EMFAC Mode for vehicles in Merced County. The EMFAC model generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of temperature, relative humidity, and vehicle speed. The model was run for speeds traveled in the vicinity of the Project. The vehicle travel speeds for each segment modeled are summarized below.

- ✓ Idling (15 minutes) – on-site loading/unloading and truck gate
- ✓ 10 miles per hour – on-site vehicle movement including driving and maneuvering

Tables 6 - 8 show the estimated emissions for the diesel operated equipment and vehicles that will operate on the Project site.

4.2 Concrete Batch Plant Operation Emissions

Operational emissions from concrete batch plant activities were estimated using the EPA AP-42 emission factors as shown in the appendices. The relevant PM10 and TACs for the project operations are identified in Tables 9 and 10 as derived from air pollutant emission factors provided by the EPA AP-42.

Table 6
Onsite On-Road Mobile Source Emissions

Pollutant	Vehicle Type	EMFAC Vehicle Class	Maximum Daily Round-Trips (trips/day)	Total Annual Round-Trips (trips/yr)	Round-Trip Distance (miles)	Emission Factors (1) (gms/mile)	Emission Factors (lbs/VMT)	Annual Emissions (lbs/mile/yr)	Maximum Daily Emission Estimate (lbs/day)	Annual Average Emission Estimate (tons/yr)
ROG Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	1.280	2.822E-03	56.3	0.021	0.0032
							Total ROG Emissions	**56.3**	**0.0206**	**0.0032**
TOG Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	1.458	3.214E-03	64.1	0.023	0.0037
							Total TOG Emissions	**64.1**	**0.0235**	**0.0037**
SO_x Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	0.029	6.418E-05	1.3	0.000	0.0001
							Total SO_x Emissions	**1.3**	**0.0005**	**0.0001**
CO Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	2.789	6.149E-03	122.6	0.045	0.0070
							Total CO Emissions	**122.6**	**0.0449**	**0.0070**
NO_X Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	12.664	2.792E-02	556.8	0.204	0.0318
							Total NO_X Emissions	**556.8**	**0.2037**	**0.0318**
CO_2 Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	3081.442	6.793E+00	135,474.3	49.566	7.7323
							Total CO_2 Emissions	**135,474.3**	**49.5658**	**7.7323**
PM_{10} Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	0.180	3.968E-04	7.9	0.003	0.0005
							Total PM_{10} Emissions	**7.9**	**0.0029**	**0.0005**
$PM_{2.5}$ Exhaust	Product Trucks - Outside Sales	T7	38	9971	0.192004	0.172	3.792E-04	7.6	0.003	0.0004
							Total $PM_{2.5}$ Emissions	**7.6**	**0.0028**	**0.0004**

References:
(1) Emission Factors source: EMFAC2017 for Merced County Year 2021, for speed distribution of 10 mph
Assumptions:
Maximum 38 daily truck trips

Table 7
Onsite On-Road Mobile Source Idling Emissions

Pollutant	Vehicle Type	EMFAC Vehicle Class	Maximum Daily Round-Trips (trips/day)	Total Annual Round-Trips (trips/yr)	Idle Time per Trip (1) (hrs/trip)	Idle Emission Factors (2) (g/hr-veh)	Idle Emission Factors (lbs/hr-veh)	Maximum Daily Emission Estimate (lbs/day)	Annual Average Emission Estimate (tons/yr)
ROG	Product Trucks - Outside Sales	T7	38	9971	0.25	1.578	3.48E-03	0.033	0.0052
							Total ROG Emissions	**0.033**	**0.0052**
TOG	Product Trucks - Outside Sales	T7	38	9971	0.25	1.796	3.96E-03	0.038	0.0059
							Total TOG Emissions	**0.038**	**0.0059**
CO	Product Trucks - Outside Sales	T7	38	9971	0.25	20.042	4.42E-02	0.420	0.0655
							Total CO Emissions	**0.420**	**0.0655**
NO_X	Product Trucks - Outside Sales	T7	38	9971	0.25	22.673	5.00E-02	0.475	0.0741
							Total NO_X Emissions	**0.475**	**0.0741**
CO_2	Product Trucks - Outside Sales	T7	38	9971	0.25	3917.792	8.64E+00	82.054	12.8004
							Total CO_2 Emissions	**82.054**	**12.8004**
HC	Product Trucks - Outside Sales	T7	38	9971	0.25	0.073	1.62E-04	0.002	0.0002
							Total HC Emissions	**0.002**	**0.0002**
SO_X	Product Trucks - Outside Sales	T7	38	9971	0.25	0.037	8.16E-05	0.001	0.0001
							Total SO_X Emissions	**0.001**	**0.0001**
PM_{10}	Product Trucks - Outside Sales	T7	38	9971	0.25	0.032	7.13E-05	0.001	0.0001
							Total PM_{10} Emissions	**0.001**	**0.0001**
$PM_{2.5}$	Product Trucks - Outside Sales	T7	38	9971	0.25	0.031	6.82E-05	0.001	0.0001
							Total $PM_{2.5}$ Emissions	**0.001**	**0.0001**

References:
(1) Assumes 15 minutes idle time
(2) Emission Factors source: EMFAC2017 for Merced County Year 2021.
Assumptions:
Maximum 38 daily truck trips

Table 8
Onsite Off-Road Mobile Source Emissions

Pollutant	Vehicle Type	Quantity	HP	Annual Operation (hrs/year)	Load Factor	Emission Factor (g/hp-hr)	Annual Average Emission Estimate (lbs/yr)	Normalized Hourly Emission Estimate (lbs/hr)
ROG Exhaust	Rubber Tired Loader	1	180	550	0.54	1.00	117.86	0.0135
	Excavator	1	157	600	0.57	1.20	142.05	0.0162
	Crushing Equipment	1	475	360	0.78	0.40	117.62	0.0134
	Total ROG Emissions						**377.52**	**0.0431**
TOG Exhaust	Rubber Tired Loader	1	180	550	0.54	1.00	117.86	0.0135
	Excavator	1	157	600	0.57	1.20	142.05	0.0162
	Crushing Equipment	1	475	360	0.78	0.40	117.62	0.0134
	Total TOG Emissions						**377.52**	**0.0431**
CO Exhaust	Rubber Tired Loader	1	180	550	0.54	6.90	813.21	0.0928
	Excavator	1	157	600	0.57	3.70	437.98	0.0500
	Crushing Equipment	1	475	360	0.78	2.60	764.52	0.0873
	Total CO Emissions						**2,015.72**	**0.2301**
NO_X Exhaust	Rubber Tired Loader	1	180	550	0.54	6.90	813.21	0.0928
	Excavator	1	157	600	0.57	4.30	509.00	0.0581
	Crushing Equipment	1	475	360	0.78	2.60	764.52	0.0873
	Total NO_X Emissions						**2,086.74**	**0.2382**
PM_{10} Exhaust	Rubber Tired Loader	1	180	550	0.54	0.40	47.14	0.0054
	Excavator	1	157	600	0.57	0.22	26.04	0.0030
	Crushing Equipment	1	475	360	0.78	0.15	44.11	0.0050
	Total PM_{10} Emissions						**117.29**	**0.0134**
$PM_{2.5}$ Exhaust	Rubber Tired Loader	1	180	550	0.54	0.40	47.14	0.0054
	Excavator	1	157	600	0.57	0.22	26.04	0.0030
	Crushing Equipment	1	475	360	0.78	0.15	44.11	0.0050
	Total $PM_{2.5}$ Emissions						**117.29**	**0.0134**

Source: Project Representatives
Rubber Tired Loader - Tier 1 Engine
Excavator - Tier 2 Engine
Crushing Equipment - Tier 3
Source for HP: Project Representative; excavator: OFFROAD default
Source for Load Factor: CalEEMod default
Source for Emission Factor: OFFROAD default

Table 9
Concrete Batch Plant Operation Emissions

Source	Hourly Concrete Production (tons/hour)	Daily Concrete Production (tons/day)	Yearly Concrete Production (tons/year)	Emission Factor for Total PM (lb/ton)	Emission Factor for Total PM_{10} (lb/ton)	Total PM Hourly Emission Estimate (lb/hr)	Total PM Daily Emission Estimate (lb/day)	Total PM Yearly Emission Estimate (lb/yr)	Total PM_{10} Hourly Emission Estimate (lb/hr)	Total PM_{10} Daily Emission Estimate (lb/day)	Total PM_{10} Yearly Emission Estimate (lb/yr)
Concrete Batch Plant											
Aggregate transfer	28	313	91,750	0.0069	0.0033	0.19	2.16	633.08	0.09	1.03	302.78
Sand transfer	28	313	91,750	0.0021	0.00099	0.06	0.66	192.68	0.03	0.31	90.83
Cement unloading to elevated storage silo	28	313	91,750	0.0010	0.0003	0.03	0.31	90.83	0.01	0.11	31.20
Cement supplement unloading to elevated storage silo	28	313	91,750	0.0089	0.0049	0.25	2.79	816.58	0.14	1.53	449.58
Weigh hopper loading	28	313	91,750	0.0048	0.0028	0.13	1.50	440.40	0.08	0.88	256.90
Mixer loading	28	313	91,750	0.0184	0.0055	0.52	5.76	1,688.20	0.15	1.72	504.63
Truck loading	28	313	91,750	0.0980	0.0263	2.74	30.67	8,991.50	0.74	8.23	2,413.03
Aggregate Stock Pile	28	313	91,750	0.0000	1.29E-01	0.00	0.00	0.00	3.62	40.44	11,855.25
					Total Emissions	**3.92**	**43.85**	**12,853.26**	**4.85**	**54.26**	**15,904.18**
Concrete Recycling											
Truck Unloading - Fragmented Stone	8	85	25,000	0.0000	1.60E-05	0.00	0.00	0.00	0.00	0.00	0.40
Tertiary Crushing	8	85	25,000	0.0012	5.40E-04	0.01	0.10	30.00	0.00	0.05	13.50
Conveyor Transfer Point	8	85	25,000	0.0001	4.60E-05	0.00	0.01	3.50	0.00	0.00	1.15
Recycled Base Pile	8	85	25,000	0.0000	1.29E-01	0.00	0.00	0.00	1.03	10.98	3,230.31
					Total Emissions	**0.01**	**0.11**	**33.50**	**1.04**	**11.03**	**3,245.36**
Dust From Haul/Access Roads											
Dust - Haul Roads									0.42	4.62	10,516.70
Dust - Access Road									0.59	6.49	1,353.70
					Total Emissions				**1.01**	**11.11**	**11,870.40**

Emission Factor Source: EPA AP-42; Dust from Haul/Access Roads Emissions determined from EPA AP-42 emissions for Unpaved Roads

Table 10
Concrete Batch Plant Organic Pollutant Emissions

Pollutant	Hourly Emission Estimate (lb/hr)	Yearly Emission Estimate (lb/yr)
Recycled Base Pile/Aggregate Stock Pile		
Arsenic	0.00115	0.145
Beryllium	0.0000574	0.00727
Cadmium	0.0000574	0.00727
Chromium Total	0.00287	0.363
Copper	0.00574	0.727
Hexavalent Chromium	0.000143	0.0182
Lead	0.00287	0.363
Manganese	0.0287	3.63
Nickel	0.00115	0.145
Selenium	0.000287	0.0363
Zinc	0.0115	1.45
Concrete Batch Plant Operations		
Aluminum	0.0000127	0.00151
Arsenic	0.0000098	0.00116
Beryllium	0.0000127	0.00151
Cadmium	0.0000098	0.00116
Chromium Total	0.000474	0.0561
Copper	0.000273	0.0323
Hexavalent Chromium	0.0000431	0.0051
Lead	0.000126	0.0149
Manganese	0.00298	0.352
Nickel	0.000207	0.0244
Selenium	0.0000098	0.00116
Zinc	0.000719	0.085

Source: SJVAPCD toxic Emission Factors

5.0 Exposure Assessment

Cancer and non-cancer health risks are related to the exposure concentration, for example in grams/cubic meter, of various toxic air contaminants. Exposure occurs primarily via inhalation and to a smaller extent via ingestion, dermal exposure, etc.

The ambient concentration of various TACs at a given location depends on its emission rate, distance from the emission source, local wind speed and direction and local topography, land-use, etc. An air dispersion model that incorporates these variables and parameters was used to calculate the concentration of TACs in the vicinity of the proposed project.

5.1 Dispersion Modeling

The modeling of emissions for this Project follows guidance from the SJVAPCD. The Health Risk Assessment Standalone Tool Version 2 model was used to estimate the dispersion of the TAC emissions from the Project. The model was then used to estimate cancer risks and non-cancer health hazards from the Project's TAC emissions. In estimating the Project's impacts, it was assumed that the project would operate on a schedule of 12 hours per day, 260 days per year.

The Project emission sources identified in Section 4.0 were modeled using the parameters summarized in Tables 11. Table 11 shows the parameters for the modeling of all concrete batch plant activities that will exist on-site.

5.2 Sensitive Receptors

Health risks such as cancer risk, chronic hazard index, and acute hazard index were calculated for a variety of receptor locations. Receptors of primary interest are those at residential locations, at sensitive population locations, and at off-site worker locations. However, in order to get a more complete picture of the patterns of exposure, and for consistency with the HARP software, concentrations and risk are also calculated along the proposed Project's boundary. The receptors used to analyze project impacts include:

- ✓ Off-site worker locations at the industrial land uses to the south/southeast and the retail locations to the northwest
- ✓ Residence nearest to the facility to the southeast of the Project

Sensitive receptor locations were obtained via an internet search and the Google Earth database.

5.3 Meteorological Data

The meteorological data that was used in this HRA comes from the Merced station and is published by the District. The data from the Merced station, which is approximately 8 miles southeast of the Project site, includes five years of data from 2013 through 2017. The data from the Merced station provides the best available data for the area.

Table 11
Project Emission Source Modeling Parameters

Source Name	Averaging Period	Number of Identical Source Representations	Source Type	Release Height (m)	Initial Vertical Dimension (m)	Initial Lateral Dimension (m)	Length X (Length of Side) (m)	Length Y (m)	Rotation Angle (deg)	Exit Temperature (k)	Exit Velocity (m/s)	Stack Diameter (m)	Release Type
Concrete Batch Plant (Tranfer Points)	All	1	Volume	4.65	2.16	4.3							
Recycle Plant (Crushing)	All	1	Volume	4.65	2.16	5.81							
Recycle Plant (Transfer Points)	All	1	Volume	4.65	2.16	17.05							
Equipment Haul - Dust	All	6	Line	0	1.7	3.4							
On-road / On-site Trucks - Exhaust	All	32	Line	3.84	0.85	3.4							
On-road / On-site Trucks - Dust	All	32	Line	0	1.7	3.4							
Idling - Trucks	All	1	Point	3.84						366	51.71	0.1	Vertical
Process Area - Vehicles	All	2	Area	3.84	3.66		73	61	0				
Process Area (Crushing) - Dust	Annual	1	Area	0	3.66		25	12	1.89				
Recycled Base Pile	All	1	Area	3.84	3.66		51	22	1.89				
Aggregate Stock Pile	All	1	Area	3.84	3.66		61	30.5	1.89				

5.4 Risk Characterization

The Health Risk Assessment Standalone Tool Version 2 model was used to calculate exposure point concentrations considering the air dispersion run and the maximum estimated TAC emission rates for the Project. For off-site workplaces, the exposure is 8 hours a day, 245 days a year for 40 years. For lifetime excess cancer risk estimates, the 70-year annual average emission rates were used. The Health Risk Assessment Standalone Tool Version 2 model was then used to estimate overall exposure to TAC concentrations and compute estimates of lifetime excess cancer risk, chronic health hazard, and acute health hazard in accordance with OEHHA guidance for conducting risk assessments.

Based on the estimated concentrations from the Project, the Health Risk Assessment Standalone Tool Version 2 model calculated potential exposure levels to people through the various applicable pathways. The software uses the algorithms identified in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines.

The maximum predicted lifetime excess cancer risk, chronic health hazard, and acute health hazard for the modeled sensitive receptors described above are shown in Table 12. Results of the HRA indicated that the maximum predicted cancer risk, chronic health hazard, and acute health hazard for off-site workplaces are below the significance threshold of 10 in one million for cancer risks and 1.0 for non-cancer health risks. Therefore, the Projects health risk impacts are considered less than significant. It should be noted that maximum predicted lifetime excess cancer risk, chronic health hazard, and acute health hazard was modeled at boundary receptors as shown in the appendices. The locations of the modeled receptors are shown in Figure 3.

Table 12
Maximum Human Health Risk Assessment Results

Sensitive Receptor	Type	Cancer Risk	Chronic HI	Acute Simple HI
1	Industrial Land Use Site	6.95E-07	1.66E-01	1.05E-01
2	Winton Disposal Service - Industrial	1.40E-06	3.44E-01	1.13E-01
3	CR Cabinets Inc. - Industrial	2.56E-06	5.41E-01	1.12E-01
4	West Mark - Industrial	3.25E-07	7.18E-02	8.47E-02
5	Industrial Building	3.65E-07	8.90E-02	1.30E-01
6	Wal-Mart - Commercial	2.24E-07	5.45E-02	3.53E-02
7	Industrial Land Use Site	1.56E-06	3.91E-01	1.36E-01
8	Residence	5.24E-07	1.71E-02	1.19E-02

Jim Brisco Enterprises, Inc. Ready-Mix Concrete Batch Plant Project
Sensitive Receptor Locations

Figure 3

LEGEND
Project Location
Off-Site Workplace Receptor
Residential Receptor

VRPA TECHNOLOGIES, INC.

APPENDIX A

Health Risk Assessment Standalone Tool Version 2 Worksheets

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   TITLETWO  V3
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   AVERTIME 1 PERIOD
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   RUNORNOT RUN
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CO FINISHED
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SO STARTING
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   LOCATION Area1 AREA  712151.8  4135095  43.89
   LOCATION Area2 AREA  712142.3  4135108  43.93
   LOCATION Area3 AREA  712138.5  4135034  43.89
   LOCATION Area4 AREA  712151.1  4135169  44.07
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   LOCATION Volume3 VOLUME  712121.5  4135202  43.89
   LOCATION Volume4 VOLUME  712159.3  4135068  43.89
   LOCATION Volume5 VOLUME  712156.2  4135046  43.89
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   LOCATION Line3 LINE  712159.3  4135023  712119  4135048  43.89
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   LOCATION Line5 LINE  712176.4  4135180  712204.1  4135167  44.2
   LOCATION Line6 LINE  712162.6  4135009  712085  4135076  43.89
   LOCATION Line7 LINE  712085.5  4135077  712142.9  4135199  43.89
   LOCATION Line8 LINE  712137.3  4135207  712204.1  4135173  43.93
   LOCATION Line9 LINE  712139.9  4135210  712206.7  4135177  43.95
   LOCATION Line10 LINE  712083.7  4135080  712141.1  4135203  43.89
   LOCATION Line11 LINE  712158  4135007  712080.4  4135075  43.89
   LOCATION Line12 LINE  712177.3  4135182  712205  4135169  44.2
   LOCATION Line13 LINE  712116.1  4135051  712170.3  4135181  43.89
   LOCATION Line14 LINE  712157.4  4135020  712117.1  4135045  43.89
   LOCATION Line15 LINE  712180.8  4135018  712160.6  4135025  43.97
   LOCATION Line16 LINE  712241.9  4135153  712207.2  4135169  44.38
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   SRCPARAM Area1 0.000005979744 3.84 52.6  37.1  112.6
   SRCPARAM Area2 0.000007095379 0 60.5  53.3  110.1
   SRCPARAM Area3 0.0001161775 3.84 22  51  22.1
   SRCPARAM Area4 0.0002454778 3.84 61  30.5  113.3
   SRCPARAM Volume1 0.005661411 4.65 4.3  2.16
   SRCPARAM Volume2 0.00691520297 24.384 4.3  2.16
```

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   SRCPARAM Volume4 0.00019417455 4.65 5.81  2.16
   SRCPARAM Volume5 .00002229412 4.65 17.05  2.16
   SRCPARAM Line1 0.01663 0 2.8 3.66
   SRCPARAM Line2 0.00933 0 2.8 3.66
   SRCPARAM Line3 0.00753 0 2.8 3.66
   SRCPARAM Line4 0.00254 0 2.8 3.66
   SRCPARAM Line5 0.01177 0 2.8 3.66
   SRCPARAM Line6 0.00348 0 2.8 3.66
   SRCPARAM Line7 0.00264 0 2.8 3.66
   SRCPARAM Line8 0.00478 0 2.8 3.66
   SRCPARAM Line9 0.00478 3.66 2.8 3.66
   SRCPARAM Line10 0.00263 3.66 2.8 3.66
   SRCPARAM Line11 0.00347 3.66 2.8 3.66
   SRCPARAM Line12 0.01174 3.66 2.8 3.66
   SRCPARAM Line13 0.00253 3.66 2.8 3.66
   SRCPARAM Line14 0.00755 3.66 2.8 3.66
   SRCPARAM Line15 0.01660 3.66 2.8 3.66
   SRCPARAM Line16 0.00928 3.66 2.8 3.66
SO BUILDHGT Point1      0.00    0.00    0.00   12.00   12.00   12.00
SO BUILDHGT Point1     12.00   12.00   12.00   12.00   12.00   12.00
SO BUILDHGT Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT Point1      0.00    0.00   12.00   12.00   12.00   12.00
SO BUILDHGT Point1     12.00   12.00   12.00    0.00    0.00   12.00
SO BUILDHGT Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID Point1      0.00    0.00    0.00   38.19   42.25   45.02
SO BUILDWID Point1     46.42   46.45   45.00   42.18   38.08   39.07
SO BUILDWID Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID Point1      0.00    0.00   33.07   38.27   42.31   45.07
SO BUILDWID Point1     46.49   46.45   45.00    0.00    0.00   39.07
SO BUILDWID Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN Point1      0.00    0.00    0.00   42.84   45.35   46.49
SO BUILDLEN Point1     46.21   44.63   41.60   37.30   31.87   33.15
SO BUILDLEN Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN Point1      0.00    0.00   39.16   42.98   45.49   46.63
SO BUILDLEN Point1     46.31   44.63   41.60    0.00    0.00   33.15
SO BUILDLEN Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    Point1      0.00    0.00    0.00  -97.05 -100.89 -101.65
SO XBADJ    Point1    -99.33  -66.02  -65.40  -62.79  -58.28  -55.84
SO XBADJ    Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    Point1      0.00    0.00  -96.39 -100.82 -102.19 -100.45
SO XBADJ    Point1     18.33   21.39   23.80    0.00    0.00   22.69
SO XBADJ    Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    Point1      0.00    0.00    0.00   21.48    8.03   -5.67
SO YBADJ    Point1    -19.19    8.94    1.20   -6.57  -14.14  -21.22
SO YBADJ    Point1      0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    Point1      0.00    0.00   21.33    7.66   -6.25  -19.96
SO YBADJ    Point1    -16.40   -8.94   -1.20    0.00    0.00   21.22
SO YBADJ    Point1      0.00    0.00    0.00    0.00    0.00    0.00
**Monday
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**Thursday
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**Sunday
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**Wednesday
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**Saturday
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**Tuesday
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**Friday
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**Monday
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**Thursday
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**Friday
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   EMISFACT  Line2 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line2 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line2 HRDOW7  0 0 0 0 0 0
**Saturday
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   EMISFACT  Line2 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line2 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line2 HRDOW7  0 0 0 0 0 0
**Sunday
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   EMISFACT  Line2 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line2 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line2 HRDOW7  0 0 0 0 0 0
**Monday
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   EMISFACT  Line3 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
**Tuesday
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   EMISFACT  Line3 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line3 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
**Wednesday
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   EMISFACT  Line3 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
**Friday
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   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
**Saturday
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   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
**Sunday
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   EMISFACT  Line3 HRDOW7  2 2 2 2 2 2
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   EMISFACT  Line3 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line4 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line4 HRDOW7  0 0 0 0 0 0
**Sunday
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   EMISFACT  Line4 HRDOW7  0 0 0 0 0 0
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**Tuesday
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   EMISFACT  Line5 HRDOW7  0 0 0 0 0 0
**Wednesday
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   EMISFACT  Line5 HRDOW7  0 0 0 0 0 2
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   EMISFACT  Line5 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line5 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line5 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line5 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line5 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line5 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line5 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line5 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line5 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line5 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line6 HRDOW7  2 2 2 2 2 0
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   EMISFACT  Line6 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line6 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line6 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line6 HRDOW7  0 0 0 0 0 0
**Saturday
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   EMISFACT  Line6 HRDOW7  2 2 2 2 2 2
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   EMISFACT  Line6 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line6 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line7 HRDOW7  0 0 0 0 0 0
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   EMISFACT  Line7 HRDOW7  2 2 2 2 2 0
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**Monday
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   EMISFACT  Line8 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line8 HRDOW7  0 0 0 0 0 0
**Tuesday
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   EMISFACT  Line8 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line8 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line8 HRDOW7  0 0 0 0 0 0
**Wednesday
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   EMISFACT  Line8 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line8 HRDOW7  0 0 0 0 0 0
**Thursday
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   EMISFACT  Line8 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line8 HRDOW7  0 0 0 0 0 0
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**Saturday
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   EMISFACT  Line8 HRDOW7  0 0 0 0 0 0
**Sunday
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   EMISFACT  Line8 HRDOW7  0 0 0 0 0 0
**Monday
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   EMISFACT  Line9 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line9 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line9 HRDOW7  0 0 0 0 0 0
**Tuesday
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   EMISFACT  Line9 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line9 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line9 HRDOW7  0 0 0 0 0 0
**Wednesday
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   EMISFACT  Line9 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line9 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line9 HRDOW7  0 0 0 0 0 0
**Thursday
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   EMISFACT  Line9 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line9 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line9 HRDOW7  0 0 0 0 0 0
**Friday
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   EMISFACT  Line9 HRDOW7  0 0 0 0 0 2
   EMISFACT  Line9 HRDOW7  2 2 2 2 2 2
   EMISFACT  Line9 HRDOW7  2 2 2 2 2 0
   EMISFACT  Line9 HRDOW7  0 0 0 0 0 0
**Saturday
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   EMISFACT  Line9 HRDOW7  0 0 0 0 0 0
**Sunday
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**Tuesday
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**Wednesday
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   EMISFACT Line10 HRDOW7  0 0 0 0 0 0
**Thursday
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   EMISFACT Line10 HRDOW7  2 2 2 2 2 0
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**Friday
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   EMISFACT Line10 HRDOW7  2 2 2 2 2 0
   EMISFACT Line10 HRDOW7  0 0 0 0 0 0
**Saturday
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   EMISFACT Line10 HRDOW7  2 2 2 2 2 2
   EMISFACT Line10 HRDOW7  2 2 2 2 2 0
   EMISFACT Line10 HRDOW7  0 0 0 0 0 0
**Sunday
   EMISFACT Line10 HRDOW7  0 0 0 0 0 2
   EMISFACT Line10 HRDOW7  2 2 2 2 2 2
   EMISFACT Line10 HRDOW7  2 2 2 2 2 0
   EMISFACT Line10 HRDOW7  0 0 0 0 0 0
**Monday
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**Tuesday
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**Wednesday
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**Saturday
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**Wednesday
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**Thursday
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   EMISFACT Line12 HRDOW7  0 0 0 0 0 0
**Saturday
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   EMISFACT Line12 HRDOW7  2 2 2 2 2 0
   EMISFACT Line12 HRDOW7  0 0 0 0 0 0
**Sunday
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**Monday
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**Tuesday
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**Wednesday
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**Saturday
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   EMISFACT Line13 HRDOW7  0 0 0 0 0 0
**Sunday
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**Tuesday
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**Saturday
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**Wednesday
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**Saturday
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**Monday
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
**Tuesday
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
**Wednesday
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
**Thursday
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
**Friday
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
**Saturday
```

```
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
**Sunday
   EMISFACT Line16 HRDOW7  0 0 0 0 0 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 2
   EMISFACT Line16 HRDOW7  2 2 2 2 2 0
   EMISFACT Line16 HRDOW7  0 0 0 0 0 0
   SRCGROUP Point1 Point1
   SRCGROUP Area1 Area1
   SRCGROUP Area2 Area2
   SRCGROUP Area3 Area3
   SRCGROUP Area4 Area4
   SRCGROUP Volume1 Volume1
   SRCGROUP Volume2 Volume2
   SRCGROUP Volume3 Volume3
   SRCGROUP Volume4 Volume4
   SRCGROUP Volume5 Volume5
   SRCGROUP Line1 Line1
   SRCGROUP Line2 Line2
   SRCGROUP Line3 Line3
   SRCGROUP Line4 Line4
   SRCGROUP Line5 Line5
   SRCGROUP Line6 Line6
   SRCGROUP Line7 Line7
   SRCGROUP Line8 Line8
   SRCGROUP Line9 Line9
   SRCGROUP Line10 Line10
   SRCGROUP Line11 Line11
   SRCGROUP Line12 Line12
   SRCGROUP Line13 Line13
   SRCGROUP Line14 Line14
   SRCGROUP Line15 Line15
   SRCGROUP Line16 Line16
SO FINISHED
**
**RECEPTORS
RE STARTING
   INCLUDED "C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\BEIBATCH_AERMAP.REC"
RE FINISHED
**
**MET PATHWAY
ME STARTING
ME SURFFILE "C:\Users\jellard\Desktop\BEIv3\Merced_2013-2017.SFC"
ME PROFFILE "C:\Users\jellard\Desktop\BEIv3\Merced_2013-2017.PFL"
ME SURFDATA 23257 2013
ME UAIRDATA 23230 2013
ME SITEDATA 0 2013
ME PROFBASE 46
```

```
ME FINISHED
**
**OUTPUT PATHWAY
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   PLOTFILE 1 Point1 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRPoint1.PLT" 31
   PLOTFILE 1 Area1 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRArea1.PLT" 32
   PLOTFILE 1 Area2 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRArea2.PLT" 33
   PLOTFILE 1 Area3 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRArea3.PLT" 34
   PLOTFILE 1 Area4 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRArea4.PLT" 35
   PLOTFILE 1 Volume1 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRVolume1.PLT" 36
   PLOTFILE 1 Volume2 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRVolume2.PLT" 37
   PLOTFILE 1 Volume3 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRVolume3.PLT" 38
   PLOTFILE 1 Volume4 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRVolume4.PLT" 39
   PLOTFILE 1 Volume5 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRVolume5.PLT" 40
   PLOTFILE 1 Line1 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine1.PLT" 41
   PLOTFILE 1 Line2 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine2.PLT" 42
   PLOTFILE 1 Line3 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine3.PLT" 43
   PLOTFILE 1 Line4 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine4.PLT" 44
   PLOTFILE 1 Line5 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine5.PLT" 45
   PLOTFILE 1 Line6 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine6.PLT" 46
   PLOTFILE 1 Line7 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine7.PLT" 47
   PLOTFILE 1 Line8 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine8.PLT" 48
   PLOTFILE 1 Line9 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine9.PLT" 49
   PLOTFILE 1 Line10 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine10.PLT" 50
   PLOTFILE 1 Line11 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine11.PLT" 51
   PLOTFILE 1 Line12 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine12.PLT" 52
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   PLOTFILE 1 Line13 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine13.PLT" 53
   PLOTFILE 1 Line14 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine14.PLT" 54
   PLOTFILE 1 Line15 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine15.PLT" 55
   PLOTFILE 1 Line16 1ST
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\MAX1HRLine16.PLT" 56
   PLOTFILE PERIOD Point1
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODPoint1.PLT" 57
   PLOTFILE PERIOD Area1
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODArea1.PLT" 58
   PLOTFILE PERIOD Area2
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODArea2.PLT" 59
   PLOTFILE PERIOD Area3
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODArea3.PLT" 60
   PLOTFILE PERIOD Area4
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODArea4.PLT" 61
   PLOTFILE PERIOD Volume1
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODVolume1.PLT" 62
   PLOTFILE PERIOD Volume2
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODVolume2.PLT" 63
   PLOTFILE PERIOD Volume3
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODVolume3.PLT" 64
   PLOTFILE PERIOD Volume4
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODVolume4.PLT" 65
   PLOTFILE PERIOD Volume5
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODVolume5.PLT" 66
   PLOTFILE PERIOD Line1
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine1.PLT" 67
   PLOTFILE PERIOD Line2
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine2.PLT" 68
   PLOTFILE PERIOD Line3
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine3.PLT" 69
   PLOTFILE PERIOD Line4
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine4.PLT" 70
   PLOTFILE PERIOD Line5
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine5.PLT" 71
   PLOTFILE PERIOD Line6
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine6.PLT" 72
   PLOTFILE PERIOD Line7
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine7.PLT" 73
   PLOTFILE PERIOD Line8
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine8.PLT" 74
   PLOTFILE PERIOD Line9
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine9.PLT" 75
   PLOTFILE PERIOD Line10
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine10.PLT" 76
   PLOTFILE PERIOD Line11
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine11.PLT" 77
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   PLOTFILE PERIOD Line12
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine12.PLT" 78
   PLOTFILE PERIOD Line13
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine13.PLT" 79
   PLOTFILE PERIOD Line14
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine14.PLT" 80
   PLOTFILE PERIOD Line15
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine15.PLT" 81
   PLOTFILE PERIOD Line16
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\PERIODLine16.PLT" 82
   POSTFILE 1 Point1 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTPoint1.TXT" 83
   POSTFILE 1 Area1 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTArea1.TXT" 84
   POSTFILE 1 Area2 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTArea2.TXT" 85
   POSTFILE 1 Area3 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTArea3.TXT" 86
   POSTFILE 1 Area4 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTArea4.TXT" 87
   POSTFILE 1 Volume1 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTVolume1.TXT" 88
   POSTFILE 1 Volume2 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTVolume2.TXT" 89
   POSTFILE 1 Volume3 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTVolume3.TXT" 90
   POSTFILE 1 Volume4 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTVolume4.TXT" 91
   POSTFILE 1 Volume5 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTVolume5.TXT" 92
   POSTFILE 1 Line1 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine1.TXT" 93
   POSTFILE 1 Line2 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine2.TXT" 94
   POSTFILE 1 Line3 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine3.TXT" 95
   POSTFILE 1 Line4 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine4.TXT" 96
   POSTFILE 1 Line5 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine5.TXT" 97
   POSTFILE 1 Line6 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine6.TXT" 98
   POSTFILE 1 Line7 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine7.TXT" 99
   POSTFILE 1 Line8 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine8.TXT" 100
   POSTFILE 1 Line9 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine9.TXT" 101
   POSTFILE 1 Line10 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine10.TXT" 102
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   POSTFILE 1 Line11 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine11.TXT" 103
   POSTFILE 1 Line12 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine12.TXT" 104
   POSTFILE 1 Line13 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine13.TXT" 105
   POSTFILE 1 Line14 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine14.TXT" 106
   POSTFILE 1 Line15 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine15.TXT" 107
   POSTFILE 1 Line16 PLOT
"C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\plt\POSTLine16.TXT" 108
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of           10 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186    1051       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
 ME W187    1051       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

 OU W565    1127       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1128       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1129       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1130       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1131       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1132       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1133       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1134       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
```

```
 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                        ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                      ***        16:45:09

                                 PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                           ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  OTHER

 **Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates PERIOD Averages

 **This Run Includes:     26 Source(s);      26 Source Group(s); and      42
Receptor(s)

                with:      1 POINT(s), including
```

```
                    0 POINTCAP(s) and      0 POINTHOR(s)
          and:      5 VOLUME source(s)
          and:      4 AREA type source(s)
          and:     16 LINE source(s)
          and:      0 OPENPIT source(s)
          and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of Concurrent Values for Postprocessing
(POSTFILE Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    46.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.6 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\BEIBATCH_AERMOD.ERR
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*
```

```
                                                 *** POINT SOURCE DATA ***

            NUMBER EMISSION RATE                    BASE     STACK   STACK
STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y       ELEV.    HEIGHT  TEMP.   EXIT
VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (DEG.K)
(M/SEC)  (METERS)                       VARY BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 POINT1           0   0.28767E-05  712146.7 4135164.0    44.0     3.84   366.00
50.00     0.10    YES     NO    NO  HRDOW7
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*


                                                 *** VOLUME SOURCE DATA ***

            NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y       ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

 VOLUME1          0   0.56614E-02  712141.7 4135126.0    44.0     4.65     4.30
2.16     NO    HRDOW7
 VOLUME2          0   0.69152E-02  712153.7 4135231.0    44.1    24.38     4.30
2.16     NO    HRDOW7
 VOLUME3          0   0.45660E-01  712121.5 4135202.0    43.9     4.65     4.30
2.16     NO    HRDOW7
 VOLUME4          0   0.19417E-03  712159.3 4135068.0    43.9     4.65     5.81
2.16     NO    HRDOW7
 VOLUME5          0   0.22294E-04  712156.2 4135046.0    43.9     4.65    17.05
2.16     NO    HRDOW7
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE   4
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*


                                                           *** AREA SOURCE DATA ***

               NUMBER EMISSION RATE  COORD (SW CORNER)  BASE     RELEASE  X-DIM
Y-DIM    ORIENT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF AREA
OF AREA   OF AREA     SZ     SOURCE  SCALAR VARY
     ID         CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)   (DEG.)  (METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

 AREA1            0   0.59797E-05  712151.8 4135095.0    43.9     3.84     52.60
37.10    112.60     0.00     NO    HRDOW7
 AREA2            0   0.70954E-05  712142.3 4135108.0    43.9     0.00     60.50
53.30    110.10     0.00     NO    HRDOW7
 AREA3            0   0.11618E-03  712138.5 4135034.0    43.9     3.84     22.00
51.00     22.10     0.00     NO    HRDOW7
 AREA4            0   0.24548E-03  712151.1 4135169.0    44.1     3.84     61.00
30.50    113.30     0.00     NO    HRDOW7
 *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*


                                                           *** LINE SOURCE DATA ***

               NUMBER EMISSION RATE     FIRST COORD       SECOND COORD     BASE
RELEASE    WIDTH    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC        X        Y           X       Y      ELEV.
HEIGHT    OF LINE    SZ     SOURCE SCALAR VARY
     ID         CATS.   /METER**2)   (METERS) (METERS)   (METERS) (METERS) (METERS)
(METERS)  (METERS) (METERS)            BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

 LINE1            0   0.16630E-01  712182.7 4135022.0  712162.5 4135029.0    44.0
 0.00      2.80     3.66     NO    HRDOW7
 LINE2            0   0.93300E-02  712240.7 4135150.0  712206.0 4135166.0    44.4
 0.00      2.80     3.66     NO    HRDOW7
 LINE3            0   0.75300E-02  712159.3 4135023.0  712119.0 4135048.0    43.9
 0.00      2.80     3.66     NO    HRDOW7
 LINE4            0   0.25400E-02  712119.6 4135048.0  712173.8 4135178.0    43.9
 0.00      2.80     3.66     NO    HRDOW7
```

```
LINE5            0   0.11770E-01  712176.4 4135180.0  712204.1 4135167.0    44.2
0.00      2.80     3.66     NO    HRDOW7
LINE6            0   0.34800E-02  712162.6 4135009.0  712085.0 4135076.0    43.9
0.00      2.80     3.66     NO    HRDOW7
LINE7            0   0.26400E-02  712085.5 4135077.0  712142.9 4135199.0    43.9
0.00      2.80     3.66     NO    HRDOW7
LINE8            0   0.47800E-02  712137.3 4135207.0  712204.1 4135173.0    43.9
0.00      2.80     3.66     NO    HRDOW7
LINE9            0   0.47800E-02  712139.9 4135210.0  712206.7 4135177.0    43.9
3.66      2.80     3.66     NO    HRDOW7
LINE10           0   0.26300E-02  712083.7 4135080.0  712141.1 4135203.0    43.9
3.66      2.80     3.66     NO    HRDOW7
LINE11           0   0.34700E-02  712158.0 4135007.0  712080.4 4135075.0    43.9
3.66      2.80     3.66     NO    HRDOW7
LINE12           0   0.11740E-01  712177.3 4135182.0  712205.0 4135169.0    44.2
3.66      2.80     3.66     NO    HRDOW7
LINE13           0   0.25300E-02  712116.1 4135051.0  712170.3 4135181.0    43.9
3.66      2.80     3.66     NO    HRDOW7
LINE14           0   0.75500E-02  712157.4 4135020.0  712117.1 4135045.0    43.9
3.66      2.80     3.66     NO    HRDOW7
LINE15           0   0.16600E-01  712180.8 4135018.0  712160.6 4135025.0    44.0
3.66      2.80     3.66     NO    HRDOW7
LINE16           0   0.92800E-02  712241.9 4135153.0  712207.2 4135169.0    44.4
3.66      2.80     3.66     NO    HRDOW7
```


*** SOURCE IDs DEFINING SOURCE GROUPS ***

```
SRCGROUP ID                                                SOURCE IDs
-----------                                                ----------

 POINT1     POINT1      ,

 AREA1      AREA1       ,

 AREA2      AREA2       ,

 AREA3      AREA3       ,

 AREA4      AREA4       ,

 VOLUME1    VOLUME1     ,
```

```
 VOLUME2    VOLUME2     ,

 VOLUME3    VOLUME3     ,

 VOLUME4    VOLUME4     ,

 VOLUME5    VOLUME5     ,

 LINE1      LINE1       ,

 LINE2      LINE2       ,

 LINE3      LINE3       ,

 LINE4      LINE4       ,

 LINE5      LINE5       ,

 LINE6      LINE6       ,

 LINE7      LINE7       ,

 LINE8      LINE8       ,

 LINE9      LINE9       ,

 LINE10     LINE10      ,
```


```
                                        *** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID                                                  SOURCE IDs
-----------                                                  ----------


 LINE11     LINE11      ,

 LINE12     LINE12      ,

 LINE13     LINE13      ,

 LINE14     LINE14      ,
```

LINE15 LINE15 ,

LINE16 LINE16 ,

↑ *** AERMOD - VERSION 18081 *** *** BEI
*** 03/07/20
*** AERMET - VERSION 18081 *** *** V3
*** 16:45:09

PAGE 8
*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: POINT1

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	0.0,	0.0,	0.0,	0.0,	0.0,	2	0.0,	0.0,	0.0,	0.0,	0.0,
3	0.0,	0.0,	0.0,	0.0,	0.0,	4	12.0,	38.2,	42.8,	-97.0,	21.5,
5	12.0,	42.2,	45.3,	-100.9,	8.0,	6	12.0,	45.0,	46.5,	-101.6,	-5.7,
7	12.0,	46.4,	46.2,	-99.3,	-19.2,	8	12.0,	46.4,	44.6,	-66.0,	8.9,
9	12.0,	45.0,	41.6,	-65.4,	1.2,	10	12.0,	42.2,	37.3,	-62.8,	-6.6,
11	12.0,	38.1,	31.9,	-58.3,	-14.1,	12	12.0,	39.1,	33.1,	-55.8,	-21.2,
13	0.0,	0.0,	0.0,	0.0,	0.0,	14	0.0,	0.0,	0.0,	0.0,	0.0,
15	0.0,	0.0,	0.0,	0.0,	0.0,	16	0.0,	0.0,	0.0,	0.0,	0.0,
17	0.0,	0.0,	0.0,	0.0,	0.0,	18	0.0,	0.0,	0.0,	0.0,	0.0,
19	0.0,	0.0,	0.0,	0.0,	0.0,	20	0.0,	0.0,	0.0,	0.0,	0.0,
21	12.0,	33.1,	39.2,	-96.4,	21.3,	22	12.0,	38.3,	43.0,	-100.8,	7.7,
23	12.0,	42.3,	45.5,	-102.2,	-6.2,	24	12.0,	45.1,	46.6,	-100.5,	-20.0,
25	12.0,	46.5,	46.3,	18.3,	-16.4,	26	12.0,	46.4,	44.6,	21.4,	-8.9,
27	12.0,	45.0,	41.6,	23.8,	-1.2,	28	0.0,	0.0,	0.0,	0.0,	0.0,
29	0.0,	0.0,	0.0,	0.0,	0.0,	30	12.0,	39.1,	33.1,	22.7,	21.2,
31	0.0,	0.0,	0.0,	0.0,	0.0,	32	0.0,	0.0,	0.0,	0.0,	

```
   0.0,
   33    0.0,    0.0,    0.0,    0.0,    0.0,     34    0.0,    0.0,    0.0,    0.0,
   0.0,
   35    0.0,    0.0,    0.0,    0.0,    0.0,     36    0.0,    0.0,    0.0,    0.0,
   0.0,
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                    * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = POINT1       ; SOURCE TYPE = POINT    :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
                                                     DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                     DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                     DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = AREA1        ; SOURCE TYPE = AREA     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                                     DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                     DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
```

```
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = AREA2        ; SOURCE TYPE = AREA     :
  HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
```

```
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
```

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22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE  12
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = AREA3       ; SOURCE TYPE = AREA     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
```

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   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



```
                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = AREA4        ; SOURCE TYPE = AREA     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
```

14 .2000E+01   15 .2000E+01   16 .2000E+01
   17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = THURSDAY
    1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
    9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
   17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = FRIDAY
    1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
    9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
   17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = SATURDAY
    1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
    9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
   17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = SUNDAY
    1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
    9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
   17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = VOLUME1   ; SOURCE TYPE = VOLUME   :
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
- -
- -
DAY OF WEEK = MONDAY
    1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01

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    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = VOLUME2      ; SOURCE TYPE = VOLUME   :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
```

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    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                         ***       16:45:09

                                    PAGE  16
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = VOLUME3      ; SOURCE TYPE = VOLUME   :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
```

6 .2000E+01   7 .2000E+01   8 .2000E+01
9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = FRIDAY
1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = SATURDAY
1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = SUNDAY
1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = VOLUME4   ; SOURCE TYPE = VOLUME   :
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
- -
DAY OF WEEK = MONDAY
1 .0000E+00   2 .0000E+00   3 .0000E+00   4 .0000E+00   5 .0000E+00
6 .2000E+01   7 .2000E+01   8 .2000E+01
9 .2000E+01   10 .2000E+01   11 .2000E+01   12 .2000E+01   13 .2000E+01
14 .2000E+01   15 .2000E+01   16 .2000E+01
17 .2000E+01   18 .0000E+00   19 .0000E+00   20 .0000E+00   21 .0000E+00
22 .0000E+00   23 .0000E+00   24 .0000E+00
DAY OF WEEK = TUESDAY

```
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
```

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WEEK (HRDOW7) *

 SOURCE ID = VOLUME5      ; SOURCE TYPE = VOLUME   :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
```

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    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE1        ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
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                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                     * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE2        ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
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22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE  21
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE3        ; SOURCE TYPE = LINE      :
  HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
```

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 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
```

```
22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

                                  PAGE  22
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE4        ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
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   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE  23
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE5        ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
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14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

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                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE6        ; SOURCE TYPE = LINE     :
  HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
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    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = LINE7 ; SOURCE TYPE = LINE :

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  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
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    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



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                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE8        ; SOURCE TYPE = LINE      :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
```

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6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



```
                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE9        ; SOURCE TYPE = LINE      :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
```

```
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF

```
WEEK (HRDOW7) *

 SOURCE ID = LINE10       ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
```

```
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                    * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE11       ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
                                             DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                             DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                             DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE12       ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                             DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                             DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
```

```
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                   PAGE  31
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                     * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE13       ; SOURCE TYPE = LINE      :
  HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
HOUR    SCALAR    HOUR    SCALAR    HOUR    SCALAR
```

- -

```
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
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22  .0000E+00   23  .0000E+00   24  .0000E+00
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

                                  PAGE  32
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE14       ; SOURCE TYPE = LINE     :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
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   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                   * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF
WEEK (HRDOW7) *

 SOURCE ID = LINE15       ; SOURCE TYPE = LINE      :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
```

14 .2000E+01 15 .2000E+01 16 .2000E+01
17 .2000E+01 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00
DAY OF WEEK = THURSDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .2000E+01 7 .2000E+01 8 .2000E+01
9 .2000E+01 10 .2000E+01 11 .2000E+01 12 .2000E+01 13 .2000E+01
14 .2000E+01 15 .2000E+01 16 .2000E+01
17 .2000E+01 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00
DAY OF WEEK = FRIDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .2000E+01 7 .2000E+01 8 .2000E+01
9 .2000E+01 10 .2000E+01 11 .2000E+01 12 .2000E+01 13 .2000E+01
14 .2000E+01 15 .2000E+01 16 .2000E+01
17 .2000E+01 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00
DAY OF WEEK = SATURDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .2000E+01 7 .2000E+01 8 .2000E+01
9 .2000E+01 10 .2000E+01 11 .2000E+01 12 .2000E+01 13 .2000E+01
14 .2000E+01 15 .2000E+01 16 .2000E+01
17 .2000E+01 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00
DAY OF WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .2000E+01 7 .2000E+01 8 .2000E+01
9 .2000E+01 10 .2000E+01 11 .2000E+01 12 .2000E+01 13 .2000E+01
14 .2000E+01 15 .2000E+01 16 .2000E+01
17 .2000E+01 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = LINE16 ; SOURCE TYPE = LINE :
HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR
HOUR SCALAR HOUR SCALAR HOUR SCALAR
- -
DAY OF WEEK = MONDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .2000E+01 7 .2000E+01 8 .2000E+01

```
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = FRIDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00
6  .2000E+01    7  .2000E+01    8  .2000E+01
    9  .2000E+01   10  .2000E+01   11  .2000E+01   12  .2000E+01   13  .2000E+01
14  .2000E+01   15  .2000E+01   16  .2000E+01
   17  .2000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00
22  .0000E+00   23  .0000E+00   24  .0000E+00
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```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                                      *** DISCRETE CARTESIAN RECEPTORS ***
                                                    (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                                    (METERS)

     ( 712100.8, 4135272.0,      43.9,      43.9,       0.0);         ( 712278.8,
4135105.0,      44.5,      44.5,       0.0);
     ( 712204.2, 4135002.0,      44.0,      44.0,       0.0);         ( 712074.8,
4134973.0,      43.6,      43.6,       0.0);
     ( 712269.6, 4135272.0,      44.5,      44.5,       0.0);         ( 711861.5,
4135295.0,      43.9,      43.9,       0.0);
     ( 712059.1, 4135181.0,      43.9,      43.9,       0.0);         ( 712142.5,
4135304.0,      44.2,      44.2,       0.0);
     ( 712165.1, 4135293.0,      44.2,      44.2,       0.0);         ( 712187.8,
4135283.0,      44.2,      44.2,       0.0);
     ( 712210.4, 4135272.0,      44.2,      44.2,       0.0);         ( 712233.1,
4135262.0,      44.3,      44.3,       0.0);
     ( 712255.7, 4135251.0,      44.5,      44.5,       0.0);         ( 712278.3,
4135240.0,      44.5,      44.5,       0.0);
     ( 712284.1, 4135238.0,      44.5,      44.5,       0.0);         ( 712273.8,
4135215.0,      44.5,      44.5,       0.0);
     ( 712263.4, 4135192.0,      44.5,      44.5,       0.0);         ( 712253.0,
4135169.0,      44.5,      44.5,       0.0);
     ( 712242.7, 4135147.0,      44.4,      44.4,       0.0);         ( 712232.3,
4135124.0,      44.3,      44.3,       0.0);
     ( 712221.9, 4135101.0,      44.2,      44.2,       0.0);         ( 712211.6,
4135078.0,      44.2,      44.2,       0.0);
     ( 712201.3, 4135056.0,      44.2,      44.2,       0.0);         ( 712190.9,
4135033.0,      44.1,      44.1,       0.0);
     ( 712180.5, 4135010.0,      43.9,      43.9,       0.0);         ( 712170.1,
4134987.0,      43.9,      43.9,       0.0);
     ( 712169.5, 4134986.0,      43.9,      43.9,       0.0);         ( 712151.5,
4135003.0,      43.9,      43.9,       0.0);
     ( 712133.5, 4135021.0,      43.9,      43.9,       0.0);         ( 712115.5,
4135038.0,      43.9,      43.9,       0.0);
     ( 712097.4, 4135055.0,      43.9,      43.9,       0.0);         ( 712079.4,
4135073.0,      43.9,      43.9,       0.0);
     ( 712061.4, 4135090.0,      43.9,      43.9,       0.0);         ( 712049.3,
4135102.0,      43.9,      43.9,       0.0);
     ( 712059.8, 4135124.0,      43.9,      43.9,       0.0);         ( 712070.2,
4135147.0,      43.9,      43.9,       0.0);
     ( 712080.7, 4135170.0,      43.9,      43.9,       0.0);         ( 712091.1,
4135192.0,      43.9,      43.9,       0.0);
     ( 712101.6, 4135215.0,      43.9,      43.9,       0.0);         ( 712112.1,
4135238.0,      43.9,      43.9,       0.0);
     ( 712122.5, 4135261.0,      43.9,      43.9,       0.0);         ( 712132.9,
4135283.0,      44.0,      44.0,       0.0);
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↑ *** AERMOD - VERSION 18081 ***   *** BEI
                        ***   03/07/20
 *** AERMET - VERSION 18081 ***   *** V3
                      ***   16:45:09

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 *** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *

LESS THAN 1.0 METER; WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL

SOURCE ID	XR (METERS)	YR (METERS)	DISTANCE (METERS)
VOLUME5	712190.9	4135033.0	0.40
VOLUME5	712133.5	4135021.0	-2.89

↑ *** AERMOD - VERSION 18081 ***   *** BEI
                        ***   03/07/20
 *** AERMET - VERSION 18081 ***   *** V3
                      ***   16:45:09

                                  PAGE 37
 *** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54,   3.09,   5.14,   8.23,   10.80,

↑ *** AERMOD - VERSION 18081 ***   *** BEI   ***   03/07/20
*** AERMET - VERSION 18081 ***   *** V3   ***   16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jellard\Desktop\BEIv3\Merced_2013-2017.SFC
Met Version: 18081
Profile file: C:\Users\jellard\Desktop\BEIv3\Merced_2013-2017.PFL

Surface format: FREE

Profile format: FREE

Surface station no.:   23257   Upper air station no.:   23230
Name: UNKNOWN   Name: UNKNOWN

Year: 2013   Year: 2013

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
13	01	01	1	01	-2.8	0.076	-9.000	-9.000	-999.	51.	14.4	0.13	2.13	1.00	0.82	111.	10.0	276.4	2.0
13	01	01	1	02	-9.1	0.131	-9.000	-9.000	-999.	114.	22.3	0.14	2.13	1.00	1.53	122.	10.0	273.8	2.0
13	01	01	1	03	-11.9	0.154	-9.000	-9.000	-999.	145.	27.7	0.24	2.13	1.00	1.52	87.	10.0	275.4	2.0
13	01	01	1	04	-23.3	0.225	-9.000	-9.000	-999.	255.	55.5	0.24	2.13						

```
1.00    2.16   72.   10.0  274.2    2.0
 13 01 01   1 05  -19.2  0.197 -9.000 -9.000 -999.  210.     42.7  0.24   2.13
1.00    1.91   68.   10.0  275.4    2.0
 13 01 01   1 06   -5.0  0.095 -9.000 -9.000 -999.   76.     15.5  0.09   2.13
1.00    1.25   20.   10.0  274.9    2.0
 13 01 01   1 07   -8.6  0.127 -9.000 -9.000 -999.  108.     21.4  0.13   2.13
1.00    1.52  332.   10.0  274.2    2.0
 13 01 01   1 08   -6.5  0.107 -9.000 -9.000 -999.   84.     17.1  0.07   2.13
0.69    1.50  175.   10.0  273.8    2.0
 13 01 01   1 09    2.9  0.141  0.143  0.005   36.  127.    -88.7  0.06   2.13
0.37    1.71  184.   10.0  275.9    2.0
 13 01 01   1 10   75.4  0.182  0.721  0.005  181.  186.     -7.3  0.07   2.13
0.27    1.69  260.   10.0  277.0    2.0
 13 01 01   1 11  123.1  0.173  1.279  0.007  619.  173.     -3.8  0.13   2.13
0.23    1.23  353.   10.0  280.4    2.0
 13 01 01   1 12  148.4  0.187  1.542  0.008  899.  195.     -4.0  0.09   2.13
0.21    1.50    4.   10.0  280.9    2.0
 13 01 01   1 13  143.6  0.332  1.550  0.007  943.  458.    -23.1  0.13   2.13
0.21    3.03  341.   10.0  282.5    2.0
 13 01 01   1 14  122.5  0.396  1.489  0.006  979.  599.    -46.1  0.13   2.13
0.22    3.86  341.   10.0  283.1    2.0
 13 01 01   1 15   79.0  0.425  1.297  0.005 1002.  665.    -88.3  0.13   2.13
0.26    4.32  341.   10.0  283.8    2.0
 13 01 01   1 16   17.2  0.338  0.782  0.005 1006.  477.   -203.9  0.13   2.13
0.35    3.56  343.   10.0  283.8    2.0
 13 01 01   1 17  -29.5  0.322 -9.000 -9.000 -999.  439.    114.0  0.13   2.13
0.60    3.64  342.   10.0  280.9    2.0
 13 01 01   1 18  -11.9  0.152 -9.000 -9.000 -999.  167.     26.8  0.16   2.13
1.00    1.70  320.   10.0  280.9    2.0
 13 01 01   1 19   -8.8  0.126 -9.000 -9.000 -999.  107.     20.4  0.07   2.13
1.00    1.72  250.   10.0  278.1    2.0
 13 01 01   1 20   -9.5  0.133 -9.000 -9.000 -999.  116.     22.4  0.11   2.13
1.00    1.65  291.   10.0  278.8    2.0
 13 01 01   1 21   -8.8  0.123 -9.000 -9.000 -999.  104.     19.3  0.05   2.13
1.00    1.81  235.   10.0  275.9    2.0
 13 01 01   1 22   -2.8  0.076 -9.000 -9.000 -999.   51.     14.0  0.11   2.13
1.00    0.86  289.   10.0  275.9    2.0
 13 01 01   1 23   -2.8  0.075 -9.000 -9.000 -999.   50.     14.0  0.11   2.13
1.00    0.84  288.   10.0  274.9    2.0
 13 01 01   1 24  -10.1  0.139 -9.000 -9.000 -999.  125.     24.4  0.19   2.13
1.00    1.50   51.   10.0  275.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 13 01 01 01   10.0 1  111.    0.82   276.5   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: POINT1 ***
INCLUDING SOURCE(S): POINT1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	0.00004	712278.80	4135105.00	0.00008
712204.20	4135002.00	0.00006	712074.80	4134973.00	0.00001
712269.60	4135272.00	0.00002	711861.50	4135295.00	0.00002
712059.10	4135181.00	0.00010	712142.50	4135304.00	0.00002
712165.10	4135293.00	0.00002	712187.80	4135283.00	0.00002
712210.40	4135272.00	0.00002	712233.10	4135262.00	0.00003
712255.70	4135251.00	0.00003	712278.30	4135240.00	0.00003
712284.10	4135238.00	0.00003	712273.80	4135215.00	0.00004
712263.40	4135192.00	0.00005	712253.00	4135169.00	0.00007
712242.70	4135147.00	0.00009	712232.30	4135124.00	0.00014
712221.90	4135101.00	0.00018	712211.60	4135078.00	0.00017
712201.30	4135056.00	0.00013	712190.90	4135033.00	0.00009
712180.50	4135010.00	0.00005	712170.10	4134987.00	0.00003
712169.50	4134986.00	0.00003	712151.50	4135003.00	0.00003
712133.50	4135021.00	0.00003	712115.50	4135038.00	0.00002

712097.40   4135055.00   0.00002   712079.40
4135073.00   0.00003
712061.40   4135090.00   0.00003   712049.30
4135102.00   0.00003
712059.80   4135124.00   0.00004   712070.20
4135147.00   0.00007
712080.70   4135170.00   0.00013   712091.10
4135192.00   0.00011
712101.60   4135215.00   0.00009   712112.10
4135238.00   0.00006
712122.50   4135261.00   0.00004   712132.90
4135283.00   0.00003

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: AREA1 ***
INCLUDING SOURCE(S):   AREA1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)   Y-COORD (M)   CONC   X-COORD (M)
Y-COORD (M)   CONC
- -
712100.80   4135272.00   0.10933   712278.80
4135105.00   0.35949
712204.20   4135002.00   2.31038   712074.80
4134973.00   0.15567
712269.60   4135272.00   0.06814   711861.50
4135295.00   0.06108
712059.10   4135181.00   0.26857   712142.50
4135304.00   0.07105
712165.10   4135293.00   0.07196   712187.80
4135283.00   0.07397
712210.40   4135272.00   0.07719   712233.10
4135262.00   0.07933
712255.70   4135251.00   0.08326   712278.30
4135240.00   0.08815
712284.10   4135238.00   0.08858   712273.80
4135215.00   0.11263

712263.40   4135192.00   0.14841   712253.00
4135169.00   0.20491
712242.70   4135147.00   0.29739   712232.30
4135124.00   0.47883
712221.90   4135101.00   0.87618   712211.60
4135078.00   1.83935
712201.30   4135056.00   4.01387   712190.90
4135033.00   5.24028
712180.50   4135010.00   3.54149   712170.10
4134987.00   1.48432
712169.50   4134986.00   1.42447   712151.50
4135003.00   1.47945
712133.50   4135021.00   1.09221   712115.50
4135038.00   0.92709
712097.40   4135055.00   0.89653   712079.40
4135073.00   0.74034
712061.40   4135090.00   0.56631   712049.30
4135102.00   0.46985
712059.80   4135124.00   0.50462   712070.20
4135147.00   0.44200
712080.70   4135170.00   0.34450   712091.10
4135192.00   0.26552
712101.60   4135215.00   0.20164   712112.10
4135238.00   0.15174
712122.50   4135261.00   0.11436   712132.90
4135283.00   0.08854

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: AREA2   ***
INCLUDING SOURCE(S):   AREA2   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)   Y-COORD (M)   CONC   X-COORD (M)
Y-COORD (M)   CONC
- -
712100.80   4135272.00   0.23197   712278.80
4135105.00   0.77805

```
         712204.20    4135002.00        4.44774                          712074.80
4134973.00        0.29060
         712269.60    4135272.00        0.14057                          711861.50
4135295.00        0.13059
         712059.10    4135181.00        0.60980                          712142.50
4135304.00        0.14107
         712165.10    4135293.00        0.14435                          712187.80
4135283.00        0.15274
         712210.40    4135272.00        0.15860                          712233.10
4135262.00        0.16054
         712255.70    4135251.00        0.17274                          712278.30
4135240.00        0.18566
         712284.10    4135238.00        0.18591                          712273.80
4135215.00        0.24005
         712263.40    4135192.00        0.32305                          712253.00
4135169.00        0.45824
         712242.70    4135147.00        0.68795                          712232.30
4135124.00        1.17162
         712221.90    4135101.00        2.32818                          712211.60
4135078.00        5.34997
         712201.30    4135056.00       10.35952                          712190.90
4135033.00       11.55367
         712180.50    4135010.00        6.52123                          712170.10
4134987.00        2.57659
         712169.50    4134986.00        2.47270                          712151.50
4135003.00        2.83771
         712133.50    4135021.00        2.87700                          712115.50
4135038.00        2.22468
         712097.40    4135055.00        1.97748                          712079.40
4135073.00        1.60078
         712061.40    4135090.00        1.22120                          712049.30
4135102.00        1.02180
         712059.80    4135124.00        1.18411                          712070.20
4135147.00        1.06157
         712080.70    4135170.00        0.79895                          712091.10
4135192.00        0.59510
         712101.60    4135215.00        0.44982                          712112.10
4135238.00        0.32885
         712122.50    4135261.00        0.23714                          712132.90
4135283.00        0.17816
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: AREA3    ***
```

INCLUDING SOURCE(S): AREA3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	1.11253	712278.80	4135105.00	3.59624
712204.20	4135002.00	29.82238	712074.80	4134973.00	1.95138
712269.60	4135272.00	0.70142	711861.50	4135295.00	0.65506
712059.10	4135181.00	2.65668	712142.50	4135304.00	0.72971
712165.10	4135293.00	0.73822	712187.80	4135283.00	0.75984
712210.40	4135272.00	0.79375	712233.10	4135262.00	0.81261
712255.70	4135251.00	0.84913	712278.30	4135240.00	0.90067
712284.10	4135238.00	0.90635	712273.80	4135215.00	1.14031
712263.40	4135192.00	1.48238	712253.00	4135169.00	2.01106
712242.70	4135147.00	2.85140	712232.30	4135124.00	4.44104
712221.90	4135101.00	7.80377	712211.60	4135078.00	15.93359
712201.30	4135056.00	36.44636	712190.90	4135033.00	62.34109
712180.50	4135010.00	54.27083	712170.10	4134987.00	23.72236
712169.50	4134986.00	22.67397	712151.50	4135003.00	23.61818
712133.50	4135021.00	13.58935	712115.50	4135038.00	14.46854
712097.40	4135055.00	11.92076	712079.40	4135073.00	8.84940
712061.40	4135090.00	6.39664	712049.30	4135102.00	5.17631
712059.80	4135124.00	5.15448	712070.20	4135147.00	4.31034
712080.70	4135170.00	3.33912	712091.10	4135192.00	2.60601

712101.60   4135215.00   1.99969   712112.10
4135238.00   1.51634
712122.50   4135261.00   1.15304   712132.90
4135283.00   0.90124

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: AREA4   ***
INCLUDING SOURCE(S):   AREA4   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	9.54355	712278.80	4135105.00	19.55008
712204.20	4135002.00	24.20516	712074.80	4134973.00	3.75310
712269.60	4135272.00	5.11218	711861.50	4135295.00	3.06980
712059.10	4135181.00	22.59006	712142.50	4135304.00	5.48931
712165.10	4135293.00	5.62184	712187.80	4135283.00	5.82563
712210.40	4135272.00	6.14851	712233.10	4135262.00	6.50203
712255.70	4135251.00	6.83356	712278.30	4135240.00	6.83869
712284.10	4135238.00	6.73369	712273.80	4135215.00	9.27541
712263.40	4135192.00	13.42621	712253.00	4135169.00	20.17266
712242.70	4135147.00	30.30863	712232.30	4135124.00	47.20151
712221.90	4135101.00	67.05004	712211.60	4135078.00	74.55067
712201.30	4135056.00	62.63070	712190.90	4135033.00	40.75209

712180.50   4135010.00   23.70532   712170.10
4134987.00   13.99570
712169.50   4134986.00   13.67417   712151.50
4135003.00   14.01512
712133.50   4135021.00   13.84408   712115.50
4135038.00   12.22550
712097.40   4135055.00   10.24190   712079.40
4135073.00   9.99843
712061.40   4135090.00   9.78242   712049.30
4135102.00   9.69878
712059.80   4135124.00   16.32462   712070.20
4135147.00   27.00422
712080.70   4135170.00   34.56467   712091.10
4135192.00   32.79066
712101.60   4135215.00   24.21523   712112.10
4135238.00   16.34831
712122.50   4135261.00   10.94354   712132.90
4135283.00   7.54767

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOLUME1 ***
INCLUDING SOURCE(S):   VOLUME1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	0.10585	712278.80	4135105.00	0.17348
712204.20	4135002.00	0.30026	712074.80	4134973.00	0.06489
712269.60	4135272.00	0.05937	711861.50	4135295.00	0.03606
712059.10	4135181.00	0.29858	712142.50	4135304.00	0.06462
712165.10	4135293.00	0.06853	712187.80	4135283.00	0.07165

712210.40   4135272.00   0.07444   712233.10
4135262.00   0.07598
712255.70   4135251.00   0.07669   712278.30
4135240.00   0.07505
712284.10   4135238.00   0.07376   712273.80
4135215.00   0.09670
712263.40   4135192.00   0.13129   712253.00
4135169.00   0.18430
712242.70   4135147.00   0.25822   712232.30
4135124.00   0.35371
712221.90   4135101.00   0.50146   712211.60
4135078.00   0.66477
712201.30   4135056.00   0.67089   712190.90
4135033.00   0.50347
712180.50   4135010.00   0.32045   712170.10
4134987.00   0.19819
712169.50   4134986.00   0.19396   712151.50
4135003.00   0.20830
712133.50   4135021.00   0.21983   712115.50
4135038.00   0.21902
712097.40   4135055.00   0.20309   712079.40
4135073.00   0.19643
712061.40   4135090.00   0.17982   712049.30
4135102.00   0.16800
712059.80   4135124.00   0.27667   712070.20
4135147.00   0.44258
712080.70   4135170.00   0.47741   712091.10
4135192.00   0.36553
712101.60   4135215.00   0.25216   712112.10
4135238.00   0.17021
712122.50   4135261.00   0.11638   712132.90
4135283.00   0.08427

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: VOLUME2 ***
INCLUDING SOURCE(S):   VOLUME2   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF OTHER   IN MICROGRAMS/M**3
**

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	0.03620	712278.80	4135105.00	0.10459
712204.20	4135002.00	0.03858	712074.80	4134973.00	0.00832
712269.60	4135272.00	0.04260	711861.50	4135295.00	0.01083
712059.10	4135181.00	0.02220	712142.50	4135304.00	0.03556
712165.10	4135293.00	0.02631	712187.80	4135283.00	0.02578
712210.40	4135272.00	0.03258	712233.10	4135262.00	0.04268
712255.70	4135251.00	0.04880	712278.30	4135240.00	0.04931
712284.10	4135238.00	0.04850	712273.80	4135215.00	0.05815
712263.40	4135192.00	0.07393	712253.00	4135169.00	0.09896
712242.70	4135147.00	0.12262	712232.30	4135124.00	0.12861
712221.90	4135101.00	0.11161	712211.60	4135078.00	0.08498
712201.30	4135056.00	0.06144	712190.90	4135033.00	0.04343
712180.50	4135010.00	0.03110	712170.10	4134987.00	0.02295
712169.50	4134986.00	0.02263	712151.50	4135003.00	0.02063
712133.50	4135021.00	0.01880	712115.50	4135038.00	0.01706
712097.40	4135055.00	0.01563	712079.40	4135073.00	0.01468
712061.40	4135090.00	0.01404	712049.30	4135102.00	0.01382
712059.80	4135124.00	0.01691	712070.20	4135147.00	0.02037
712080.70	4135170.00	0.02308	712091.10	4135192.00	0.02285
712101.60	4135215.00	0.01777	712112.10	4135238.00	0.01144
712122.50	4135261.00	0.01458	712132.90	4135283.00	0.02629

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOLUME3 ***
INCLUDING SOURCE(S): VOLUME3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	3.14759	712278.80	4135105.00	1.21684
712204.20	4135002.00	0.97693	712074.80	4134973.00	0.35458
712269.60	4135272.00	0.80867	711861.50	4135295.00	0.37398
712059.10	4135181.00	2.54948	712142.50	4135304.00	1.31901
712165.10	4135293.00	1.40086	712187.80	4135283.00	1.41801
712210.40	4135272.00	1.37819	712233.10	4135262.00	1.24336
712255.70	4135251.00	1.08950	712278.30	4135240.00	0.92767
712284.10	4135238.00	0.88361	712273.80	4135215.00	1.07236
712263.40	4135192.00	1.27583	712253.00	4135169.00	1.57430
712242.70	4135147.00	1.97494	712232.30	4135124.00	2.31255
712221.90	4135101.00	2.40251	712211.60	4135078.00	2.18096
712201.30	4135056.00	1.78450	712190.90	4135033.00	1.33968
712180.50	4135010.00	0.97308	712170.10	4134987.00	0.70774
712169.50	4134986.00	0.69763	712151.50	4135003.00	0.73717
712133.50	4135021.00	0.77999	712115.50	4135038.00	0.81345
712097.40	4135055.00	0.84309	712079.40	4135073.00	0.85179

712061.40 4135090.00 0.80180 712049.30
4135102.00 0.77358
712059.80 4135124.00 1.13325 712070.20
4135147.00 1.85306
712080.70 4135170.00 3.53892 712091.10
4135192.00 8.17281
712101.60 4135215.00 18.59958 712112.10
4135238.00 8.85511
712122.50 4135261.00 3.77561 712132.90
4135283.00 2.05580

↑ *** AERMOD - VERSION 18081 *** *** BEI *** 03/07/20
*** AERMET - VERSION 18081 *** *** V3 *** 16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOLUME4 ***
INCLUDING SOURCE(S): VOLUME4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	0.00198	712278.80	4135105.00	0.00603
712204.20	4135002.00	0.02926	712074.80	4134973.00	0.00301
712269.60	4135272.00	0.00134	711861.50	4135295.00	0.00095
712059.10	4135181.00	0.00443	712142.50	4135304.00	0.00137
712165.10	4135293.00	0.00142	712187.80	4135283.00	0.00148
712210.40	4135272.00	0.00156	712233.10	4135262.00	0.00160
712255.70	4135251.00	0.00164	712278.30	4135240.00	0.00169
712284.10	4135238.00	0.00168	712273.80	4135215.00	0.00213
712263.40	4135192.00	0.00279	712253.00	4135169.00	0.00381

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         712242.70    4135147.00        0.00544                             712232.30
4135124.00        0.00849
         712221.90    4135101.00        0.01457                             712211.60
4135078.00        0.02683
         712201.30    4135056.00        0.05033                             712190.90
4135033.00        0.06735
         712180.50    4135010.00        0.03816                             712170.10
4134987.00        0.01709
         712169.50    4134986.00        0.01650                             712151.50
4135003.00        0.01696
         712133.50    4135021.00        0.01590                             712115.50
4135038.00        0.01462
         712097.40    4135055.00        0.01264                             712079.40
4135073.00        0.01094
         712061.40    4135090.00        0.00868                             712049.30
4135102.00        0.00727
         712059.80    4135124.00        0.00803                             712070.20
4135147.00        0.00719
         712080.70    4135170.00        0.00574                             712091.10
4135192.00        0.00457
         712101.60    4135215.00        0.00357                             712112.10
4135238.00        0.00276
         712122.50    4135261.00        0.00213                             712132.90
4135283.00        0.00168
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: VOLUME5  ***
                                  INCLUDING SOURCE(S):     VOLUME5     ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

       X-COORD (M)   Y-COORD (M)        CONC                            X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
         712100.80    4135272.00        0.00019                             712278.80
4135105.00        0.00055
         712204.20    4135002.00        0.00434                             712074.80
4134973.00        0.00047
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         712269.60    4135272.00        0.00013                            711861.50
4135295.00         0.00010
         712059.10    4135181.00        0.00041                            712142.50
4135304.00         0.00013
         712165.10    4135293.00        0.00014                            712187.80
4135283.00         0.00014
         712210.40    4135272.00        0.00015                            712233.10
4135262.00         0.00015
         712255.70    4135251.00        0.00016                            712278.30
4135240.00         0.00016
         712284.10    4135238.00        0.00016                            712273.80
4135215.00         0.00020
         712263.40    4135192.00        0.00026                            712253.00
4135169.00         0.00034
         712242.70    4135147.00        0.00046                            712232.30
4135124.00         0.00069
         712221.90    4135101.00        0.00111                            712211.60
4135078.00         0.00203
         712201.30    4135056.00        0.00428                            712190.90
4135033.00         0.00000
         712180.50    4135010.00        0.00764                            712170.10
4134987.00         0.00399
         712169.50    4134986.00        0.00385                            712151.50
4135003.00         0.00501
         712133.50    4135021.00        0.00000                            712115.50
4135038.00         0.00343
         712097.40    4135055.00        0.00231                            712079.40
4135073.00         0.00153
         712061.40    4135090.00        0.00104                            712049.30
4135102.00         0.00082
         712059.80    4135124.00        0.00078                            712070.20
4135147.00         0.00065
         712080.70    4135170.00        0.00051                            712091.10
4135192.00         0.00041
         712101.60    4135215.00        0.00032                            712112.10
4135238.00         0.00025
         712122.50    4135261.00        0.00020                            712132.90
4135283.00         0.00016
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: LINE1    ***
                                  INCLUDING SOURCE(S):     LINE1       ,
```

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	6.72479	712278.80	4135105.00	21.41453
712204.20	4135002.00	652.82767	712074.80	4134973.00	16.11959
712269.60	4135272.00	3.89885	711861.50	4135295.00	4.52257
712059.10	4135181.00	13.22833	712142.50	4135304.00	4.36411
712165.10	4135293.00	4.41420	712187.80	4135283.00	4.47125
712210.40	4135272.00	4.77939	712233.10	4135262.00	5.11337
712255.70	4135251.00	4.72174	712278.30	4135240.00	5.19971
712284.10	4135238.00	5.36596	712273.80	4135215.00	6.59182
712263.40	4135192.00	8.31242	712253.00	4135169.00	10.84150
712242.70	4135147.00	14.58107	712232.30	4135124.00	21.11814
712221.90	4135101.00	33.53430	712211.60	4135078.00	61.85250
712201.30	4135056.00	143.50149	712190.90	4135033.00	610.40182
712180.50	4135010.00	1829.45085	712170.10	4134987.00	240.10155
712169.50	4134986.00	222.96152	712151.50	4135003.00	142.63116
712133.50	4135021.00	143.73386	712115.50	4135038.00	127.80100
712097.40	4135055.00	84.01695	712079.40	4135073.00	55.37660
712061.40	4135090.00	38.73011	712049.30	4135102.00	31.24296
712059.80	4135124.00	28.23303	712070.20	4135147.00	21.10136
712080.70	4135170.00	15.82496	712091.10	4135192.00	13.97025
712101.60	4135215.00	11.56329	712112.10	4135238.00	8.79760

712122.50 4135261.00 6.68673 712132.90
4135283.00 5.28750

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE2 ***
INCLUDING SOURCE(S): LINE2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	22.61441	712278.80	4135105.00	220.51922
712204.20	4135002.00	15.40183	712074.80	4134973.00	3.80194
712269.60	4135272.00	17.22999	711861.50	4135295.00	4.91933
712059.10	4135181.00	17.40143	712142.50	4135304.00	16.88609
712165.10	4135293.00	21.31933	712187.80	4135283.00	23.54208
712210.40	4135272.00	23.85029	712233.10	4135262.00	24.30675
712255.70	4135251.00	25.92358	712278.30	4135240.00	28.55122
712284.10	4135238.00	28.85938	712273.80	4135215.00	49.79428
712263.40	4135192.00	104.48317	712253.00	4135169.00	311.61072
712242.70	4135147.00	2434.19845	712232.30	4135124.00	488.26427
712221.90	4135101.00	126.40095	712211.60	4135078.00	52.18834
712201.30	4135056.00	29.14953	712190.90	4135033.00	18.56780
712180.50	4135010.00	12.92703	712170.10	4134987.00	9.54623

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         712169.50    4134986.00        9.41432                          712151.50
4135003.00        8.09329
         712133.50    4135021.00        7.25846                          712115.50
4135038.00        7.68592
         712097.40    4135055.00        7.99052                          712079.40
4135073.00        7.70839
         712061.40    4135090.00        7.40143                          712049.30
4135102.00        7.40410
         712059.80    4135124.00        9.61045                          712070.20
4135147.00       13.21658
         712080.70    4135170.00       20.30874                          712091.10
4135192.00       29.57652
         712101.60    4135215.00       34.96839                          712112.10
4135238.00       35.06945
         712122.50    4135261.00       28.25719                          712132.90
4135283.00       20.41708
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                          ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                        ***       16:45:09

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: LINE3    ***
                                  INCLUDING SOURCE(S):     LINE3       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

       X-COORD (M)   Y-COORD (M)        CONC                           X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
         712100.80    4135272.00        6.29770                          712278.80
4135105.00       17.94663
         712204.20    4135002.00      181.36843                          712074.80
4134973.00       21.99655
         712269.60    4135272.00        4.41855                          711861.50
4135295.00        5.07302
         712059.10    4135181.00       17.18803                          712142.50
4135304.00        4.28698
         712165.10    4135293.00        4.45995                          712187.80
4135283.00        4.77741
         712210.40    4135272.00        4.78794                          712233.10
4135262.00        4.72139
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         712255.70    4135251.00        5.19858                              712278.30
4135240.00        5.52883
         712284.10    4135238.00        5.53231                              712273.80
4135215.00        6.76057
         712263.40    4135192.00        8.47890                              712253.00
4135169.00       10.98289
         712242.70    4135147.00       14.64834                              712232.30
4135124.00       20.75192
         712221.90    4135101.00       31.33338                              712211.60
4135078.00       52.59985
         712201.30    4135056.00       97.48532                              712190.90
4135033.00      200.98751
         712180.50    4135010.00      476.94934                              712170.10
4134987.00      374.25577
         712169.50    4134986.00      360.48863                              712151.50
4135003.00      571.85204
         712133.50    4135021.00      678.04415                              712115.50
4135038.00      449.40113
         712097.40    4135055.00      273.26239                              712079.40
4135073.00      125.28467
         712061.40    4135090.00       70.78723                              712049.30
4135102.00       51.74403
         712059.80    4135124.00       38.73708                              712070.20
4135147.00       27.24537
         712080.70    4135170.00       21.54617                              712091.10
4135192.00       15.82735
         712101.60    4135215.00       11.16392                              712112.10
4135238.00        8.19600
         712122.50    4135261.00        6.32263                              712132.90
4135283.00        5.11376
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                               *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: LINE4    ***
                                   INCLUDING SOURCE(S):     LINE4       ,

                                              *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                         ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)   Y-COORD (M)        CONC                            X-COORD (M)
Y-COORD (M)        CONC
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- -
- -
712100.80 4135272.00 16.88832 712278.80
4135105.00 36.06389
712204.20 4135002.00 76.78814 712074.80
4134973.00 10.14337
712269.60 4135272.00 9.43237 711861.50
4135295.00 6.49511
712059.10 4135181.00 39.25172 712142.50
4135304.00 9.84527
712165.10 4135293.00 10.08351 712187.80
4135283.00 10.84364
712210.40 4135272.00 10.51784 712233.10
4135262.00 12.06668
712255.70 4135251.00 12.61043 712278.30
4135240.00 12.68237
712284.10 4135238.00 12.47617 712273.80
4135215.00 17.15130
712263.40 4135192.00 24.85118 712253.00
4135169.00 36.60595
712242.70 4135147.00 54.32916 712232.30
4135124.00 83.28175
712221.90 4135101.00 113.19512 712211.60
4135078.00 129.93870
712201.30 4135056.00 132.99320 712190.90
4135033.00 124.26647
712180.50 4135010.00 101.88731 712170.10
4134987.00 67.33276
712169.50 4134986.00 65.76409 712151.50
4135003.00 89.46321
712133.50 4135021.00 129.10292 712115.50
4135038.00 92.75816
712097.40 4135055.00 78.61588 712079.40
4135073.00 61.81558
712061.40 4135090.00 45.80445 712049.30
4135102.00 38.43437
712059.80 4135124.00 48.45420 712070.20
4135147.00 53.88837
712080.70 4135170.00 55.83161 712091.10
4135192.00 52.54568
712101.60 4135215.00 41.74335 712112.10
4135238.00 28.71206
712122.50 4135261.00 19.65395 712132.90
4135283.00 13.70023

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE5 ***
INCLUDING SOURCE(S): LINE5 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	31.48070	712278.80	4135105.00	95.73902
712204.20	4135002.00	17.31604	712074.80	4134973.00	3.98278
712269.60	4135272.00	19.69071	711861.50	4135295.00	5.91626
712059.10	4135181.00	22.67386	712142.50	4135304.00	23.05128
712165.10	4135293.00	24.29472	712187.80	4135283.00	23.89272
712210.40	4135272.00	25.51411	712233.10	4135262.00	26.82097
712255.70	4135251.00	29.79504	712278.30	4135240.00	30.01630
712284.10	4135238.00	29.16740	712273.80	4135215.00	46.84821
712263.40	4135192.00	82.68320	712253.00	4135169.00	139.98777
712242.70	4135147.00	266.56300	712232.30	4135124.00	310.20195
712221.90	4135101.00	172.45534	712211.60	4135078.00	76.09585
712201.30	4135056.00	38.50958	712190.90	4135033.00	22.80558
712180.50	4135010.00	15.45690	712170.10	4134987.00	11.36863
712169.50	4134986.00	11.22327	712151.50	4135003.00	11.39339
712133.50	4135021.00	10.40329	712115.50	4135038.00	8.65644
712097.40	4135055.00	8.52421	712079.40	4135073.00	9.25625
712061.40	4135090.00	9.04423	712049.30	4135102.00	8.69847

712059.80   4135124.00   11.59085   712070.20
4135147.00   16.57988
712080.70   4135170.00   26.48453   712091.10
4135192.00   46.72953
712101.60   4135215.00   62.97538   712112.10
4135238.00   59.66160
712122.50   4135261.00   40.31798   712132.90
4135283.00   30.18391

↑ *** AERMOD - VERSION 18081 ***   *** BEI
*** 03/07/20
*** AERMET - VERSION 18081 ***   *** V3
*** 16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE6   ***
INCLUDING SOURCE(S):   LINE6   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	6.31560	712278.80	4135105.00	16.55500
712204.20	4135002.00	131.09939	712074.80	4134973.00	27.08767
712269.60	4135272.00	4.49775	711861.50	4135295.00	5.45827
712059.10	4135181.00	20.76201	712142.50	4135304.00	4.47362
712165.10	4135293.00	4.63657	712187.80	4135283.00	4.71119
712210.40	4135272.00	4.94630	712233.10	4135262.00	5.07769
712255.70	4135251.00	5.33262	712278.30	4135240.00	5.60282
712284.10	4135238.00	5.60943	712273.80	4135215.00	6.84820
712263.40	4135192.00	8.53517	712253.00	4135169.00	10.88117
712242.70	4135147.00	14.22465	712232.30	4135124.00	19.75500

712221.90   4135101.00   28.81381   712211.60
4135078.00   44.44600
712201.30   4135056.00   71.43307   712190.90
4135033.00   133.25096
712180.50   4135010.00   312.85324   712170.10
4134987.00   378.43670
712169.50   4134986.00   364.17734   712151.50
4135003.00   573.22688
712133.50   4135021.00   764.77567   712115.50
4135038.00   825.07457
712097.40   4135055.00   731.11446   712079.40
4135073.00   378.37036
712061.40   4135090.00   142.74739   712049.30
4135102.00   86.51997
712059.80   4135124.00   54.94572   712070.20
4135147.00   35.72796
712080.70   4135170.00   23.54605   712091.10
4135192.00   15.99084
712101.60   4135215.00   11.18941   712112.10
4135238.00   8.30532
712122.50   4135261.00   6.48333   712132.90
4135283.00   5.29574

*** AERMOD - VERSION 18081 ***   *** BEI ***   03/07/20
*** AERMET - VERSION 18081 ***   *** V3 ***   16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE7   ***
INCLUDING SOURCE(S):   LINE7   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	23.37442	712278.80	4135105.00	24.06787
712204.20	4135002.00	47.96278	712074.80	4134973.00	14.24194
712269.60	4135272.00	10.22385	711861.50	4135295.00	8.08495

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         712059.10    4135181.00       73.73216                              712142.50
4135304.00       11.44753
         712165.10    4135293.00       11.88697                              712187.80
4135283.00       12.58114
         712210.40    4135272.00       13.76833                              712233.10
4135262.00       13.94834
         712255.70    4135251.00       13.47603                              712278.30
4135240.00       12.73364
         712284.10    4135238.00       12.41267                              712273.80
4135215.00       16.18138
         712263.40    4135192.00       21.11802                              712253.00
4135169.00       26.97233
         712242.70    4135147.00       35.54931                              712232.30
4135124.00       47.21062
         712221.90    4135101.00       59.49106                              712211.60
4135078.00       68.10800
         712201.30    4135056.00       71.62092                              712190.90
4135033.00       68.61384
         712180.50    4135010.00       58.99499                              712170.10
4134987.00       45.21387
         712169.50    4134986.00       44.56958                              712151.50
4135003.00       56.48813
         712133.50    4135021.00       76.46636                              712115.50
4135038.00      108.59864
         712097.40    4135055.00      158.75659                              712079.40
4135073.00       97.22598
         712061.40    4135090.00       90.09737                              712049.30
4135102.00       71.07642
         712059.80    4135124.00      104.61658                              712070.20
4135147.00      118.59096
         712080.70    4135170.00      120.85229                              712091.10
4135192.00      115.38654
         712101.60    4135215.00       88.61028                              712112.10
4135238.00       47.77301
         712122.50    4135261.00       25.83512                              712132.90
4135283.00       15.98382
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                 PAGE  56
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                             *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: LINE8    ***
                                 INCLUDING SOURCE(S):     LINE8       ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS
***
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** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	46.88441	712278.80	4135105.00	68.92261
712204.20	4135002.00	17.26039	712074.80	4134973.00	4.67263
712269.60	4135272.00	21.38244	711861.50	4135295.00	6.68742
712059.10	4135181.00	23.69791	712142.50	4135304.00	26.63286
712165.10	4135293.00	27.99342	712187.80	4135283.00	28.70902
712210.40	4135272.00	31.17732	712233.10	4135262.00	32.33598
712255.70	4135251.00	32.48699	712278.30	4135240.00	30.38478
712284.10	4135238.00	29.23154	712273.80	4135215.00	44.00534
712263.40	4135192.00	66.61738	712253.00	4135169.00	100.91791
712242.70	4135147.00	172.96228	712232.30	4135124.00	183.17487
712221.90	4135101.00	119.93618	712211.60	4135078.00	66.70392
712201.30	4135056.00	37.89709	712190.90	4135033.00	22.75705
712180.50	4135010.00	15.10525	712170.10	4134987.00	10.92609
712169.50	4134986.00	10.77969	712151.50	4135003.00	11.18381
712133.50	4135021.00	11.24164	712115.50	4135038.00	10.47439
712097.40	4135055.00	9.47397	712079.40	4135073.00	9.00811
712061.40	4135090.00	9.11491	712049.30	4135102.00	9.21912
712059.80	4135124.00	12.37216	712070.20	4135147.00	17.79642
712080.70	4135170.00	28.28019	712091.10	4135192.00	53.83786
712101.60	4135215.00	116.92225	712112.10	4135238.00	115.65238
712122.50	4135261.00	66.80923	712132.90	4135283.00	40.87898

↑ *** AERMOD - VERSION 18081 ***   *** BEI
                     ***   03/07/20
 *** AERMET - VERSION 18081 ***   *** V3
                     ***   16:45:09

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 *** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE9   ***
INCLUDING SOURCE(S):   LINE9   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	46.60165	712278.80	4135105.00	65.27224
712204.20	4135002.00	17.87483	712074.80	4134973.00	4.81651
712269.60	4135272.00	22.21116	711861.50	4135295.00	6.39648
712059.10	4135181.00	21.95969	712142.50	4135304.00	27.64538
712165.10	4135293.00	29.74819	712187.80	4135283.00	30.66948
712210.40	4135272.00	32.63438	712233.10	4135262.00	33.69561
712255.70	4135251.00	33.73687	712278.30	4135240.00	31.47378
712284.10	4135238.00	30.28334	712273.80	4135215.00	45.24512
712263.40	4135192.00	69.20474	712253.00	4135169.00	113.12374
712242.70	4135147.00	169.03285	712232.30	4135124.00	153.76247
712221.90	4135101.00	100.13771	712211.60	4135078.00	59.51249
712201.30	4135056.00	36.41041	712190.90	4135033.00	23.05808
712180.50	4135010.00	15.62312	712170.10	4134987.00	11.28536
712169.50	4134986.00	11.12750	712151.50	4135003.00	11.18834

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        712133.50    4135021.00       11.03602                              712115.50
4135038.00       10.35859
        712097.40    4135055.00        9.46187                              712079.40
4135073.00        8.89346
        712061.40    4135090.00        8.73205                              712049.30
4135102.00        8.78994
        712059.80    4135124.00       11.65632                              712070.20
4135147.00       16.43234
        712080.70    4135170.00       25.54514                              712091.10
4135192.00       45.63655
        712101.60    4135215.00       91.26220                              712112.10
4135238.00      102.93785
        712122.50    4135261.00       66.69212                              712132.90
4135283.00       41.86108
 *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                             *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: LINE10   ***
                                 INCLUDING SOURCE(S):     LINE10      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)   Y-COORD (M)        CONC                               X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
        712100.80    4135272.00       24.27632                              712278.80
4135105.00       24.47000
        712204.20    4135002.00       42.60895                              712074.80
4134973.00       14.36430
        712269.60    4135272.00       10.39477                              711861.50
4135295.00        7.95044
        712059.10    4135181.00       71.27196                              712142.50
4135304.00       11.98004
        712165.10    4135293.00       12.53430                              712187.80
4135283.00       13.16242
        712210.40    4135272.00       14.09461                              712233.10
4135262.00       14.16587
        712255.70    4135251.00       13.72193                              712278.30
4135240.00       12.88183
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712284.10 4135238.00 12.54496 712273.80
4135215.00 16.18578
712263.40 4135192.00 20.87630 712253.00
4135169.00 27.08832
712242.70 4135147.00 35.55500 712232.30
4135124.00 45.99825
712221.90 4135101.00 55.84058 712211.60
4135078.00 62.32093
712201.30 4135056.00 64.45751 712190.90
4135033.00 61.00729
712180.50 4135010.00 52.47710 712170.10
4134987.00 41.08789
712169.50 4134986.00 40.57692 712151.50
4135003.00 51.32317
712133.50 4135021.00 68.45233 712115.50
4135038.00 93.81879
712097.40 4135055.00 127.90528 712079.40
4135073.00 82.15346
712061.40 4135090.00 74.78163 712049.30
4135102.00 63.81540
712059.80 4135124.00 96.40660 712070.20
4135147.00 110.62775
712080.70 4135170.00 113.73750 712091.10
4135192.00 109.64124
712101.60 4135215.00 87.74566 712112.10
4135238.00 49.63160
712122.50 4135261.00 27.02536 712132.90
4135283.00 16.88079

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE11 ***
INCLUDING SOURCE(S): LINE11 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC X-COORD (M) Y-COORD (M) CONC
- -

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         712100.80    4135272.00        6.43641                            712278.80
4135105.00       15.62881
         712204.20    4135002.00      109.02702                            712074.80
4134973.00       30.23786
         712269.60    4135272.00        4.51548                            711861.50
4135295.00        5.17945
         712059.10    4135181.00       19.73935                            712142.50
4135304.00        4.51230
         712165.10    4135293.00        4.65874                            712187.80
4135283.00        4.78630
         712210.40    4135272.00        4.97143                            712233.10
4135262.00        5.13897
         712255.70    4135251.00        5.34641                            712278.30
4135240.00        5.52104
         712284.10    4135238.00        5.52182                            712273.80
4135215.00        6.68346
         712263.40    4135192.00        8.26258                            712253.00
4135169.00       10.48296
         712242.70    4135147.00       13.60106                            712232.30
4135124.00       18.50653
         712221.90    4135101.00       26.33959                            712211.60
4135078.00       39.28244
         712201.30    4135056.00       61.24492                            712190.90
4135033.00      107.36959
         712180.50    4135010.00      217.41512                            712170.10
4134987.00      309.68677
         712169.50    4134986.00      304.46039                            712151.50
4135003.00      583.53297
         712133.50    4135021.00      802.51155                            712115.50
4135038.00      871.42013
         712097.40    4135055.00      834.85601                            712079.40
4135073.00      422.47153
         712061.40    4135090.00      128.02392                            712049.30
4135102.00       78.66014
         712059.80    4135124.00       52.58175                            712070.20
4135147.00       33.43201
         712080.70    4135170.00       22.01791                            712091.10
4135192.00       15.39184
         712101.60    4135215.00       11.10654                            712112.10
4135238.00        8.37558
         712122.50    4135261.00        6.56826                            712132.90
4135283.00        5.35698
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*
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*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE12 ***
INCLUDING SOURCE(S): LINE12 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	30.51079	712278.80	4135105.00	89.56441
712204.20	4135002.00	18.77358	712074.80	4134973.00	4.41343
712269.60	4135272.00	19.77288	711861.50	4135295.00	5.82017
712059.10	4135181.00	22.00291	712142.50	4135304.00	22.38236
712165.10	4135293.00	24.84002	712187.80	4135283.00	25.16909
712210.40	4135272.00	26.12339	712233.10	4135262.00	27.45485
712255.70	4135251.00	29.66612	712278.30	4135240.00	30.02564
712284.10	4135238.00	29.35877	712273.80	4135215.00	46.79874
712263.40	4135192.00	80.14342	712253.00	4135169.00	140.53836
712242.70	4135147.00	252.88463	712232.30	4135124.00	257.84371
712221.90	4135101.00	148.61722	712211.60	4135078.00	73.76498
712201.30	4135056.00	39.94124	712190.90	4135033.00	23.93266
712180.50	4135010.00	15.99501	712170.10	4134987.00	11.59041
712169.50	4134986.00	11.43141	712151.50	4135003.00	11.28412
712133.50	4135021.00	10.54889	712115.50	4135038.00	9.30801
712097.40	4135055.00	8.64367	712079.40	4135073.00	8.86986
712061.40	4135090.00	8.94050	712049.30	4135102.00	8.79884
712059.80	4135124.00	11.44841	712070.20	4135147.00	16.13052

712080.70   4135170.00   25.78524   712091.10
4135192.00   42.08681
712101.60   4135215.00   56.62951   712112.10
4135238.00   53.98477
712122.50   4135261.00   40.61257   712132.90
4135283.00   29.98512

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE13   ***
INCLUDING SOURCE(S):   LINE13   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	17.35909	712278.80	4135105.00	34.66114
712204.20	4135002.00	67.09924	712074.80	4134973.00	11.48301
712269.60	4135272.00	9.51917	711861.50	4135295.00	6.39423
712059.10	4135181.00	39.09498	712142.50	4135304.00	10.26214
712165.10	4135293.00	10.51601	712187.80	4135283.00	10.84377
712210.40	4135272.00	11.36511	712233.10	4135262.00	12.04757
712255.70	4135251.00	12.61524	712278.30	4135240.00	12.59153
712284.10	4135238.00	12.40169	712273.80	4135215.00	16.86934
712263.40	4135192.00	23.85310	712253.00	4135169.00	34.42013
712242.70	4135147.00	50.77593	712232.30	4135124.00	74.51024
712221.90	4135101.00	97.39870	712211.60	4135078.00	110.81494

712201.30 4135056.00 114.12316 712190.90
4135033.00 106.90121
712180.50 4135010.00 87.89765 712170.10
4134987.00 60.95675
712169.50 4134986.00 59.76883 712151.50
4135003.00 80.01131
712133.50 4135021.00 112.30740 712115.50
4135038.00 96.00596
712097.40 4135055.00 67.97188 712079.40
4135073.00 58.61813
712061.40 4135090.00 44.82537 712049.30
4135102.00 37.95011
712059.80 4135124.00 47.78285 712070.20
4135147.00 53.56688
712080.70 4135170.00 55.33732 712091.10
4135192.00 52.10287
712101.60 4135215.00 41.80566 712112.10
4135238.00 29.32669
712122.50 4135261.00 19.97706 712132.90
4135283.00 13.99074

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE14 ***
INCLUDING SOURCE(S): LINE14 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC X-COORD (M) Y-COORD (M) CONC
- -
712100.80 4135272.00 6.39469 712278.80
4135105.00 17.14643
712204.20 4135002.00 158.27489 712074.80
4134973.00 23.40958
712269.60 4135272.00 4.35629 711861.50
4135295.00 4.75321
712059.10 4135181.00 16.76157 712142.50
4135304.00 4.37414

712165.10   4135293.00   4.51246   712187.80
4135283.00   4.66068
712210.40   4135272.00   4.79996   712233.10
4135262.00   4.91186
712255.70   4135251.00   5.14415   712278.30
4135240.00   5.40951
712284.10   4135238.00   5.43510   712273.80
4135215.00   6.60888
712263.40   4135192.00   8.22355   712253.00
4135169.00   10.52956
712242.70   4135147.00   13.83493   712232.30
4135124.00   19.23908
712221.90   4135101.00   28.53609   712211.60
4135078.00   46.15306
712201.30   4135056.00   81.28925   712190.90
4135033.00   161.92711
712180.50   4135010.00   366.72009   712170.10
4134987.00   348.17747
712169.50   4134986.00   338.81233   712151.50
4135003.00   576.43161
712133.50   4135021.00   703.01398   712115.50
4135038.00   457.68130
712097.40   4135055.00   231.72260   712079.40
4135073.00   107.13345
712061.40   4135090.00   61.93007   712049.30
4135102.00   45.74832
712059.80   4135124.00   35.68757   712070.20
4135147.00   26.50457
712080.70   4135170.00   19.78520   712091.10
4135192.00   14.77679
712101.60   4135215.00   10.91933   712112.10
4135238.00   8.24709
712122.50   4135261.00   6.42871   712132.90
4135283.00   5.21087

*** AERMOD - VERSION 18081 ***   *** BEI
***   03/07/20
*** AERMET - VERSION 18081 ***   *** V3
***   16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE15   ***
INCLUDING SOURCE(S):   LINE15   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3

**

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	6.44337	712278.80	4135105.00	19.51410
712204.20	4135002.00	502.07702	712074.80	4134973.00	17.32835
712269.60	4135272.00	4.18101	711861.50	4135295.00	4.21700
712059.10	4135181.00	13.32698	712142.50	4135304.00	4.44801
712165.10	4135293.00	4.45097	712187.80	4135283.00	4.51320
712210.40	4135272.00	4.70411	712233.10	4135262.00	4.84146
712255.70	4135251.00	4.95550	712278.30	4135240.00	5.16267
712284.10	4135238.00	5.20372	712273.80	4135215.00	6.34411
712263.40	4135192.00	7.92737	712253.00	4135169.00	10.21797
712242.70	4135147.00	13.54738	712232.30	4135124.00	19.17865
712221.90	4135101.00	29.38437	712211.60	4135078.00	50.83186
712201.30	4135056.00	104.51931	712190.90	4135033.00	330.59518
712180.50	4135010.00	1787.29712	712170.10	4134987.00	285.44378
712169.50	4134986.00	264.85038	712151.50	4135003.00	148.39056
712133.50	4135021.00	162.85115	712115.50	4135038.00	124.22155
712097.40	4135055.00	77.99583	712079.40	4135073.00	50.78249
712061.40	4135090.00	35.39772	712049.30	4135102.00	28.51122
712059.80	4135124.00	24.92065	712070.20	4135147.00	19.87543
712080.70	4135170.00	15.91939	712091.10	4135192.00	13.09153
712101.60	4135215.00	10.53931	712112.10	4135238.00	8.35903
712122.50	4135261.00	6.62557	712132.90	4135283.00	5.35891

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE16 ***
INCLUDING SOURCE(S): LINE16 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
712100.80	4135272.00	21.24049	712278.80	4135105.00	189.76607
712204.20	4135002.00	15.28440	712074.80	4134973.00	3.78453
712269.60	4135272.00	18.06966	711861.50	4135295.00	4.85631
712059.10	4135181.00	16.42493	712142.50	4135304.00	17.35312
712165.10	4135293.00	20.90028	712187.80	4135283.00	23.73038
712210.40	4135272.00	25.25244	712233.10	4135262.00	25.53463
712255.70	4135251.00	26.99924	712278.30	4135240.00	29.20086
712284.10	4135238.00	29.30504	712273.80	4135215.00	50.11942
712263.40	4135192.00	103.36812	712253.00	4135169.00	291.71861
712242.70	4135147.00	1444.30201	712232.30	4135124.00	346.53402
712221.90	4135101.00	108.48121	712211.60	4135078.00	48.26872
712201.30	4135056.00	27.67374	712190.90	4135033.00	17.91240
712180.50	4135010.00	12.61288	712170.10	4134987.00	9.42788
712169.50	4134986.00	9.30435	712151.50	4135003.00	8.40435
712133.50	4135021.00	7.62204	712115.50	4135038.00	7.44303

712097.40   4135055.00   7.62418   712079.40
4135073.00   7.64750
712061.40   4135090.00   7.38149   712049.30
4135102.00   7.23591
712059.80   4135124.00   9.34260   712070.20
4135147.00   13.08299
712080.70   4135170.00   19.30549   712091.10
4135192.00   26.80795
712101.60   4135215.00   32.29223   712112.10
4135238.00   32.13303
712122.50   4135261.00   27.04399   712132.90
4135283.00   21.45793

↑ *** AERMOD - VERSION 18081 ***   *** BEI
*** 03/07/20
*** AERMET - VERSION 18081 ***   *** V3
*** 16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: POINT1   ***
INCLUDING SOURCE(S):   POINT1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF OTHER   IN MICROGRAMS/M**3
**

X-COORD (M) Y-COORD (M)   CONC   (YYMMDDHH)   X-COORD (M)
Y-COORD (M)   CONC   (YYMMDDHH)
- -
- -
712100.80   4135272.00   0.00271 (16012117)   712278.80
4135105.00   0.00779 (14110706)
712204.20   4135002.00   0.00178 (16062906)   712074.80
4134973.00   0.00296 (17121707)
712269.60   4135272.00   0.00642 (16112217)   711861.50
4135295.00   0.00344 (14022108)
712059.10   4135181.00   0.00844 (13021306)   712142.50
4135304.00   0.00230 (16011708)
712165.10   4135293.00   0.00263 (14121017)   712187.80
4135283.00   0.00259 (17012308)
712210.40   4135272.00   0.00389 (16091506)   712233.10
4135262.00   0.00594 (15100506)
712255.70   4135251.00   0.00656 (15090906)   712278.30
4135240.00   0.00635 (14100306)
712284.10   4135238.00   0.00661 (14100306)   712273.80
4135215.00   0.00655 (17011707)

712263.40 4135192.00 0.00764 (14101907) 712253.00
4135169.00 0.00784 (16091106)
712242.70 4135147.00 0.00843 (16110206) 712232.30
4135124.00 0.00869 (14110706)
712221.90 4135101.00 0.00623 (16110606) 712211.60
4135078.00 0.00277 (16072806)
712201.30 4135056.00 0.00253 (13071406) 712190.90
4135033.00 0.00219 (14091406)
712180.50 4135010.00 0.00197 (14060506) 712170.10
4134987.00 0.00210 (16090707)
712169.50 4134986.00 0.00211 (16090707) 712151.50
4135003.00 0.00214 (16090707)
712133.50 4135021.00 0.00235 (14020517) 712115.50
4135038.00 0.00231 (13120508)
712097.40 4135055.00 0.00491 (14012808) 712079.40
4135073.00 0.00676 (17122708)
712061.40 4135090.00 0.00739 (16103106) 712049.30
4135102.00 0.00719 (17102507)
712059.80 4135124.00 0.00786 (13011908) 712070.20
4135147.00 0.00719 (14040607)
712080.70 4135170.00 0.00882 (14100307) 712091.10
4135192.00 0.00459 (16011409)
712101.60 4135215.00 0.00423 (17020908) 712112.10
4135238.00 0.00390 (16021706)
712122.50 4135261.00 0.00314 (14121008) 712132.90
4135283.00 0.00257 (15020517)

*** AERMOD - VERSION 18081 *** *** BEI
*** 03/07/20
*** AERMET - VERSION 18081 *** *** V3
*** 16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: AREA1 ***
INCLUDING SOURCE(S): AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M) Y-COORD (M) CONC (YYMMDDHH)
- -
712100.80 4135272.00 34.31219 (17121507) 712278.80
4135105.00 68.86539 (17122917)

```
        712204.20   4135002.00      103.86242  (17062206)                712074.80
4134973.00       54.42218  (17121908)
        712269.60   4135272.00       34.78524  (16020908)                711861.50
4135295.00       16.67699  (13011909)
        712059.10   4135181.00       53.42609  (13011909)                712142.50
4135304.00       31.34550  (16120317)
        712165.10   4135293.00       33.91275  (15011308)                712187.80
4135283.00       34.33204  (15121208)
        712210.40   4135272.00       35.65954  (13021307)                712233.10
4135262.00       38.52873  (16020908)
        712255.70   4135251.00       40.79042  (16020908)                712278.30
4135240.00       44.68117  (13013117)
        712284.10   4135238.00       48.53404  (13013117)                712273.80
4135215.00       60.16993  (13013117)
        712263.40   4135192.00       73.77901  (13013117)                712253.00
4135169.00       88.04183  (13013117)
        712242.70   4135147.00       99.04501  (13013117)                712232.30
4135124.00      108.04459  (13022008)
        712221.90   4135101.00      112.64980  (15021206)                712211.60
4135078.00      141.29379  (17122917)
        712201.30   4135056.00      162.09844  (13021607)                712190.90
4135033.00      146.37919  (14060906)
        712180.50   4135010.00      141.89490  (15051606)                712170.10
4134987.00      108.21540  (14020408)
        712169.50   4134986.00      107.14374  (14020408)                712151.50
4135003.00      137.46392  (17123008)
        712133.50   4135021.00      163.13915  (13032507)                712115.50
4135038.00      145.33357  (15122008)
        712097.40   4135055.00      109.70765  (13021306)                712079.40
4135073.00       89.18388  (13021707)
        712061.40   4135090.00       71.17546  (13010708)                712049.30
4135102.00       61.72471  (14022108)
        712059.80   4135124.00       64.84853  (15021108)                712070.20
4135147.00       77.52200  (13011909)
        712080.70   4135170.00       56.16325  (13011909)                712091.10
4135192.00       54.68359  (14121406)
        712101.60   4135215.00       48.46171  (17022406)                712112.10
4135238.00       42.89722  (14120508)
        712122.50   4135261.00       39.21542  (14120508)                712132.90
4135283.00       35.51976  (16120317)
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  AREA2    ***
```

INCLUDING SOURCE(S): AREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	105.60569	(13011606)	712278.80	4135105.00	188.52291	(17122917)
712204.20	4135002.00	251.04395	(17062206)	712074.80	4134973.00	141.00138	(17121908)
712269.60	4135272.00	102.06494	(15010808)	711861.50	4135295.00	50.44674	(15021108)
712059.10	4135181.00	155.07501	(13011909)	712142.50	4135304.00	96.98152	(13022206)
712165.10	4135293.00	103.57803	(15011308)	712187.80	4135283.00	107.96262	(15121208)
712210.40	4135272.00	107.27637	(15010708)	712233.10	4135262.00	117.83347	(16020908)
712255.70	4135251.00	115.85388	(16020908)	712278.30	4135240.00	125.86244	(13013117)
712284.10	4135238.00	144.12763	(13013117)	712273.80	4135215.00	183.14296	(13013117)
712263.40	4135192.00	219.72852	(13013117)	712253.00	4135169.00	247.56025	(13013117)
712242.70	4135147.00	269.66170	(13022008)	712232.30	4135124.00	304.75407	(13022008)
712221.90	4135101.00	341.07189	(17122917)	712211.60	4135078.00	489.00464	(14022308)
712201.30	4135056.00	482.14366	(14022308)	712190.90	4135033.00	451.17646	(17111208)
712180.50	4135010.00	377.30588	(15051606)	712170.10	4134987.00	267.95122	(14020408)
712169.50	4134986.00	264.52876	(14020408)	712151.50	4135003.00	320.01116	(17123008)
712133.50	4135021.00	427.63511	(13032507)	712115.50	4135038.00	424.94056	(13013108)
712097.40	4135055.00	296.14875	(13021306)	712079.40	4135073.00	227.77086	(13021306)
712061.40	4135090.00	191.51698	(13021707)	712049.30	4135102.00	168.15333	(13010708)
712059.80	4135124.00	179.69956	(14022108)	712070.20	4135147.00	215.81084	(13011909)
712080.70	4135170.00	156.47921	(17120208)	712091.10	4135192.00	158.17161	(14121406)

712101.60 4135215.00 146.46382 (17022406) 712112.10
4135238.00 128.26367 (14120508)
712122.50 4135261.00 118.81824 (14120508) 712132.90
4135283.00 112.18561 (16120317)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: AREA3 ***
INCLUDING SOURCE(S): AREA3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	371.46796	(14120508)	712278.80	4135105.00	722.48863	(16021508)
712204.20	4135002.00	1279.39603	(14060906)	712074.80	4134973.00	670.85518	(17121908)
712269.60	4135272.00	383.34142	(16020908)	711861.50	4135295.00	192.76022	(13011909)
712059.10	4135181.00	512.46184	(13011909)	712142.50	4135304.00	335.63470	(16120317)
712165.10	4135293.00	364.26702	(15011308)	712187.80	4135283.00	371.42991	(17121806)
712210.40	4135272.00	389.42979	(13021307)	712233.10	4135262.00	400.37149	(16020908)
712255.70	4135251.00	446.11376	(16020908)	712278.30	4135240.00	431.58587	(13013117)
712284.10	4135238.00	481.70337	(13013117)	712273.80	4135215.00	610.22147	(13013117)
712263.40	4135192.00	771.84582	(13013117)	712253.00	4135169.00	964.48644	(13013117)
712242.70	4135147.00	1156.62340	(13013117)	712232.30	4135124.00	1272.97200	(13013117)
712221.90	4135101.00	1370.96702	(15021206)	712211.60	4135078.00	1642.03253	(17122917)
712201.30	4135056.00	1887.31837	(14022308)	712190.90	4135033.00	1707.25544	(13021607)

712180.50   4135010.00   1793.48706 (16111006)   712170.10
4134987.00   1434.96322 (14020408)
712169.50   4134986.00   1429.05005 (14020408)   712151.50
4135003.00   1983.64936 (17123008)
712133.50   4135021.00   2372.01771 (13011807)   712115.50
4135038.00   1704.62987 (17022506)
712097.40   4135055.00   1267.83640 (13021306)   712079.40
4135073.00   1008.63969 (13010708)
712061.40   4135090.00   809.24815 (14022108)   712049.30
4135102.00   731.58532 (14022108)
712059.80   4135124.00   769.62685 (13011909)   712070.20
4135147.00   803.74613 (13011909)
712080.70   4135170.00   542.12078 (13010807)   712091.10
4135192.00   597.70358 (14121406)
712101.60   4135215.00   525.84407 (17121507)   712112.10
4135238.00   469.72847 (14120508)
712122.50   4135261.00   417.77324 (14120508)   712132.90
4135283.00   382.39797 (16120317)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: AREA4   ***
INCLUDING SOURCE(S):   AREA4   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	2100.40095	(17022406)	712278.80	4135105.00	2241.72460	(15011917)
712204.20	4135002.00	2067.01695	(15051606)	712074.80	4134973.00	1642.11806	(13032507)
712269.60	4135272.00	2705.82729	(13013117)	711861.50	4135295.00	704.15263	(14022108)
712059.10	4135181.00	2759.07818	(14022108)	712142.50	4135304.00	1927.84504	(16120317)
712165.10	4135293.00	2128.73803	(17121308)	712187.80	4135283.00	2228.15030	(13021307)

712210.40 4135272.00 2543.13490 (16020908) 712233.10
4135262.00 2506.62671 (13013117)
712255.70 4135251.00 3193.22292 (13013117) 712278.30
4135240.00 2530.91360 (13022008)
712284.10 4135238.00 2351.32986 (13022008) 712273.80
4135215.00 2374.19948 (14120617)
712263.40 4135192.00 2612.56907 (15111908) 712253.00
4135169.00 3250.67296 (17122917)
712242.70 4135147.00 3939.97610 (14022308) 712232.30
4135124.00 4214.92023 (14022308)
712221.90 4135101.00 4145.32373 (17111208) 712211.60
4135078.00 3535.19527 (14060906)
712201.30 4135056.00 3094.55192 (15051606) 712190.90
4135033.00 2863.27860 (15051606)
712180.50 4135010.00 2235.53638 (14020408) 712170.10
4134987.00 1974.79273 (14020408)
712169.50 4134986.00 1957.23650 (14020408) 712151.50
4135003.00 2407.55067 (16012706)
712133.50 4135021.00 3003.68992 (14021508) 712115.50
4135038.00 3557.82131 (13032507)
712097.40 4135055.00 3009.10204 (14122217) 712079.40
4135073.00 3024.67228 (13013108)
712061.40 4135090.00 2376.64954 (13011908) 712049.30
4135102.00 2108.05075 (17022506)
712059.80 4135124.00 2760.92766 (13021306) 712070.20
4135147.00 3185.19466 (13021707)
712080.70 4135170.00 3429.73711 (14022108) 712091.10
4135192.00 4112.86539 (13011909)
712101.60 4135215.00 2957.05173 (13011909) 712112.10
4135238.00 2873.58331 (13013006)
712122.50 4135261.00 2478.25899 (14120508) 712132.90
4135283.00 2223.15934 (16120317)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: VOLUME1 ***
INCLUDING SOURCE(S): VOLUME1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF OTHER IN MICROGRAMS/M**3
**

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	18.55820	(14021008)	712278.80	4135105.00	17.27190	(15021507)
712204.20	4135002.00	16.20372	(13021506)	712074.80	4134973.00	14.73480	(14120506)
712269.60	4135272.00	14.78367	(16032407)	711861.50	4135295.00	5.06293	(13012908)
712059.10	4135181.00	23.11231	(16021107)	712142.50	4135304.00	16.12541	(16021208)
712165.10	4135293.00	15.59853	(15011307)	712187.80	4135283.00	17.39826	(15120106)
712210.40	4135272.00	17.80815	(16012708)	712233.10	4135262.00	18.40798	(16021408)
712255.70	4135251.00	17.47436	(13010706)	712278.30	4135240.00	16.17485	(13022008)
712284.10	4135238.00	15.98952	(13020706)	712273.80	4135215.00	18.23412	(14120617)
712263.40	4135192.00	20.94410	(17022407)	712253.00	4135169.00	24.26935	(16021508)
712242.70	4135147.00	25.43093	(14021807)	712232.30	4135124.00	30.48487	(17012607)
712221.90	4135101.00	30.18804	(14012208)	712211.60	4135078.00	27.07063	(15021806)
712201.30	4135056.00	23.74455	(17022408)	712190.90	4135033.00	22.76484	(16120206)
712180.50	4135010.00	18.76493	(14021106)	712170.10	4134987.00	15.66387	(15010408)
712169.50	4134986.00	15.59483	(15010408)	712151.50	4135003.00	19.04393	(16022106)
712133.50	4135021.00	24.98509	(14020406)	712115.50	4135038.00	29.21376	(15011907)
712097.40	4135055.00	29.55680	(14012706)	712079.40	4135073.00	26.39793	(17121006)
712061.40	4135090.00	20.29187	(17120907)	712049.30	4135102.00	18.08055	(17120606)
712059.80	4135124.00	29.59709	(14011608)	712070.20	4135147.00	32.60310	(17121907)
712080.70	4135170.00	31.73481	(16021107)	712091.10	4135192.00	28.82927	(17012908)
712101.60	4135215.00	29.40900	(17012408)	712112.10	4135238.00	24.77173	(14021008)
712122.50	4135261.00	20.68655	(15021708)	712132.90	4135283.00	17.71709	(16021208)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOLUME2 ***
INCLUDING SOURCE(S): VOLUME2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	3.78935	(16111309)	712278.80	4135105.00	2.61503	(15010509)
712204.20	4135002.00	1.93142	(16121909)	712074.80	4134973.00	2.40184	(14011709)
712269.60	4135272.00	5.11580	(16030208)	711861.50	4135295.00	1.74111	(17122609)
712059.10	4135181.00	4.57530	(17122809)	712142.50	4135304.00	4.62202	(16031608)
712165.10	4135293.00	5.63839	(16102308)	712187.80	4135283.00	4.30602	(16102308)
712210.40	4135272.00	5.06410	(13011911)	712233.10	4135262.00	5.02577	(16030208)
712255.70	4135251.00	4.86662	(16030208)	712278.30	4135240.00	3.96023	(17041507)
712284.10	4135238.00	4.00781	(17041507)	712273.80	4135215.00	4.26958	(16122409)
712263.40	4135192.00	3.39151	(16122409)	712253.00	4135169.00	3.88482	(15011110)
712242.70	4135147.00	4.00289	(13010809)	712232.30	4135124.00	4.26653	(14011309)
712221.90	4135101.00	3.78893	(14011309)	712211.60	4135078.00	3.33473	(16121909)
712201.30	4135056.00	2.97603	(16121909)	712190.90	4135033.00	2.17694	(16121909)
712180.50	4135010.00	1.65421	(14011909)	712170.10	4134987.00	1.61180	(15122609)
712169.50	4134986.00	1.61890	(15122609)	712151.50	4135003.00	2.10786	(14011709)
712133.50	4135021.00	2.95109	(14011709)	712115.50	4135038.00	3.53460	(14011709)
712097.40	4135055.00	3.43347	(14011709)	712079.40	4135073.00	2.49320	(14011709)

712061.40 4135090.00 2.62477 (13011409) 712049.30
4135102.00 3.32282 (13011409)
712059.80 4135124.00 4.09629 (13011409) 712070.20
4135147.00 4.80669 (13011409)
712080.70 4135170.00 4.66034 (13011409) 712091.10
4135192.00 4.18684 (16110108)
712101.60 4135215.00 4.43288 (13013109) 712112.10
4135238.00 3.44150 (17052107)
712122.50 4135261.00 2.98155 (17120810) 712132.90
4135283.00 4.04367 (16122910)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: VOLUME3 ***
INCLUDING SOURCE(S): VOLUME3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF OTHER IN MICROGRAMS/M**3
**

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M)
Y-COORD (M) CONC (YYMMDDHH)
- -
712100.80 4135272.00 309.47611 (14021008) 712278.80
4135105.00 91.89850 (15021806)
712204.20 4135002.00 73.63428 (17022607) 712074.80
4134973.00 80.63464 (14021508)
712269.60 4135272.00 134.35605 (17012817) 711861.50
4135295.00 53.78474 (17121907)
712059.10 4135181.00 237.98324 (16020406) 712142.50
4135304.00 227.63497 (15011307)
712165.10 4135293.00 236.59191 (16012708) 712187.80
4135283.00 236.06395 (16021108)
712210.40 4135272.00 214.82190 (13012907) 712233.10
4135262.00 184.69550 (17022407)
712255.70 4135251.00 158.82735 (16021508) 712278.30
4135240.00 129.15000 (15021407)
712284.10 4135238.00 119.95203 (15021407) 712273.80
4135215.00 144.64939 (16020308)
712263.40 4135192.00 140.68982 (17012607) 712253.00
4135169.00 144.09349 (13012706)

712242.70 4135147.00 147.73077 (14012508) 712232.30
4135124.00 122.33695 (16020307)
712221.90 4135101.00 108.99452 (14032306) 712211.60
4135078.00 103.15720 (15011707)
712201.30 4135056.00 104.70295 (16120206) 712190.90
4135033.00 91.74021 (17022607)
712180.50 4135010.00 82.22567 (14021106) 712170.10
4134987.00 71.51430 (13021107)
712169.50 4134986.00 70.95700 (13021107) 712151.50
4135003.00 80.79714 (15010408)
712133.50 4135021.00 98.21164 (16022106) 712115.50
4135038.00 123.39484 (16022106)
712097.40 4135055.00 142.24203 (14021508) 712079.40
4135073.00 155.85727 (13020908)
712061.40 4135090.00 160.93498 (14012706) 712049.30
4135102.00 127.86105 (15012606)
712059.80 4135124.00 167.82620 (16121908) 712070.20
4135147.00 232.77340 (14012806)
712080.70 4135170.00 349.61720 (15122706) 712091.10
4135192.00 486.71922 (16020406)
712101.60 4135215.00 611.72831 (15021209) 712112.10
4135238.00 462.90980 (16102306)
712122.50 4135261.00 362.52234 (16021208) 712132.90
4135283.00 271.55268 (14030306)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOLUME4 ***
INCLUDING SOURCE(S): VOLUME4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M)
Y-COORD (M) CONC (YYMMDDHH)
- -
712100.80 4135272.00 0.42512 (14021008) 712278.80
4135105.00 0.77644 (16011517)
712204.20 4135002.00 0.97630 (15011707) 712074.80
4134973.00 0.51201 (15010108)

712269.60 4135272.00 0.40680 (13012508) 711861.50
4135295.00 0.14292 (17120107)
712059.10 4135181.00 0.47682 (16011408) 712142.50
4135304.00 0.36667 (15021708)
712165.10 4135293.00 0.40998 (16021208) 712187.80
4135283.00 0.39594 (17121308)
712210.40 4135272.00 0.44584 (17122317) 712233.10
4135262.00 0.42731 (13010417)
712255.70 4135251.00 0.46023 (13012508) 712278.30
4135240.00 0.47543 (16021408)
712284.10 4135238.00 0.46635 (16021408) 712273.80
4135215.00 0.54626 (16021108)
712263.40 4135192.00 0.62602 (16021108) 712253.00
4135169.00 0.74385 (13010706)
712242.70 4135147.00 0.88137 (15122007) 712232.30
4135124.00 1.08733 (13012907)
712221.90 4135101.00 1.30288 (17012817) 712211.60
4135078.00 1.53390 (15101206)
712201.30 4135056.00 1.72356 (15030308) 712190.90
4135033.00 1.59820 (17022408)
712180.50 4135010.00 1.33829 (13021708) 712170.10
4134987.00 1.00671 (15011209)
712169.50 4134986.00 0.99041 (15011209) 712151.50
4135003.00 1.34408 (14020406)
712133.50 4135021.00 1.51637 (13030106) 712115.50
4135038.00 1.39333 (15122706)
712097.40 4135055.00 1.04072 (17120606) 712079.40
4135073.00 1.02207 (14011608)
712061.40 4135090.00 0.80920 (14121407) 712049.30
4135102.00 0.68744 (17121907)
712059.80 4135124.00 0.69305 (13012908) 712070.20
4135147.00 0.64803 (15020306)
712080.70 4135170.00 0.58533 (17012908) 712091.10
4135192.00 0.67310 (15121107)
712101.60 4135215.00 0.59719 (17012408) 712112.10
4135238.00 0.52999 (14021008)
712122.50 4135261.00 0.45898 (14120508) 712132.90
4135283.00 0.41581 (15021708)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOLUME5 ***
INCLUDING SOURCE(S): VOLUME5 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	0.03954	(14120508)	712278.80	4135105.00	0.06930	(17012817)
712204.20	4135002.00	0.10289	(16123108)	712074.80	4134973.00	0.06074	(17121006)
712269.60	4135272.00	0.03764	(16012708)	711861.50	4135295.00	0.01547	(15020306)
712059.10	4135181.00	0.04724	(15123008)	712142.50	4135304.00	0.03549	(16021208)
712165.10	4135293.00	0.03837	(16021208)	712187.80	4135283.00	0.03763	(17121308)
712210.40	4135272.00	0.04152	(17122317)	712233.10	4135262.00	0.04072	(17013108)
712255.70	4135251.00	0.04240	(16012708)	712278.30	4135240.00	0.04271	(15021906)
712284.10	4135238.00	0.04374	(16021408)	712273.80	4135215.00	0.04978	(16021408)
712263.40	4135192.00	0.05623	(16021408)	712253.00	4135169.00	0.06522	(16021108)
712242.70	4135147.00	0.07512	(16032407)	712232.30	4135124.00	0.08669	(13022008)
712221.90	4135101.00	0.10281	(13022008)	712211.60	4135078.00	0.11600	(17012907)
712201.30	4135056.00	0.12875	(14101907)	712190.90	4135033.00	0.00000	(00000000)
712180.50	4135010.00	0.13002	(16021008)	712170.10	4134987.00	0.11164	(17122707)
712169.50	4134986.00	0.11026	(17122707)	712151.50	4135003.00	0.13105	(16010807)
712133.50	4135021.00	0.00000	(00000000)	712115.50	4135038.00	0.12602	(17120606)
712097.40	4135055.00	0.11468	(15120108)	712079.40	4135073.00	0.09199	(17121907)
712061.40	4135090.00	0.07408	(15120107)	712049.30	4135102.00	0.06445	(16021206)
712059.80	4135124.00	0.06058	(17120107)	712070.20	4135147.00	0.05622	(17012908)
712080.70	4135170.00	0.06255	(15123008)	712091.10	4135192.00	0.05958	(17012408)
712101.60	4135215.00	0.05273	(15122406)	712112.10	4135238.00	0.04810	(14120508)

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        712122.50   4135261.00        0.04221  (17122506)                712132.90
4135283.00        0.03921  (15021708)
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                 PAGE  75
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE1    ***
                                 INCLUDING SOURCE(S):     LINE1       ,

                                              *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                         ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
        712100.80   4135272.00     4306.68680  (13011606)                712278.80
4135105.00    10736.62367  (13011407)
        712204.20   4135002.00    36667.19798  (14060906)                712074.80
4134973.00     8280.54913  (13010806)
        712269.60   4135272.00     3844.82474  (16020908)                711861.50
4135295.00     2321.93053  (13011909)
        712059.10   4135181.00     5141.91882  (13021406)                712142.50
4135304.00     4018.46240  (16120317)
        712165.10   4135293.00     4171.45799  (13012208)                712187.80
4135283.00     4506.98035  (17121308)
        712210.40   4135272.00     4508.52207  (15121208)                712233.10
4135262.00     4563.79179  (17122317)
        712255.70   4135251.00     3976.53577  (17013108)                712278.30
4135240.00     5185.52585  (16020908)
        712284.10   4135238.00     4770.29829  (16020908)                712273.80
4135215.00     5395.00588  (13021106)
        712263.40   4135192.00     6471.10996  (15010808)                712253.00
4135169.00     7856.95197  (15010808)
        712242.70   4135147.00     9595.42065  (13010808)                712232.30
4135124.00    12111.23288  (13010808)
        712221.90   4135101.00    16232.79374  (17013107)                712211.60
4135078.00    25969.18227  (13013117)
        712201.30   4135056.00    40142.12222  (13013117)                712190.90
4135033.00    60385.69487  (17122917)
        712180.50   4135010.00    69966.40354  (16111006)                712170.10
4134987.00    31815.46934  (16012706)
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        712169.50   4134986.00    30877.08303  (16012706)                712151.50
4135003.00    38611.35926  (13011807)
        712133.50   4135021.00    33421.65197  (17123006)                712115.50
4135038.00    25499.21573  (13021707)
        712097.40   4135055.00    16445.38286  (14022108)                712079.40
4135073.00    13853.36554  (14022108)
        712061.40   4135090.00     8987.72038  (13020406)                712049.30
4135102.00     7514.28182  (13012006)
        712059.80   4135124.00     9580.27568  (13011909)                712070.20
4135147.00     6852.25903  (17120208)
        712080.70   4135170.00     5449.66860  (15123008)                712091.10
4135192.00     6699.54269  (14121406)
        712101.60   4135215.00     5757.73807  (15122406)                712112.10
4135238.00     5166.01290  (13011606)
        712122.50   4135261.00     4937.70270  (14120508)                712132.90
4135283.00     3921.41860  (17122506)
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

                                  PAGE  76
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE2    ***
                                  INCLUDING SOURCE(S):     LINE2       ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYYYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
        712100.80   4135272.00     8521.95531  (13011909)                712278.80
4135105.00    18875.67574  (14060906)
        712204.20   4135002.00     6567.09144  (13022807)                712074.80
4134973.00     3019.60423  (16120308)
        712269.60   4135272.00     9873.44779  (16020908)                711861.50
4135295.00     1978.01357  (14011008)
        712059.10   4135181.00     6401.19280  (13012607)                712142.50
4135304.00     6668.47219  (15121107)
        712165.10   4135293.00     8386.36739  (17022406)                712187.80
4135283.00     8977.27094  (13011606)
        712210.40   4135272.00    10674.70401  (16120317)                712233.10
4135262.00    10513.28656  (17121806)
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        712255.70   4135251.00    11134.05329  (16020908)                712278.30
4135240.00    11959.24757  (13013117)
        712284.10   4135238.00    14238.25703  (13013117)                712273.80
4135215.00    18719.23986  (13013117)
        712263.40   4135192.00    21807.47692  (13013117)                712253.00
4135169.00    31445.12188  (17122917)
        712242.70   4135147.00   100236.73032  (17111208)                712232.30
4135124.00    27159.78891  (17102406)
        712221.90   4135101.00    17243.45750  (16012706)                712211.60
4135078.00    13004.29873  (17123008)
        712201.30   4135056.00     9986.55355  (17123008)                712190.90
4135033.00     7554.28532  (16122006)
        712180.50   4135010.00     6224.73851  (13032507)                712170.10
4134987.00     5489.11581  (13032507)
        712169.50   4134986.00     5472.55555  (13032507)                712151.50
4135003.00     5853.91535  (13012008)
        712133.50   4135021.00     5181.30012  (17121708)                712115.50
4135038.00     5215.64806  (17121908)
        712097.40   4135055.00     5497.42680  (13013108)                712079.40
4135073.00     4813.25218  (13021408)
        712061.40   4135090.00     4520.75378  (13011908)                712049.30
4135102.00     4106.99267  (14022306)
        712059.80   4135124.00     4952.77486  (17022506)                712070.20
4135147.00     5823.45189  (13021306)
        712080.70   4135170.00     7187.80184  (16120407)                712091.10
4135192.00     8438.19999  (17122808)
        712101.60   4135215.00    10082.56981  (14022108)                712112.10
4135238.00     9238.83773  (15021108)
        712122.50   4135261.00     9567.92847  (13011909)                712132.90
4135283.00     6748.25837  (13021406)
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

                                          PAGE  77
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                      *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE3    ***
                                          INCLUDING SOURCE(S):     LINE3       ,

                                                     *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                                ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
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        712100.80   4135272.00     4054.15870  (16120317)                712278.80
4135105.00     6629.15683  (15111908)
        712204.20   4135002.00    25708.49678  (17111208)                712074.80
4134973.00     9215.34145  (17121908)
        712269.60   4135272.00     3675.43723  (15010808)                711861.50
4135295.00     2831.56371  (13011909)
        712059.10   4135181.00     6729.88035  (15121107)                712142.50
4135304.00     3899.94573  (15011308)
        712165.10   4135293.00     3929.89924  (17121806)                712187.80
4135283.00     4084.46404  (13021307)
        712210.40   4135272.00     4096.33615  (17013108)                712233.10
4135262.00     4309.10406  (16020908)
        712255.70   4135251.00     4029.04375  (16020908)                712278.30
4135240.00     4261.60302  (14120807)
        712284.10   4135238.00     4248.19365  (14120807)                712273.80
4135215.00     5359.82536  (13013117)
        712263.40   4135192.00     6940.04478  (13013117)                712253.00
4135169.00     8414.85782  (13013117)
        712242.70   4135147.00     9420.10105  (13013117)                712232.30
4135124.00     9664.49369  (13013117)
        712221.90   4135101.00    11049.35095  (13022008)                712211.60
4135078.00    11527.07254  (17121717)
        712201.30   4135056.00    16763.64909  (17122917)                712190.90
4135033.00    31095.17672  (14022308)
        712180.50   4135010.00    39740.76003  (17111208)                712170.10
4134987.00    22188.87974  (15051606)
        712169.50   4134986.00    22404.28128  (15051606)                712151.50
4135003.00    27106.13141  (15051606)
        712133.50   4135021.00    27270.30669  (17102406)                712115.50
4135038.00    39218.45796  (16100907)
        712097.40   4135055.00    40082.18460  (14022108)                712079.40
4135073.00    20823.47200  (15021108)
        712061.40   4135090.00    15330.02939  (15021108)                712049.30
4135102.00    12492.97102  (15021108)
        712059.80   4135124.00    10351.14861  (13011909)                712070.20
4135147.00     8249.86949  (15123008)
        712080.70   4135170.00     8345.03211  (17022406)                712091.10
4135192.00     7036.60970  (17121507)
        712101.60   4135215.00     6233.40474  (14120508)                712112.10
4135238.00     5411.00721  (16120317)
        712122.50   4135261.00     4633.67957  (16120317)                712132.90
4135283.00     4269.40657  (15011308)
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE4 ***
INCLUDING SOURCE(S): LINE4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	4071.29201	(16122908)	712278.80	4135105.00	3954.13059	(14022308)
712204.20	4135002.00	4008.63280	(15051606)	712074.80	4134973.00	8280.15700	(17121707)
712269.60	4135272.00	7870.98621	(13013117)	711861.50	4135295.00	1509.76125	(15021108)
712059.10	4135181.00	4022.87954	(13011909)	712142.50	4135304.00	4936.49098	(13022206)
712165.10	4135293.00	6103.76940	(17121308)	712187.80	4135283.00	7461.22365	(13021307)
712210.40	4135272.00	8303.92174	(16020908)	712233.10	4135262.00	8368.48711	(13010808)
712255.70	4135251.00	9311.03698	(13013117)	712278.30	4135240.00	6430.07913	(13022008)
712284.10	4135238.00	6049.75026	(13022008)	712273.80	4135215.00	5647.07216	(13022008)
712263.40	4135192.00	5086.30656	(17121717)	712253.00	4135169.00	4827.22788	(17122917)
712242.70	4135147.00	5271.19200	(14022308)	712232.30	4135124.00	5313.24564	(14022308)
712221.90	4135101.00	5343.78754	(14022308)	712211.60	4135078.00	5337.30323	(14022308)
712201.30	4135056.00	4694.01888	(17111208)	712190.90	4135033.00	4827.37717	(15051606)
712180.50	4135010.00	4878.94469	(15051606)	712170.10	4134987.00	4941.89856	(14020408)
712169.50	4134986.00	4969.05471	(14020408)	712151.50	4135003.00	6789.55811	(14020408)
712133.50	4135021.00	11331.91274	(16012706)	712115.50	4135038.00	32674.84893	(13032507)
712097.40	4135055.00	10709.57117	(13011807)	712079.40	4135073.00	5992.36999	(15122008)
712061.40	4135090.00	4187.32336	(13021707)	712049.30	4135102.00	3724.83400	(13010708)

712059.80   4135124.00   4046.02452 (13011909)   712070.20
4135147.00   4656.08206 (13011909)
712080.70   4135170.00   4694.62364 (13011909)   712091.10
4135192.00   4732.66454 (13011909)
712101.60   4135215.00   4696.45031 (16122908)   712112.10
4135238.00   4845.15239 (16122908)
712122.50   4135261.00   4733.60422 (16120317)   712132.90
4135283.00   5091.50827 (16120317)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE5   ***
INCLUDING SOURCE(S):   LINE5   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M)   CONC   (YYMMDDHH)   X-COORD (M)
Y-COORD (M)   CONC   (YYMMDDHH)
- -
712100.80   4135272.00   9262.66031 (13011909)   712278.80
4135105.00   9861.79348 (17071706)
712204.20   4135002.00   5783.97692 (15120206)   712074.80
4134973.00   3523.23064 (17121707)
712269.60   4135272.00   13542.40630 (13013117)   711861.50
4135295.00   2350.48141 (14011008)
712059.10   4135181.00   8263.34208 (16122907)   712142.50
4135304.00   9046.31522 (17121507)
712165.10   4135293.00   10756.95593 (14120508)   712187.80
4135283.00   12110.06139 (15011308)
712210.40   4135272.00   12420.44807 (13021307)   712233.10
4135262.00   14265.21771 (16020908)
712255.70   4135251.00   17334.86015 (13013117)   712278.30
4135240.00   12298.24054 (15021206)
712284.10   4135238.00   11773.45730 (14120617)   712273.80
4135215.00   13844.84930 (15111908)
712263.40   4135192.00   19043.18945 (17122917)   712253.00
4135169.00   30695.54025 (14022308)
712242.70   4135147.00   33431.32621 (17111208)   712232.30
4135124.00   23128.10690 (17062206)

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        712221.90   4135101.00    17077.19306  (15051606)                712211.60
4135078.00    11400.49557  (17102406)
        712201.30   4135056.00     9400.01433  (14020408)                712190.90
4135033.00     8037.88907  (16012706)
        712180.50   4135010.00     6767.84291  (16012706)                712170.10
4134987.00     5759.10558  (16010807)
        712169.50   4134986.00     5714.24797  (16010807)                712151.50
4135003.00     6177.29733  (16122006)
        712133.50   4135021.00     7220.09396  (13032507)                712115.50
4135038.00     6553.47075  (17121707)
        712097.40   4135055.00     5819.33447  (14122217)                712079.40
4135073.00     6023.17667  (16021506)
        712061.40   4135090.00     5917.27922  (15122008)                712049.30
4135102.00     5236.58184  (13010806)
        712059.80   4135124.00     6254.28830  (13022806)                712070.20
4135147.00     7590.05038  (17022506)
        712080.70   4135170.00    10758.82692  (13021306)                712091.10
4135192.00    12751.20297  (15120108)
        712101.60   4135215.00    15455.47401  (14022108)                712112.10
4135238.00    15457.01512  (13011909)
        712122.50   4135261.00    10916.18835  (17120208)                712132.90
4135283.00    10497.65211  (14121406)
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↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

                                  PAGE  80
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE6    ***
                                  INCLUDING SOURCE(S):     LINE6       ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
        712100.80   4135272.00     3697.95932  (16120317)                712278.80
4135105.00     3971.33883  (17122917)
        712204.20   4135002.00    16481.27121  (17111208)                712074.80
4134973.00     5807.69716  (13032507)
        712269.60   4135272.00     2594.06513  (17013107)                711861.50
4135295.00     2984.83270  (13011909)
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        712059.10   4135181.00     6955.44035  (14121406)                712142.50
4135304.00     2844.23388  (17121308)
        712165.10   4135293.00     2904.17559  (15121208)                712187.80
4135283.00     2628.72022  (17013108)
        712210.40   4135272.00     3020.97735  (16020908)                712233.10
4135262.00     3104.58550  (16020908)
        712255.70   4135251.00     2815.90715  (13013117)                712278.30
4135240.00     3562.36353  (13013117)
        712284.10   4135238.00     3593.52868  (13013117)                712273.80
4135215.00     3869.80322  (13013117)
        712263.40   4135192.00     4141.97624  (13013117)                712253.00
4135169.00     4435.71700  (13013117)
        712242.70   4135147.00     4756.19998  (13013117)                712232.30
4135124.00     5102.06065  (13013117)
        712221.90   4135101.00     5393.05740  (13013117)                712211.60
4135078.00     5928.80861  (17122917)
        712201.30   4135056.00     8498.91527  (14022308)                712190.90
4135033.00    12476.36867  (14022308)
        712180.50   4135010.00    25317.87948  (17111208)                712170.10
4134987.00    21011.14334  (17062206)
        712169.50   4134986.00    19499.19411  (17062206)                712151.50
4135003.00    22053.78097  (16111006)
        712133.50   4135021.00    23125.76871  (16111006)                712115.50
4135038.00    22481.36040  (13010708)
        712097.40   4135055.00    25764.21529  (14022108)                712079.40
4135073.00    32008.90727  (13012108)
        712061.40   4135090.00    24150.15489  (15021108)                712049.30
4135102.00    17735.93404  (13011909)
        712059.80   4135124.00    12230.54506  (13010807)                712070.20
4135147.00     9546.91492  (13013006)
        712080.70   4135170.00     7022.20516  (16122908)                712091.10
4135192.00     5348.65631  (14120508)
        712101.60   4135215.00     4815.24731  (16120317)                712112.10
4135238.00     4137.00686  (15011308)
        712122.50   4135261.00     3740.30738  (15011308)                712132.90
4135283.00     3213.52026  (15011308)
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                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE7    ***
                                  INCLUDING SOURCE(S):     LINE7       ,

                                                 *** DISCRETE CARTESIAN RECEPTOR POINTS
***
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** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	5640.90089	(16120317)	712278.80	4135105.00	3272.40423	(14022308)
712204.20	4135002.00	2895.85188	(15051606)	712074.80	4134973.00	6941.60841	(14021508)
712269.60	4135272.00	5641.35942	(13022008)	711861.50	4135295.00	1710.49464	(15021108)
712059.10	4135181.00	5417.13233	(13011909)	712142.50	4135304.00	6836.59704	(15121208)
712165.10	4135293.00	8684.34322	(17013108)	712187.80	4135283.00	9506.89670	(16020908)
712210.40	4135272.00	9447.94271	(13013117)	712233.10	4135262.00	7769.12153	(13013117)
712255.70	4135251.00	5415.35239	(13022008)	712278.30	4135240.00	3964.78645	(17012907)
712284.10	4135238.00	3766.61838	(15111908)	712273.80	4135215.00	3853.93631	(17122917)
712263.40	4135192.00	4032.60198	(17122917)	712253.00	4135169.00	4305.85825	(14022308)
712242.70	4135147.00	4412.89868	(14022308)	712232.30	4135124.00	4395.80484	(14022308)
712221.90	4135101.00	4151.97305	(14022308)	712211.60	4135078.00	3757.86185	(17111208)
712201.30	4135056.00	3723.07355	(17111208)	712190.90	4135033.00	3366.60178	(15051606)
712180.50	4135010.00	3643.09719	(15051606)	712170.10	4134987.00	3672.44255	(15051606)
712169.50	4134986.00	3670.43870	(15051606)	712151.50	4135003.00	4212.63334	(15051606)
712133.50	4135021.00	5313.27784	(14020408)	712115.50	4135038.00	7215.85095	(16012706)
712097.40	4135055.00	13057.18076	(17123008)	712079.40	4135073.00	28309.67066	(14022307)
712061.40	4135090.00	9661.62425	(13013108)	712049.30	4135102.00	6452.96874	(15122008)
712059.80	4135124.00	6661.45484	(13011909)	712070.20	4135147.00	6786.91326	(13011909)
712080.70	4135170.00	6893.59498	(16122908)	712091.10	4135192.00	7057.36835	(16122908)
712101.60	4135215.00	7322.71628	(16120317)	712112.10	4135238.00	7861.20974	(15011308)
712122.50	4135261.00	8059.54656	(15011308)	712132.90	4135283.00	7318.64354	(17121806)

↑ *** AERMOD - VERSION 18081 ***   *** BEI
                         ***   03/07/20
 *** AERMET - VERSION 18081 ***   *** V3
                       ***   16:45:09

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 *** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE8   ***
INCLUDING SOURCE(S):   LINE8   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	10280.62972	(17120208)	712278.80	4135105.00	7530.59823	(17071706)
712204.20	4135002.00	4341.58621	(14020408)	712074.80	4134973.00	3353.43912	(13032507)
712269.60	4135272.00	7082.32736	(13013117)	711861.50	4135295.00	2656.48022	(14011008)
712059.10	4135181.00	7176.09126	(13021306)	712142.50	4135304.00	6870.78468	(14120508)
712165.10	4135293.00	7448.10195	(15011308)	712187.80	4135283.00	6915.49753	(16020908)
712210.40	4135272.00	7907.84977	(16020908)	712233.10	4135262.00	8951.86689	(13013117)
712255.70	4135251.00	7862.62016	(13022008)	712278.30	4135240.00	6626.84074	(15111908)
712284.10	4135238.00	6756.86594	(17122917)	712273.80	4135215.00	9333.98493	(17122917)
712263.40	4135192.00	14390.36088	(14022308)	712253.00	4135169.00	16793.23244	(15011917)
712242.70	4135147.00	19837.74677	(17111208)	712232.30	4135124.00	13868.47102	(17062206)
712221.90	4135101.00	9925.21348	(15051606)	712211.60	4135078.00	7191.02026	(13011408)
712201.30	4135056.00	5819.35594	(14020408)	712190.90	4135033.00	5118.69679	(14020408)
712180.50	4135010.00	4128.65291	(14121707)	712170.10	4134987.00	3968.34481	(16012706)
712169.50	4134986.00	3958.10900	(16012706)	712151.50	4135003.00	4011.72288	(13022807)

712133.50 4135021.00 4274.97481 (17123008) 712115.50
4135038.00 5038.69647 (13032507)
712097.40 4135055.00 4485.96233 (13032507) 712079.40
4135073.00 4322.23059 (14122217)
712061.40 4135090.00 4396.03323 (17121908) 712049.30
4135102.00 4603.02347 (13013108)
712059.80 4135124.00 5256.55276 (15122008) 712070.20
4135147.00 6082.43768 (13011908)
712080.70 4135170.00 8076.21481 (17022506) 712091.10
4135192.00 13059.03439 (13021306)
712101.60 4135215.00 20778.51435 (17122906) 712112.10
4135238.00 23791.16764 (13011909)
712122.50 4135261.00 11405.02196 (13013006) 712132.90
4135283.00 9544.62779 (16122908)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE9 ***
INCLUDING SOURCE(S): LINE9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M) Y-COORD (M) CONC (YYMMDDHH)
- -
712100.80 4135272.00 7592.05491 (13011909) 712278.80
4135105.00 4763.73269 (14060906)
712204.20 4135002.00 2844.96924 (14020408) 712074.80
4134973.00 2280.02773 (13032507)
712269.60 4135272.00 5594.46878 (13022008) 711861.50
4135295.00 1452.15163 (14011008)
712059.10 4135181.00 4640.28588 (13021306) 712142.50
4135304.00 5359.02759 (16122908)
712165.10 4135293.00 5980.76670 (15011308) 712187.80
4135283.00 5631.71241 (13021307)
712210.40 4135272.00 6772.58735 (16020908) 712233.10
4135262.00 7455.74093 (13013117)
712255.70 4135251.00 6248.97548 (13022008) 712278.30
4135240.00 5217.88811 (17122917)

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        712284.10   4135238.00     5323.57437  (17122917)                712273.80
4135215.00     6703.15487  (17122917)
        712263.40   4135192.00    10024.36871  (14022308)                712253.00
4135169.00     9758.05073  (15011917)
        712242.70   4135147.00     9878.91821  (17111208)                712232.30
4135124.00     7887.79089  (17062206)
        712221.90   4135101.00     6428.33266  (15051606)                712211.60
4135078.00     4717.05047  (13011408)
        712201.30   4135056.00     4083.36511  (14020408)                712190.90
4135033.00     3440.84636  (14020408)
        712180.50   4135010.00     2970.20617  (16012706)                712170.10
4134987.00     2684.02305  (16012706)
        712169.50   4134986.00     2674.06908  (16012706)                712151.50
4135003.00     2888.47535  (14021508)
        712133.50   4135021.00     3089.28156  (14021508)                712115.50
4135038.00     3609.90622  (13032507)
        712097.40   4135055.00     3382.58308  (13032507)                712079.40
4135073.00     3059.65504  (14122217)
        712061.40   4135090.00     3100.17749  (17121908)                712049.30
4135102.00     3177.53920  (13013108)
        712059.80   4135124.00     3694.19809  (15122008)                712070.20
4135147.00     4140.56172  (13011908)
        712080.70   4135170.00     5270.39659  (17022506)                712091.10
4135192.00     7735.79191  (13021306)
        712101.60   4135215.00    10388.51854  (13010708)                712112.10
4135238.00    12219.89564  (13011909)
        712122.50   4135261.00     7810.04771  (13010807)                712132.90
4135283.00     6794.92279  (16122908)
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE10   ***
                                  INCLUDING SOURCE(S):     LINE10      ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
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        712100.80   4135272.00     4596.51299  (16120317)                   712278.80
4135105.00     2664.42883  (14022308)
        712204.20   4135002.00     2554.73002  (17062206)                   712074.80
4134973.00     4082.21489  (14021508)
        712269.60   4135272.00     3733.50583  (13022008)                   711861.50
4135295.00     1403.45145  (15021108)
        712059.10   4135181.00     4948.56200  (13011909)                   712142.50
4135304.00     4352.95338  (15121208)
        712165.10   4135293.00     4751.61217  (17013108)                   712187.80
4135283.00     5214.77907  (16020908)
        712210.40   4135272.00     6312.37161  (13013117)                   712233.10
4135262.00     5101.08005  (13013117)
        712255.70   4135251.00     3770.98037  (13022008)                   712278.30
4135240.00     2972.91438  (15111908)
        712284.10   4135238.00     2853.35121  (15111908)                   712273.80
4135215.00     3145.71897  (17122917)
        712263.40   4135192.00     3378.81227  (17122917)                   712253.00
4135169.00     3723.39155  (14022308)
        712242.70   4135147.00     4064.29814  (14022308)                   712232.30
4135124.00     3876.47697  (14022308)
        712221.90   4135101.00     3485.71382  (17111208)                   712211.60
4135078.00     3498.09169  (17111208)
        712201.30   4135056.00     3153.94145  (17111208)                   712190.90
4135033.00     3078.66242  (17062206)
        712180.50   4135010.00     3098.24840  (15051606)                   712170.10
4134987.00     3068.69803  (15051606)
        712169.50   4134986.00     3062.24057  (15051606)                   712151.50
4135003.00     3488.73198  (15051606)
        712133.50   4135021.00     4144.76049  (13011408)                   712115.50
4135038.00     5614.65936  (14020408)
        712097.40   4135055.00     8206.53302  (16012706)                   712079.40
4135073.00    16181.99406  (13032507)
        712061.40   4135090.00     7829.60516  (13013108)                   712049.30
4135102.00     5510.81621  (13032506)
        712059.80   4135124.00     5410.66950  (16100907)                   712070.20
4135147.00     5634.88318  (13011909)
        712080.70   4135170.00     5670.03431  (13011909)                   712091.10
4135192.00     6077.14269  (16122908)
        712101.60   4135215.00     6290.56931  (16122908)                   712112.10
4135238.00     6245.59454  (13022206)
        712122.50   4135261.00     6037.52765  (15011308)                   712132.90
4135283.00     4925.37803  (17121806)
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*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE11 ***
INCLUDING SOURCE(S): LINE11 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	2536.22051	(16120317)	712278.80	4135105.00	3130.71257	(17122917)
712204.20	4135002.00	8897.36728	(17111208)	712074.80	4134973.00	5089.72638	(13032507)
712269.60	4135272.00	2188.46460	(13013117)	711861.50	4135295.00	1745.71465	(13011909)
712059.10	4135181.00	4335.34451	(17022406)	712142.50	4135304.00	2062.94176	(17121308)
712165.10	4135293.00	2139.99424	(13021307)	712187.80	4135283.00	2074.31266	(17013108)
712210.40	4135272.00	2363.79628	(16020908)	712233.10	4135262.00	2354.70668	(16020908)
712255.70	4135251.00	2457.74054	(13013117)	712278.30	4135240.00	2931.62018	(13013117)
712284.10	4135238.00	2953.06280	(13013117)	712273.80	4135215.00	3229.07922	(13013117)
712263.40	4135192.00	3474.54031	(13013117)	712253.00	4135169.00	3669.08022	(13013117)
712242.70	4135147.00	3807.41061	(13013117)	712232.30	4135124.00	3944.96868	(13022008)
712221.90	4135101.00	4091.11955	(15021206)	712211.60	4135078.00	4882.88265	(17122917)
712201.30	4135056.00	6042.25018	(14022308)	712190.90	4135033.00	9307.25559	(14022308)
712180.50	4135010.00	12627.61747	(17111208)	712170.10	4134987.00	12587.51146	(17062206)
712169.50	4134986.00	12417.40465	(17062206)	712151.50	4135003.00	17632.87930	(16111006)
712133.50	4135021.00	17833.19302	(16111006)	712115.50	4135038.00	16730.86462	(16111006)
712097.40	4135055.00	19379.92615	(15021108)	712079.40	4135073.00	24888.68180	(15021108)
712061.40	4135090.00	14460.24767	(13011909)	712049.30	4135102.00	10999.70148	(13011909)
712059.80	4135124.00	6865.88290	(13010807)	712070.20	4135147.00	5973.63151	(16122908)

```
        712080.70   4135170.00     4657.68222  (16122908)                712091.10
4135192.00     4031.35951  (16120317)
        712101.60   4135215.00     3481.70491  (16120317)                712112.10
4135238.00     3068.65160  (15011308)
        712122.50   4135261.00     2674.59531  (15011308)                712132.90
4135283.00     2302.13468  (17121308)
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE12   ***
                                  INCLUDING SOURCE(S):     LINE12      ,

                                               *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF OTHER    IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
        712100.80   4135272.00     6092.22469  (13011909)                712278.80
4135105.00     5956.79117  (14060906)
        712204.20   4135002.00     3377.50634  (14020408)                712074.80
4134973.00     2313.48652  (17121707)
        712269.60   4135272.00     8106.06073  (13013117)                711861.50
4135295.00     1332.12681  (14011008)
        712059.10   4135181.00     4696.22362  (13021306)                712142.50
4135304.00     5126.35951  (17121507)
        712165.10   4135293.00     6086.18886  (14120508)                712187.80
4135283.00     7080.42951  (15011308)
        712210.40   4135272.00     7462.06611  (13021307)                712233.10
4135262.00     8549.07184  (16020908)
        712255.70   4135251.00    10125.91853  (13013117)                712278.30
4135240.00     7612.23616  (13022008)
        712284.10   4135238.00     6753.61650  (14120617)                712273.80
4135215.00     8013.19136  (15111908)
        712263.40   4135192.00    10648.60506  (17122917)                712253.00
4135169.00    15273.73154  (14022308)
        712242.70   4135147.00    15612.97002  (17111208)                712232.30
4135124.00    11817.23711  (17062206)
        712221.90   4135101.00     9226.22482  (15051606)                712211.60
4135078.00     6815.82327  (14020408)
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712201.30   4135056.00   5442.76323 (14020408)   712190.90
4135033.00   4658.76629 (16012706)
712180.50   4135010.00   3850.40288 (16012706)   712170.10
4134987.00   3306.04970 (14021508)
712169.50   4134986.00   3299.18398 (14021508)   712151.50
4135003.00   3651.62154 (14021508)
712133.50   4135021.00   4133.92418 (13032507)   712115.50
4135038.00   3929.69769 (17121707)
712097.40   4135055.00   3449.34905 (14122217)   712079.40
4135073.00   3510.54105 (13013108)
712061.40   4135090.00   3398.72159 (15122008)   712049.30
4135102.00   2938.92774 (13010806)
712059.80   4135124.00   3509.52023 (13011908)   712070.20
4135147.00   4179.81419 (17022506)
712080.70   4135170.00   5773.30847 (13021306)   712091.10
4135192.00   6539.91401 (13012607)
712101.60   4135215.00   7791.96593 (14022108)   712112.10
4135238.00   8437.72440 (13011909)
712122.50   4135261.00   6659.98229 (13011909)   712132.90
4135283.00   5849.95914 (14121406)

*** AERMOD - VERSION 18081 ***   *** BEI
***   03/07/20
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: LINE13   ***
INCLUDING SOURCE(S):   LINE13   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF OTHER   IN MICROGRAMS/M**3
**

X-COORD (M) Y-COORD (M)   CONC   (YYMMDDHH)   X-COORD (M)
Y-COORD (M)   CONC   (YYMMDDHH)
- -
- -
712100.80   4135272.00   3430.90358 (16122908)   712278.80
4135105.00   3601.72364 (14022308)
712204.20   4135002.00   3372.54753 (15051606)   712074.80
4134973.00   4593.09847 (13032507)
712269.60   4135272.00   4942.31492 (13013117)   711861.50
4135295.00   1229.64479 (15021108)
712059.10   4135181.00   3864.77769 (13011909)   712142.50
4135304.00   3537.02164 (15011308)

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        712165.10   4135293.00     3879.39486  (17121308)                712187.80
4135283.00     4204.13220  (13021307)
        712210.40   4135272.00     4996.33982  (16020908)                712233.10
4135262.00     4635.42679  (13013117)
        712255.70   4135251.00     5704.81050  (13013117)                712278.30
4135240.00     4347.01292  (13022008)
        712284.10   4135238.00     4090.60821  (13022008)                712273.80
4135215.00     3905.08219  (13022008)
        712263.40   4135192.00     3734.81228  (15111908)                712253.00
4135169.00     4186.69149  (17122917)
        712242.70   4135147.00     4484.76585  (14022308)                712232.30
4135124.00     4688.93472  (14022308)
        712221.90   4135101.00     4626.37107  (14022308)                712211.60
4135078.00     4179.12929  (14022308)
        712201.30   4135056.00     4063.57883  (17111208)                712190.90
4135033.00     4016.96716  (15051606)
        712180.50   4135010.00     4242.16577  (15051606)                712170.10
4134987.00     3857.59728  (13011408)
        712169.50   4134986.00     3845.23466  (13011408)                712151.50
4135003.00     5113.23971  (14020408)
        712133.50   4135021.00     7264.76760  (16012706)                712115.50
4135038.00    13698.40864  (13032507)
        712097.40   4135055.00     8935.20033  (13011807)                712079.40
4135073.00     5224.88913  (15122008)
        712061.40   4135090.00     3932.88437  (16100907)                712049.30
4135102.00     3425.85690  (13021707)
        712059.80   4135124.00     3706.29502  (13010708)                712070.20
4135147.00     4208.33983  (13011909)
        712080.70   4135170.00     4461.43799  (13011909)                712091.10
4135192.00     4492.05052  (13011909)
        712101.60   4135215.00     4145.76424  (16122908)                712112.10
4135238.00     4340.50588  (16122908)
        712122.50   4135261.00     3899.05144  (16120317)                712132.90
4135283.00     3865.51042  (16120317)
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                        ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  LINE14    ***
                                  INCLUDING SOURCE(S):     LINE14      ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3
```

**

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	2587.78232	(16120317)	712278.80	4135105.00	4185.92592	(15111908)
712204.20	4135002.00	12329.74959	(17111208)	712074.80	4134973.00	6515.93618	(17121908)
712269.60	4135272.00	2298.58194	(16020908)	711861.50	4135295.00	1631.47441	(13011909)
712059.10	4135181.00	4060.41571	(14121406)	712142.50	4135304.00	2291.17393	(15011308)
712165.10	4135293.00	2317.49192	(17121308)	712187.80	4135283.00	2436.51615	(13021307)
712210.40	4135272.00	2474.83118	(17013108)	712233.10	4135262.00	2709.36352	(16020908)
712255.70	4135251.00	2634.45285	(16020908)	712278.30	4135240.00	2870.13596	(13013117)
712284.10	4135238.00	3111.67179	(13013117)	712273.80	4135215.00	3755.35014	(13013117)
712263.40	4135192.00	4495.96665	(13013117)	712253.00	4135169.00	5301.42322	(13013117)
712242.70	4135147.00	6067.55414	(13013117)	712232.30	4135124.00	6642.35007	(13013117)
712221.90	4135101.00	7319.33495	(13022008)	712211.60	4135078.00	7774.61082	(15021206)
712201.30	4135056.00	10411.16618	(17122917)	712190.90	4135033.00	16335.10657	(14022308)
712180.50	4135010.00	19815.47040	(17111208)	712170.10	4134987.00	13458.70678	(17062206)
712169.50	4134986.00	12979.30865	(17062206)	712151.50	4135003.00	20215.99744	(16111006)
712133.50	4135021.00	18931.99240	(17102406)	712115.50	4135038.00	29000.43371	(16100907)
712097.40	4135055.00	18969.08292	(14022108)	712079.40	4135073.00	12250.33870	(13011909)
712061.40	4135090.00	9004.27585	(13011909)	712049.30	4135102.00	7546.15261	(13011909)
712059.80	4135124.00	6349.81711	(13011909)	712070.20	4135147.00	5055.89461	(14121406)
712080.70	4135170.00	4649.89919	(17022406)	712091.10	4135192.00	4021.71147	(17121507)
712101.60	4135215.00	3593.09282	(14120508)	712112.10	4135238.00	3218.31421	(16120317)
712122.50	4135261.00	2767.58003	(16120317)	712132.90	4135283.00	2547.71561	(15011308)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE15 ***
INCLUDING SOURCE(S): LINE15 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
712100.80	4135272.00	2327.00400	(13011606)	712278.80	4135105.00	6232.08878	(13022008)
712204.20	4135002.00	22711.54316	(17111208)	712074.80	4134973.00	4936.19233	(13010806)
712269.60	4135272.00	2428.93858	(16020908)	711861.50	4135295.00	1435.80724	(13011909)
712059.10	4135181.00	2768.53933	(13010807)	712142.50	4135304.00	2200.96549	(16120317)
712165.10	4135293.00	2323.24334	(15011308)	712187.80	4135283.00	2452.71301	(17121308)
712210.40	4135272.00	2493.90506	(15121208)	712233.10	4135262.00	2497.64649	(17013108)
712255.70	4135251.00	2638.47672	(16020908)	712278.30	4135240.00	2894.58558	(16020908)
712284.10	4135238.00	2818.38401	(16020908)	712273.80	4135215.00	3208.02321	(16020908)
712263.40	4135192.00	3704.36790	(16020908)	712253.00	4135169.00	4334.48113	(16020908)
712242.70	4135147.00	5150.76560	(16020908)	712232.30	4135124.00	6385.39430	(17013107)
712221.90	4135101.00	8811.85486	(13013117)	712211.60	4135078.00	13310.47163	(13013117)
712201.30	4135056.00	19518.81085	(13013117)	712190.90	4135033.00	28392.79608	(16090606)
712180.50	4135010.00	44498.06928	(16111006)	712170.10	4134987.00	19455.24549	(17092906)
712169.50	4134986.00	19010.12607	(17092906)	712151.50	4135003.00	24909.63539	(13011807)
712133.50	4135021.00	19821.94260	(13021306)	712115.50	4135038.00	13110.08950	(13010708)

712097.40   4135055.00   9736.77680 (14022108)   712079.40
4135073.00   6963.83332 (14022108)
712061.40   4135090.00   5176.84823 (15021108)   712049.30
4135102.00   4541.53896 (15021108)
712059.80   4135124.00   5361.04590 (13011909)   712070.20
4135147.00   3976.78857 (13011909)
712080.70   4135170.00   3442.70108 (15123008)   712091.10
4135192.00   3619.08344 (14121406)
712101.60   4135215.00   3179.33052 (17121507)   712112.10
4135238.00   2793.17209 (14120508)
712122.50   4135261.00   2644.91725 (14120508)   712132.90
4135283.00   2355.79335 (16120317)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: LINE16   ***
INCLUDING SOURCE(S):   LINE16   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M)   CONC   (YYMMDDHH)   X-COORD (M)
Y-COORD (M)   CONC   (YYMMDDHH)
- -
712100.80   4135272.00   4711.59652 (13011909)   712278.80
4135105.00   9634.76218 (14060906)
712204.20   4135002.00   4009.12470 (14021508)   712074.80
4134973.00   1829.57578 (14122217)
712269.60   4135272.00   6377.31214 (16020908)   711861.50
4135295.00   1147.45911 (14011008)
712059.10   4135181.00   3409.10066 (13012607)   712142.50
4135304.00   3845.45961 (14121406)
712165.10   4135293.00   4842.12083 (14121406)   712187.80
4135283.00   5451.74363 (17121507)
712210.40   4135272.00   6460.93484 (16120317)   712233.10
4135262.00   6749.22614 (15011308)
712255.70   4135251.00   7680.69927 (16020908)   712278.30
4135240.00   8663.54297 (13013117)
712284.10   4135238.00   9398.34639 (13013117)   712273.80
4135215.00   12062.66533 (13013117)

712263.40   4135192.00   13801.85703 (13013117)   712253.00
4135169.00   21070.71708 (17122917)
712242.70   4135147.00   36054.83579 (14060906)   712232.30
4135124.00   16379.32867 (17102406)
712221.90   4135101.00   10740.86497 (16012706)   712211.60
4135078.00   7978.97835 (17123008)
712201.30   4135056.00   6138.84371 (14021508)   712190.90
4135033.00   4827.72437 (13032507)
712180.50   4135010.00   4030.19320 (13032507)   712170.10
4134987.00   3426.69196 (13032507)
712169.50   4134986.00   3405.72418 (13032507)   712151.50
4135003.00   3614.27715 (13032507)
712133.50   4135021.00   3018.91386 (17121707)   712115.50
4135038.00   3060.19619 (17121908)
712097.40   4135055.00   3145.14395 (13013108)   712079.40
4135073.00   2887.45327 (15122008)
712061.40   4135090.00   2535.67157 (13011908)   712049.30
4135102.00   2347.20748 (13022806)
712059.80   4135124.00   2744.30142 (17022506)   712070.20
4135147.00   3481.95719 (13021306)
712080.70   4135170.00   4063.94212 (13021306)   712091.10
4135192.00   4451.21089 (13021707)
712101.60   4135215.00   5228.31345 (14022108)   712112.10
4135238.00   5003.46799 (15021108)
712122.50   4135261.00   5652.90511 (13011909)   712132.90
4135283.00   3860.55281 (17120208)

*** AERMOD - VERSION 18081 ***   *** BEI
***   03/07/20
*** AERMET - VERSION 18081 ***   *** V3
***   16:45:09

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3 **

NETWORK
GROUP ID   AVERAGE CONC   RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
- -

POINT1   1ST HIGHEST VALUE IS   0.00018 AT (712221.90, 4135101.00,   44.20,   44.20,   0.00) DC

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         2ND HIGHEST VALUE IS       0.00017 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
         3RD HIGHEST VALUE IS       0.00014 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
         4TH HIGHEST VALUE IS       0.00013 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
         5TH HIGHEST VALUE IS       0.00013 AT (  712080.70,  4135170.00,    43.89,
   43.89,    0.00)  DC
         6TH HIGHEST VALUE IS       0.00011 AT (  712091.10,  4135192.00,    43.89,
   43.89,    0.00)  DC
         7TH HIGHEST VALUE IS       0.00010 AT (  712059.10,  4135181.00,    43.89,
   43.89,    0.00)  DC
         8TH HIGHEST VALUE IS       0.00009 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
         9TH HIGHEST VALUE IS       0.00009 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
        10TH HIGHEST VALUE IS       0.00009 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC

AREA1    1ST HIGHEST VALUE IS       5.24028 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
         2ND HIGHEST VALUE IS       4.01387 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
         3RD HIGHEST VALUE IS       3.54149 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
         4TH HIGHEST VALUE IS       2.31038 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
         5TH HIGHEST VALUE IS       1.83935 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
         6TH HIGHEST VALUE IS       1.48432 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
         7TH HIGHEST VALUE IS       1.47945 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
         8TH HIGHEST VALUE IS       1.42447 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
         9TH HIGHEST VALUE IS       1.09221 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
        10TH HIGHEST VALUE IS       0.92709 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC

AREA2    1ST HIGHEST VALUE IS      11.55367 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
         2ND HIGHEST VALUE IS      10.35952 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
         3RD HIGHEST VALUE IS       6.52123 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
         4TH HIGHEST VALUE IS       5.34997 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
         5TH HIGHEST VALUE IS       4.44774 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
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          6TH HIGHEST VALUE IS       2.87700 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS       2.83771 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS       2.57659 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS       2.47270 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS       2.32818 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC

AREA3     1ST HIGHEST VALUE IS      62.34109 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          2ND HIGHEST VALUE IS      54.27083 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          3RD HIGHEST VALUE IS      36.44636 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          4TH HIGHEST VALUE IS      29.82238 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
          5TH HIGHEST VALUE IS      23.72236 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS      23.61818 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS      22.67397 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS      15.93359 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          9TH HIGHEST VALUE IS      14.46854 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      13.58935 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
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                                        *** THE SUMMARY OF MAXIMUM PERIOD ( 43824
HRS) RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3
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                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
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- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

AREA4     1ST HIGHEST VALUE IS      74.55067 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          2ND HIGHEST VALUE IS      67.05004 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          3RD HIGHEST VALUE IS      62.63070 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          4TH HIGHEST VALUE IS      47.20151 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          5TH HIGHEST VALUE IS      40.75209 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          6TH HIGHEST VALUE IS      34.56467 AT (  712080.70,  4135170.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS      32.79066 AT (  712091.10,  4135192.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS      30.30863 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
          9TH HIGHEST VALUE IS      27.00422 AT (  712070.20,  4135147.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      24.21523 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC

VOLUME1   1ST HIGHEST VALUE IS       0.67089 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          2ND HIGHEST VALUE IS       0.66477 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          3RD HIGHEST VALUE IS       0.50347 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          4TH HIGHEST VALUE IS       0.50146 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          5TH HIGHEST VALUE IS       0.47741 AT (  712080.70,  4135170.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS       0.44258 AT (  712070.20,  4135147.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS       0.36553 AT (  712091.10,  4135192.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS       0.35371 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          9TH HIGHEST VALUE IS       0.32045 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
         10TH HIGHEST VALUE IS       0.30026 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC

VOLUME2   1ST HIGHEST VALUE IS       0.12861 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          2ND HIGHEST VALUE IS       0.12262 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
          3RD HIGHEST VALUE IS       0.11161 AT (  712221.90,  4135101.00,    44.20,
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   44.20,    0.00)  DC
          4TH HIGHEST VALUE IS       0.10459 AT (  712278.80,  4135105.00,     44.50,
   44.50,    0.00)  DC
          5TH HIGHEST VALUE IS       0.09896 AT (  712253.00,  4135169.00,     44.49,
   44.49,    0.00)  DC
          6TH HIGHEST VALUE IS       0.08498 AT (  712211.60,  4135078.00,     44.20,
   44.20,    0.00)  DC
          7TH HIGHEST VALUE IS       0.07393 AT (  712263.40,  4135192.00,     44.50,
   44.50,    0.00)  DC
          8TH HIGHEST VALUE IS       0.06144 AT (  712201.30,  4135056.00,     44.20,
   44.20,    0.00)  DC
          9TH HIGHEST VALUE IS       0.05815 AT (  712273.80,  4135215.00,     44.50,
   44.50,    0.00)  DC
         10TH HIGHEST VALUE IS       0.04931 AT (  712278.30,  4135240.00,     44.50,
   44.50,    0.00)  DC

VOLUME3   1ST HIGHEST VALUE IS      18.59958 AT (  712101.60,  4135215.00,     43.89,
   43.89,    0.00)  DC
          2ND HIGHEST VALUE IS       8.85511 AT (  712112.10,  4135238.00,     43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS       8.17281 AT (  712091.10,  4135192.00,     43.89,
   43.89,    0.00)  DC
          4TH HIGHEST VALUE IS       3.77561 AT (  712122.50,  4135261.00,     43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS       3.53892 AT (  712080.70,  4135170.00,     43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS       3.14759 AT (  712100.80,  4135272.00,     43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS       2.54948 AT (  712059.10,  4135181.00,     43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS       2.40251 AT (  712221.90,  4135101.00,     44.20,
   44.20,    0.00)  DC
          9TH HIGHEST VALUE IS       2.31255 AT (  712232.30,  4135124.00,     44.28,
   44.28,    0.00)  DC
         10TH HIGHEST VALUE IS       2.18096 AT (  712211.60,  4135078.00,     44.20,
   44.20,    0.00)  DC
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                        *** THE SUMMARY OF MAXIMUM PERIOD ( 43824
HRS) RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3
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                         NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

VOLUME4   1ST HIGHEST VALUE IS       0.06735 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          2ND HIGHEST VALUE IS       0.05033 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          3RD HIGHEST VALUE IS       0.03816 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          4TH HIGHEST VALUE IS       0.02926 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
          5TH HIGHEST VALUE IS       0.02683 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          6TH HIGHEST VALUE IS       0.01709 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS       0.01696 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS       0.01650 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS       0.01590 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS       0.01462 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC

VOLUME5   1ST HIGHEST VALUE IS       0.00764 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          2ND HIGHEST VALUE IS       0.00501 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS       0.00434 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
          4TH HIGHEST VALUE IS       0.00428 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          5TH HIGHEST VALUE IS       0.00399 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS       0.00385 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS       0.00343 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS       0.00231 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS       0.00203 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
         10TH HIGHEST VALUE IS       0.00153 AT (  712079.40,  4135073.00,    43.89,
   43.89,    0.00)  DC
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LINE1     1ST HIGHEST VALUE IS    1829.45085 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          2ND HIGHEST VALUE IS     652.82767 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
          3RD HIGHEST VALUE IS     610.40182 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          4TH HIGHEST VALUE IS     240.10155 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     222.96152 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     143.73386 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS     143.50149 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          8TH HIGHEST VALUE IS     142.63116 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS     127.80100 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      84.01695 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC

LINE2     1ST HIGHEST VALUE IS    2434.19845 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
          2ND HIGHEST VALUE IS     488.26427 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          3RD HIGHEST VALUE IS     311.61072 AT (  712253.00,  4135169.00,    44.49,
   44.49,    0.00)  DC
          4TH HIGHEST VALUE IS     220.51922 AT (  712278.80,  4135105.00,    44.50,
   44.50,    0.00)  DC
          5TH HIGHEST VALUE IS     126.40095 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          6TH HIGHEST VALUE IS     104.48317 AT (  712263.40,  4135192.00,    44.50,
   44.50,    0.00)  DC
          7TH HIGHEST VALUE IS      52.18834 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          8TH HIGHEST VALUE IS      49.79428 AT (  712273.80,  4135215.00,    44.50,
   44.50,    0.00)  DC
          9TH HIGHEST VALUE IS      35.06945 AT (  712112.10,  4135238.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      34.96839 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
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                                        *** THE SUMMARY OF MAXIMUM PERIOD ( 43824
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HRS) RESULTS ***

                                    ** CONC OF OTHER    IN MICROGRAMS/M**3
               **

                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

LINE3     1ST HIGHEST VALUE IS     678.04415 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
          2ND HIGHEST VALUE IS     571.85204 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS     476.94934 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          4TH HIGHEST VALUE IS     449.40113 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     374.25577 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     360.48863 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS     273.26239 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS     200.98751 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          9TH HIGHEST VALUE IS     181.36843 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
         10TH HIGHEST VALUE IS     125.28467 AT (  712079.40,  4135073.00,    43.89,
   43.89,    0.00)  DC

LINE4     1ST HIGHEST VALUE IS     132.99320 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
          2ND HIGHEST VALUE IS     129.93870 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          3RD HIGHEST VALUE IS     129.10292 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
          4TH HIGHEST VALUE IS     124.26647 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          5TH HIGHEST VALUE IS     113.19512 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          6TH HIGHEST VALUE IS     101.88731 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          7TH HIGHEST VALUE IS      92.75816 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS      89.46321 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
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         9TH HIGHEST VALUE IS      83.28175 AT (  712232.30,  4135124.00,     44.28,
   44.28,    0.00)  DC
        10TH HIGHEST VALUE IS      78.61588 AT (  712097.40,  4135055.00,     43.89,
   43.89,    0.00)  DC

LINE5     1ST HIGHEST VALUE IS     310.20195 AT (  712232.30,  4135124.00,     44.28,
   44.28,    0.00)  DC
         2ND HIGHEST VALUE IS     266.56300 AT (  712242.70,  4135147.00,     44.39,
   44.39,    0.00)  DC
         3RD HIGHEST VALUE IS     172.45534 AT (  712221.90,  4135101.00,     44.20,
   44.20,    0.00)  DC
         4TH HIGHEST VALUE IS     139.98777 AT (  712253.00,  4135169.00,     44.49,
   44.49,    0.00)  DC
         5TH HIGHEST VALUE IS      95.73902 AT (  712278.80,  4135105.00,     44.50,
   44.50,    0.00)  DC
         6TH HIGHEST VALUE IS      82.68320 AT (  712263.40,  4135192.00,     44.50,
   44.50,    0.00)  DC
         7TH HIGHEST VALUE IS      76.09585 AT (  712211.60,  4135078.00,     44.20,
   44.20,    0.00)  DC
         8TH HIGHEST VALUE IS      62.97538 AT (  712101.60,  4135215.00,     43.89,
   43.89,    0.00)  DC
         9TH HIGHEST VALUE IS      59.66160 AT (  712112.10,  4135238.00,     43.89,
   43.89,    0.00)  DC
        10TH HIGHEST VALUE IS      46.84821 AT (  712273.80,  4135215.00,     44.50,
   44.50,    0.00)  DC

LINE6     1ST HIGHEST VALUE IS     825.07457 AT (  712115.50,  4135038.00,     43.89,
   43.89,    0.00)  DC
         2ND HIGHEST VALUE IS     764.77567 AT (  712133.50,  4135021.00,     43.89,
   43.89,    0.00)  DC
         3RD HIGHEST VALUE IS     731.11446 AT (  712097.40,  4135055.00,     43.89,
   43.89,    0.00)  DC
         4TH HIGHEST VALUE IS     573.22688 AT (  712151.50,  4135003.00,     43.89,
   43.89,    0.00)  DC
         5TH HIGHEST VALUE IS     378.43670 AT (  712170.10,  4134987.00,     43.89,
   43.89,    0.00)  DC
         6TH HIGHEST VALUE IS     378.37036 AT (  712079.40,  4135073.00,     43.89,
   43.89,    0.00)  DC
         7TH HIGHEST VALUE IS     364.17734 AT (  712169.50,  4134986.00,     43.89,
   43.89,    0.00)  DC
         8TH HIGHEST VALUE IS     312.85324 AT (  712180.50,  4135010.00,     43.92,
   43.92,    0.00)  DC
         9TH HIGHEST VALUE IS     142.74739 AT (  712061.40,  4135090.00,     43.87,
   43.87,    0.00)  DC
        10TH HIGHEST VALUE IS     133.25096 AT (  712190.90,  4135033.00,     44.15,
   44.15,    0.00)  DC
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

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                          NETWORK
GROUP ID                          AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

LINE7     1ST HIGHEST VALUE IS     158.75659 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC
          2ND HIGHEST VALUE IS     120.85229 AT (  712080.70,  4135170.00,    43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS     118.59096 AT (  712070.20,  4135147.00,    43.89,
   43.89,    0.00)  DC
          4TH HIGHEST VALUE IS     115.38654 AT (  712091.10,  4135192.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     108.59864 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     104.61658 AT (  712059.80,  4135124.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS      97.22598 AT (  712079.40,  4135073.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS      90.09737 AT (  712061.40,  4135090.00,    43.87,
   43.87,    0.00)  DC
          9TH HIGHEST VALUE IS      88.61028 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      76.46636 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC

LINE8     1ST HIGHEST VALUE IS     183.17487 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          2ND HIGHEST VALUE IS     172.96228 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
          3RD HIGHEST VALUE IS     119.93618 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          4TH HIGHEST VALUE IS     116.92225 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     115.65238 AT (  712112.10,  4135238.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     100.91791 AT (  712253.00,  4135169.00,    44.49,
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   44.49,    0.00)  DC
          7TH HIGHEST VALUE IS      68.92261 AT (  712278.80,  4135105.00,    44.50,
   44.50,    0.00)  DC
          8TH HIGHEST VALUE IS      66.80923 AT (  712122.50,  4135261.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS      66.70392 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
         10TH HIGHEST VALUE IS      66.61738 AT (  712263.40,  4135192.00,    44.50,
   44.50,    0.00)  DC

LINE9     1ST HIGHEST VALUE IS     169.03285 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
          2ND HIGHEST VALUE IS     153.76247 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          3RD HIGHEST VALUE IS     113.12374 AT (  712253.00,  4135169.00,    44.49,
   44.49,    0.00)  DC
          4TH HIGHEST VALUE IS     102.93785 AT (  712112.10,  4135238.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     100.13771 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          6TH HIGHEST VALUE IS      91.26220 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS      69.20474 AT (  712263.40,  4135192.00,    44.50,
   44.50,    0.00)  DC
          8TH HIGHEST VALUE IS      66.69212 AT (  712122.50,  4135261.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS      65.27224 AT (  712278.80,  4135105.00,    44.50,
   44.50,    0.00)  DC
         10TH HIGHEST VALUE IS      59.51249 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC

LINE10    1ST HIGHEST VALUE IS     127.90528 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC
          2ND HIGHEST VALUE IS     113.73750 AT (  712080.70,  4135170.00,    43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS     110.62775 AT (  712070.20,  4135147.00,    43.89,
   43.89,    0.00)  DC
          4TH HIGHEST VALUE IS     109.64124 AT (  712091.10,  4135192.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS      96.40660 AT (  712059.80,  4135124.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS      93.81879 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS      87.74566 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS      82.15346 AT (  712079.40,  4135073.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS      74.78163 AT (  712061.40,  4135090.00,    43.87,
   43.87,    0.00)  DC
         10TH HIGHEST VALUE IS      71.27196 AT (  712059.10,  4135181.00,    43.89,
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   43.89,    0.00)  DC
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                          ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                        ***       16:45:09

                                  PAGE  96
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                        *** THE SUMMARY OF MAXIMUM PERIOD ( 43824
HRS) RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - 

LINE11    1ST HIGHEST VALUE IS     871.42013 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          2ND HIGHEST VALUE IS     834.85601 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS     802.51155 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
          4TH HIGHEST VALUE IS     583.53297 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     422.47153 AT (  712079.40,  4135073.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     309.68677 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS     304.46039 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS     217.41512 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          9TH HIGHEST VALUE IS     128.02392 AT (  712061.40,  4135090.00,    43.87,
   43.87,    0.00)  DC
         10TH HIGHEST VALUE IS     109.02702 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC

LINE12    1ST HIGHEST VALUE IS     257.84371 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          2ND HIGHEST VALUE IS     252.88463 AT (  712242.70,  4135147.00,    44.39,
   44.39,    0.00)  DC
          3RD HIGHEST VALUE IS     148.61722 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
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          4TH HIGHEST VALUE IS     140.53836 AT (  712253.00,  4135169.00,     44.49,
   44.49,    0.00)  DC
          5TH HIGHEST VALUE IS      89.56441 AT (  712278.80,  4135105.00,     44.50,
   44.50,    0.00)  DC
          6TH HIGHEST VALUE IS      80.14342 AT (  712263.40,  4135192.00,     44.50,
   44.50,    0.00)  DC
          7TH HIGHEST VALUE IS      73.76498 AT (  712211.60,  4135078.00,     44.20,
   44.20,    0.00)  DC
          8TH HIGHEST VALUE IS      56.62951 AT (  712101.60,  4135215.00,     43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS      53.98477 AT (  712112.10,  4135238.00,     43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      46.79874 AT (  712273.80,  4135215.00,     44.50,
   44.50,    0.00)  DC

LINE13    1ST HIGHEST VALUE IS     114.12316 AT (  712201.30,  4135056.00,     44.20,
   44.20,    0.00)  DC
          2ND HIGHEST VALUE IS     112.30740 AT (  712133.50,  4135021.00,     43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS     110.81494 AT (  712211.60,  4135078.00,     44.20,
   44.20,    0.00)  DC
          4TH HIGHEST VALUE IS     106.90121 AT (  712190.90,  4135033.00,     44.15,
   44.15,    0.00)  DC
          5TH HIGHEST VALUE IS      97.39870 AT (  712221.90,  4135101.00,     44.20,
   44.20,    0.00)  DC
          6TH HIGHEST VALUE IS      96.00596 AT (  712115.50,  4135038.00,     43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS      87.89765 AT (  712180.50,  4135010.00,     43.92,
   43.92,    0.00)  DC
          8TH HIGHEST VALUE IS      80.01131 AT (  712151.50,  4135003.00,     43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS      74.51024 AT (  712232.30,  4135124.00,     44.28,
   44.28,    0.00)  DC
         10TH HIGHEST VALUE IS      67.97188 AT (  712097.40,  4135055.00,     43.89,
   43.89,    0.00)  DC

LINE14    1ST HIGHEST VALUE IS     703.01398 AT (  712133.50,  4135021.00,     43.89,
   43.89,    0.00)  DC
          2ND HIGHEST VALUE IS     576.43161 AT (  712151.50,  4135003.00,     43.89,
   43.89,    0.00)  DC
          3RD HIGHEST VALUE IS     457.68130 AT (  712115.50,  4135038.00,     43.89,
   43.89,    0.00)  DC
          4TH HIGHEST VALUE IS     366.72009 AT (  712180.50,  4135010.00,     43.92,
   43.92,    0.00)  DC
          5TH HIGHEST VALUE IS     348.17747 AT (  712170.10,  4134987.00,     43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     338.81233 AT (  712169.50,  4134986.00,     43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS     231.72260 AT (  712097.40,  4135055.00,     43.89,
   43.89,    0.00)  DC
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          8TH HIGHEST VALUE IS     161.92711 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          9TH HIGHEST VALUE IS     158.27489 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
         10TH HIGHEST VALUE IS     107.13345 AT (  712079.40,  4135073.00,    43.89,
   43.89,    0.00)  DC
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                 PAGE  97
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                       *** THE SUMMARY OF MAXIMUM PERIOD ( 43824
HRS) RESULTS ***


                                   ** CONC OF OTHER    IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

LINE15    1ST HIGHEST VALUE IS    1787.29712 AT (  712180.50,  4135010.00,    43.92,
   43.92,    0.00)  DC
          2ND HIGHEST VALUE IS     502.07702 AT (  712204.20,  4135002.00,    44.00,
   44.00,    0.00)  DC
          3RD HIGHEST VALUE IS     330.59518 AT (  712190.90,  4135033.00,    44.15,
   44.15,    0.00)  DC
          4TH HIGHEST VALUE IS     285.44378 AT (  712170.10,  4134987.00,    43.89,
   43.89,    0.00)  DC
          5TH HIGHEST VALUE IS     264.85038 AT (  712169.50,  4134986.00,    43.89,
   43.89,    0.00)  DC
          6TH HIGHEST VALUE IS     162.85115 AT (  712133.50,  4135021.00,    43.89,
   43.89,    0.00)  DC
          7TH HIGHEST VALUE IS     148.39056 AT (  712151.50,  4135003.00,    43.89,
   43.89,    0.00)  DC
          8TH HIGHEST VALUE IS     124.22155 AT (  712115.50,  4135038.00,    43.89,
   43.89,    0.00)  DC
          9TH HIGHEST VALUE IS     104.51931 AT (  712201.30,  4135056.00,    44.20,
   44.20,    0.00)  DC
         10TH HIGHEST VALUE IS      77.99583 AT (  712097.40,  4135055.00,    43.89,
   43.89,    0.00)  DC

LINE16    1ST HIGHEST VALUE IS    1444.30201 AT (  712242.70,  4135147.00,    44.39,
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   44.39,    0.00)  DC
          2ND HIGHEST VALUE IS     346.53402 AT (  712232.30,  4135124.00,    44.28,
   44.28,    0.00)  DC
          3RD HIGHEST VALUE IS     291.71861 AT (  712253.00,  4135169.00,    44.49,
   44.49,    0.00)  DC
          4TH HIGHEST VALUE IS     189.76607 AT (  712278.80,  4135105.00,    44.50,
   44.50,    0.00)  DC
          5TH HIGHEST VALUE IS     108.48121 AT (  712221.90,  4135101.00,    44.20,
   44.20,    0.00)  DC
          6TH HIGHEST VALUE IS     103.36812 AT (  712263.40,  4135192.00,    44.50,
   44.50,    0.00)  DC
          7TH HIGHEST VALUE IS      50.11942 AT (  712273.80,  4135215.00,    44.50,
   44.50,    0.00)  DC
          8TH HIGHEST VALUE IS      48.26872 AT (  712211.60,  4135078.00,    44.20,
   44.20,    0.00)  DC
          9TH HIGHEST VALUE IS      32.29223 AT (  712101.60,  4135215.00,    43.89,
   43.89,    0.00)  DC
         10TH HIGHEST VALUE IS      32.13303 AT (  712112.10,  4135238.00,    43.89,
   43.89,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***        16:45:09

                                  PAGE  98
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3
               **

                                                      DATE
                                             NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

POINT1   HIGH   1ST HIGH VALUE IS       0.00882  ON 14100307: AT (  712080.70,
4135170.00,    43.89,    43.89,    0.00)  DC
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AREA1    HIGH   1ST HIGH VALUE IS     163.13915  ON 13032507: AT (  712133.50,
4135021.00,    43.89,    43.89,    0.00)  DC

AREA2    HIGH   1ST HIGH VALUE IS     489.00464  ON 14022308: AT (  712211.60,
4135078.00,    44.20,    44.20,    0.00)  DC

AREA3    HIGH   1ST HIGH VALUE IS    2372.01771  ON 13011807: AT (  712133.50,
4135021.00,    43.89,    43.89,    0.00)  DC

AREA4    HIGH   1ST HIGH VALUE IS    4214.92023  ON 14022308: AT (  712232.30,
4135124.00,    44.28,    44.28,    0.00)  DC

VOLUME1  HIGH   1ST HIGH VALUE IS      32.60310  ON 17121907: AT (  712070.20,
4135147.00,    43.89,    43.89,    0.00)  DC

VOLUME2  HIGH   1ST HIGH VALUE IS       5.63839  ON 16102308: AT (  712165.10,
4135293.00,    44.20,    44.20,    0.00)  DC

VOLUME3  HIGH   1ST HIGH VALUE IS     611.72831  ON 15021209: AT (  712101.60,
4135215.00,    43.89,    43.89,    0.00)  DC

VOLUME4  HIGH   1ST HIGH VALUE IS       1.72356  ON 15030308: AT (  712201.30,
4135056.00,    44.20,    44.20,    0.00)  DC

VOLUME5  HIGH   1ST HIGH VALUE IS       0.13105  ON 16010807: AT (  712151.50,
4135003.00,    43.89,    43.89,    0.00)  DC

LINE1    HIGH   1ST HIGH VALUE IS   69966.40354  ON 16111006: AT (  712180.50,
4135010.00,    43.92,    43.92,    0.00)  DC

LINE2    HIGH   1ST HIGH VALUE IS  100236.73032  ON 17111208: AT (  712242.70,
4135147.00,    44.39,    44.39,    0.00)  DC

LINE3    HIGH   1ST HIGH VALUE IS   40082.18460  ON 14022108: AT (  712097.40,
4135055.00,    43.89,    43.89,    0.00)  DC

LINE4    HIGH   1ST HIGH VALUE IS   32674.84893  ON 13032507: AT (  712115.50,
4135038.00,    43.89,    43.89,    0.00)  DC

LINE5    HIGH   1ST HIGH VALUE IS   33431.32621  ON 17111208: AT (  712242.70,
4135147.00,    44.39,    44.39,    0.00)  DC

LINE6    HIGH   1ST HIGH VALUE IS   32008.90727  ON 13012108: AT (  712079.40,
4135073.00,    43.89,    43.89,    0.00)  DC

LINE7    HIGH   1ST HIGH VALUE IS   28309.67066  ON 14022307: AT (  712079.40,
4135073.00,    43.89,    43.89,    0.00)  DC

LINE8    HIGH   1ST HIGH VALUE IS   23791.16764  ON 13011909: AT (  712112.10,
4135238.00,    43.89,    43.89,    0.00)  DC
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LINE9    HIGH   1ST HIGH VALUE IS   12219.89564  ON 13011909: AT (   712112.10,
4135238.00,    43.89,    43.89,    0.00)  DC

LINE10   HIGH   1ST HIGH VALUE IS   16181.99406  ON 13032507: AT (   712079.40,
4135073.00,    43.89,    43.89,    0.00)  DC

LINE11   HIGH   1ST HIGH VALUE IS   24888.68180  ON 15021108: AT (   712079.40,
4135073.00,    43.89,    43.89,    0.00)  DC

LINE12   HIGH   1ST HIGH VALUE IS   15612.97002  ON 17111208: AT (   712242.70,
4135147.00,    44.39,    44.39,    0.00)  DC

LINE13   HIGH   1ST HIGH VALUE IS   13698.40864  ON 13032507: AT (   712115.50,
4135038.00,    43.89,    43.89,    0.00)  DC

LINE14   HIGH   1ST HIGH VALUE IS   29000.43371  ON 16100907: AT (   712115.50,
4135038.00,    43.89,    43.89,    0.00)  DC

LINE15   HIGH   1ST HIGH VALUE IS   44498.06928  ON 16111006: AT (   712180.50,
4135010.00,    43.92,    43.92,    0.00)  DC
↑ *** AERMOD - VERSION  18081 ***   ***  BEI
                         ***       03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                       ***       16:45:09

                                  PAGE  99
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3
               **

                                                          DATE
                                         NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -

LINE16   HIGH   1ST HIGH VALUE IS   36054.83579  ON 14060906: AT (   712242.70,
4135147.00,    44.39,    44.39,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
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                       DP = DISCPOLR
 *** AERMOD - VERSION  18081 ***   ***  BEI
                          ***        03/07/20
 *** AERMET - VERSION  18081 ***   ***  V3
                        ***        16:45:09

                                    PAGE 100
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of             0 Fatal Error Message(s)
 A Total of            10 Warning Message(s)
 A Total of          2578 Informational Message(s)

 A Total of         43824 Hours Were Processed

 A Total of          1693 Calm Hours Identified

 A Total of           885 Missing Hours Identified (  2.02 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186    1051       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
 ME W187    1051       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

 OU W565    1127       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1128       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1129       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1130       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1131       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1132       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1133       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
 OU W565    1134       OUPOST: Possible Conflict With Dynamically Allocated FUNIT
 POSTFILE
```

```
************************************
*** AERMOD Finishes Successfully ***
************************************
```

```
HARP2 - HRACalc (dated 19044) 3/9/2020 11:47:27 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
*********************************
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: All
Calculation Method: Derived

*********************************
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 40

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 40

*********************************
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments.  The remaining
pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

*********************************
INHALATION

Daily breathing rate: Moderate8HR
```

```
**Worker Adjustment Factors**
Worker adjustment factors enabled: NO

**Fraction at time at home**
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

*********************************
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

*********************************
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment.  Please see the input file for
details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\hra\BEI4CanChrAcuCancerRisk.csv
Cancer risk total by receptor saved to:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\hra\BEI4CanChrAcuCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\hra\BEI4CanChrAcuNCChronicRisk.csv
Chronic risk total by receptor saved to:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\hra\BEI4CanChrAcuNCChronicRiskSumByRec.cs
v
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\hra\BEI4CanChrAcuNCAcuteRisk.csv
Acute risk total by receptor saved to:
C:\Users\jellard\Desktop\BEIBATCH\BEIBATCH\hra\BEI4CanChrAcuNCAcuteRiskSumByRec.csv
HRA ran successfully
```

**HARP - Air Dispersion Modeling and Risk Tool v19121
**3/10/2020
**Exported Risk Results

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INHAL_RISK	SOIL_RISK	DERMAL_RISK
1	SENSITIV	W1	712100.8	4135272	6.95E-07	40YrCancerDerived	3.34E-07	2.61E-07	9.98E-08
2	SENSITIV	W2	712278.8	4135105	1.40E-06	40YrCancerDerived	6.49E-07	5.40E-07	2.07E-07
3	SENSITIV	W3	712204.2	4135002	2.56E-06	40YrCancerDerived	1.39E-06	8.49E-07	3.26E-07
4	SENSITIV	W4	712074.8	4134973	3.25E-07	40YrCancerDerived	1.69E-07	1.13E-07	4.33E-08
5	SENSITIV	W5	712269.6	4135272	3.65E-07	40YrCancerDerived	1.71E-07	1.40E-07	5.36E-08
6	SENSITIV	W6	711861.5	4135295	2.24E-07	40YrCancerDerived	1.06E-07	8.56E-08	3.28E-08
7	SENSITIV	W7	712059.1	4135181	1.56E-06	40YrCancerDerived	7.09E-07	6.14E-07	2.36E-07
8	PROPERTY		712142.5	4135304	3.98E-07	40YrCancerDerived	1.90E-07	1.50E-07	5.76E-08
9	PROPERTY		712165.1	4135293	4.09E-07	40YrCancerDerived	1.96E-07	1.54E-07	5.90E-08
10	PROPERTY		712187.8	4135283	4.23E-07	40YrCancerDerived	2.03E-07	1.60E-07	6.11E-08
11	PROPERTY		712210.4	4135272	4.45E-07	40YrCancerDerived	2.13E-07	1.68E-07	6.44E-08
12	PROPERTY		712233.1	4135262	4.67E-07	40YrCancerDerived	2.21E-07	1.78E-07	6.80E-08
13	PROPERTY		712255.7	4135251	4.86E-07	40YrCancerDerived	2.29E-07	1.86E-07	7.14E-08
14	PROPERTY		712278.3	4135240	4.85E-07	40YrCancerDerived	2.27E-07	1.87E-07	7.16E-08
15	PROPERTY		712284.1	4135238	4.78E-07	40YrCancerDerived	2.23E-07	1.84E-07	7.06E-08
16	PROPERTY		712273.8	4135215	6.55E-07	40YrCancerDerived	3.05E-07	2.52E-07	9.69E-08
17	PROPERTY		712263.4	4135192	9.41E-07	40YrCancerDerived	4.38E-07	3.64E-07	1.40E-07
18	PROPERTY		712253	4135169	1.42E-06	40YrCancerDerived	6.61E-07	5.45E-07	2.09E-07
19	PROPERTY		712242.7	4135147	2.20E-06	40YrCancerDerived	1.07E-06	8.17E-07	3.14E-07
20	PROPERTY		712232.3	4135124	3.19E-06	40YrCancerDerived	1.43E-06	1.27E-06	4.89E-07
21	PROPERTY		712221.9	4135101	4.47E-06	40YrCancerDerived	1.95E-06	1.82E-06	6.98E-07
22	PROPERTY		712211.6	4135078	5.20E-06	40YrCancerDerived	2.33E-06	2.07E-06	7.96E-07
23	PROPERTY		712201.3	4135056	5.20E-06	40YrCancerDerived	2.56E-06	1.91E-06	7.32E-07
24	PROPERTY		712190.9	4135033	4.58E-06	40YrCancerDerived	2.48E-06	1.52E-06	5.83E-07
25	PROPERTY		712180.5	4135010	3.47E-06	40YrCancerDerived	2.07E-06	1.01E-06	3.88E-07
26	PROPERTY		712170.1	4134987	1.79E-06	40YrCancerDerived	1.04E-06	5.38E-07	2.06E-07
27	PROPERTY		712169.5	4134986	1.73E-06	40YrCancerDerived	1.01E-06	5.22E-07	2.00E-07
28	PROPERTY		712151.5	4135003	1.93E-06	40YrCancerDerived	1.19E-06	5.37E-07	2.06E-07
29	PROPERTY		712133.5	4135021	1.85E-06	40YrCancerDerived	1.21E-06	4.61E-07	1.77E-07
30	PROPERTY		712115.5	4135038	1.72E-06	40YrCancerDerived	1.13E-06	4.25E-07	1.63E-07
31	PROPERTY		712097.4	4135055	1.49E-06	40YrCancerDerived	1.00E-06	3.55E-07	1.36E-07
32	PROPERTY		712079.4	4135073	1.17E-06	40YrCancerDerived	7.19E-07	3.26E-07	1.25E-07
33	PROPERTY		712061.4	4135090	9.46E-07	40YrCancerDerived	5.26E-07	3.03E-07	1.16E-07
34	PROPERTY		712049.3	4135102	8.68E-07	40YrCancerDerived	4.64E-07	2.92E-07	1.12E-07
35	PROPERTY		712059.8	4135124	1.29E-06	40YrCancerDerived	6.44E-07	4.66E-07	1.79E-07
36	PROPERTY		712070.2	4135147	1.91E-06	40YrCancerDerived	8.87E-07	7.41E-07	2.84E-07
37	PROPERTY		712080.7	4135170	2.35E-06	40YrCancerDerived	1.06E-06	9.34E-07	3.58E-07
38	PROPERTY		712091.1	4135192	2.27E-06	40YrCancerDerived	1.04E-06	8.86E-07	3.39E-07
39	PROPERTY		712101.6	4135215	1.85E-06	40YrCancerDerived	9.27E-07	6.66E-07	2.53E-07
40	PROPERTY		712112.1	4135238	1.23E-06	40YrCancerDerived	6.10E-07	4.47E-07	1.71E-07
41	PROPERTY		712122.5	4135261	8.00E-07	40YrCancerDerived	3.87E-07	2.99E-07	1.14E-07

**HARP - Air Dispersion Modeling and Risk Tool v19121
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REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVE	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	MAXHI
1	SENSITIV	W1	712100.8	4135272	NonCancerCh	0.15607	0.16589	0.00026761	0.00013735	3.80E-05	0.15609	0.1592	0.15605	0	0	0	0.0026188	0	0	0.16589
2	SENSITIV	W2	712278.8	4135105	NonCancerCh	0.32427	0.34392	0.00051254	0.00026806	7.62E-05	0.32431	0.33038	0.32422	0	0	0	0.0050913	0	0	0.34392
3	SENSITIV	W3	712204.2	4135002	NonCancerCh	0.51051	0.54133	0.00079843	0.00041855	0.00011951	0.51057	0.52081	0.51043	0	0	0	0.0079526	0	0	0.54133
4	SENSITIV	W4	712074.8	4134973	NonCancerCh	0.067702	0.07182	0.00010781	5.63E-05	1.60E-05	0.06771	0.06905	0.067692	0	0	0	0.0010697	0	0	0.07182
5	SENSITIV	W5	712269.6	4135272	NonCancerCh	0.083871	0.089024	0.00013664	7.10E-05	2.00E-05	0.083881	0.085486	0.083858	0	0	0	0.0013496	0	0	0.089024
6	SENSITIV	W6	711861.5	4135295	NonCancerCh	0.051346	0.054483	8.26E-05	4.30E-05	1.22E-05	0.051352	0.052329	0.051337	0	0	0	0.00081809	0	0	0.054483
7	SENSITIV	W7	712059.1	4135181	NonCancerCh	0.36849	0.39099	0.00059197	0.00030841	8.72E-05	0.36853	0.37544	0.36843	0	0	0	0.0058621	0	0	0.39099
8	PROPERTY		712142.5	4135304	NonCancerCh	0.090052	0.095649	0.00015037	7.76E-05	2.17E-05	0.090064	0.091825	0.090038	0	0	0	0.0014786	0	0	0.095649
9	PROPERTY		712165.1	4135293	NonCancerCh	0.092198	0.097934	0.00015436	7.97E-05	2.22E-05	0.092209	0.094018	0.092183	0	0	0	0.001517	0	0	0.097934
10	PROPERTY		712187.8	4135283	NonCancerCh	0.09551	0.10145	0.00015963	8.24E-05	2.30E-05	0.095523	0.097394	0.095495	0	0	0	0.0015693	0	0	0.10145
11	PROPERTY		712210.4	4135272	NonCancerCh	0.10074	0.10699	0.00016742	8.65E-05	2.42E-05	0.10076	0.10272	0.10073	0	0	0	0.0016476	0	0	0.10699
12	PROPERTY		712233.1	4135262	NonCancerCh	0.10638	0.11294	0.00017506	9.07E-05	2.54E-05	0.10639	0.10845	0.10636	0	0	0	0.0017259	0	0	0.11294
13	PROPERTY		712255.7	4135251	NonCancerCh	0.11173	0.1186	0.00018212	9.46E-05	2.66E-05	0.11175	0.11389	0.11172	0	0	0	0.0017986	0	0	0.1186
14	PROPERTY		712278.3	4135240	NonCancerCh	0.112	0.11886	0.00018121	9.43E-05	2.66E-05	0.11201	0.11415	0.11198	0	0	0	0.0017921	0	0	0.11886
15	PROPERTY		712284.1	4135238	NonCancerCh	0.11036	0.11711	0.0001783	9.28E-05	2.62E-05	0.11037	0.11247	0.11034	0	0	0	0.0017638	0	0	0.11711
16	PROPERTY		712273.8	4135215	NonCancerCh	0.15152	0.16077	0.00024364	0.00012691	3.59E-05	0.15154	0.15441	0.1515	0	0	0	0.0024123	0	0	0.16077
17	PROPERTY		712263.4	4135192	NonCancerCh	0.21854	0.23185	0.00034919	0.00018216	5.16E-05	0.21857	0.22269	0.21851	0	0	0	0.0034614	0	0	0.23185
18	PROPERTY		712253	4135169	NonCancerCh	0.32735	0.34724	0.00052028	0.00027175	7.71E-05	0.32739	0.33355	0.3273	0	0	0	0.0051625	0	0	0.34724
19	PROPERTY		712242.7	4135147	NonCancerCh	0.49102	0.5208	0.0007772	0.00040635	0.00011547	0.49108	0.50045	0.49095	0	0	0	0.0077177	0	0	0.5208
20	PROPERTY		712232.3	4135124	NonCancerCh	0.76454	0.81079	0.0012038	0.00063016	0.00017941	0.76462	0.77869	0.76442	0	0	0	0.011966	0	0	0.81079
21	PROPERTY		712221.9	4135101	NonCancerCh	1.0923	1.1582	0.0017123	0.00089731	0.00025585	1.0924	1.1123	1.0921	0	0	0	0.017035	0	0	1.1582
22	PROPERTY		712211.6	4135078	NonCancerCh	1.2456	1.3207	0.0019479	0.0010213	0.00029148	1.2457	1.2686	1.2454	0	0	0	0.01939	0	0	1.3207
23	PROPERTY		712201.3	4135056	NonCancerCh	1.1456	1.2147	0.0017892	0.00093835	0.00026798	1.1457	1.1676	1.1454	0	0	0	0.017819	0	0	1.2147
24	PROPERTY		712190.9	4135033	NonCancerCh	0.91162	0.9666	0.0014222	0.00074593	0.00021321	0.91172	0.92998	0.91148	0	0	0	0.014174	0	0	0.9666
25	PROPERTY		712180.5	4135010	NonCancerCh	0.60779	0.64446	0.00094845	0.00049739	0.00014219	0.60786	0.62088	0.60769	0	0	0	0.0094552	0	0	0.64446
26	PROPERTY		712170.1	4134987	NonCancerCh	0.32308	0.3426	0.0005059	0.0002651	7.57E-05	0.32312	0.32994	0.32303	0	0	0	0.0050389	0	0	0.3426
27	PROPERTY		712169.5	4134986	NonCancerCh	0.3135	0.33244	0.00049099	0.00025728	7.34E-05	0.31353	0.32014	0.31345	0	0	0	0.0048901	0	0	0.33244
28	PROPERTY		712151.5	4135003	NonCancerCh	0.32295	0.34246	0.00050594	0.00026509	7.57E-05	0.32298	0.3301	0.3229	0	0	0	0.0050388	0	0	0.34246
29	PROPERTY		712133.5	4135021	NonCancerCh	0.27712	0.29388	0.00043557	0.00022807	6.50E-05	0.27715	0.28364	0.27707	0	0	0	0.0043337	0	0	0.29388
30	PROPERTY		712115.5	4135038	NonCancerCh	0.25536	0.27082	0.00040211	0.00021045	5.99E-05	0.25539	0.26141	0.25532	0	0	0	0.0039999	0	0	0.27082
31	PROPERTY		712097.4	4135055	NonCancerCh	0.2131	0.22603	0.00033693	0.00017617	5.01E-05	0.21313	0.21828	0.21307	0	0	0	0.0033489	0	0	0.22603
32	PROPERTY		712079.4	4135073	NonCancerCh	0.19605	0.20795	0.00031066	0.00016235	4.61E-05	0.19607	0.20041	0.19602	0	0	0	0.003086	0	0	0.20795
33	PROPERTY		712061.4	4135090	NonCancerCh	0.18208	0.19313	0.00028866	0.00015084	4.29E-05	0.1821	0.18584	0.18205	0	0	0	0.0028668	0	0	0.19313
34	PROPERTY		712049.3	4135102	NonCancerCh	0.1755	0.18616	0.00027826	0.00014541	4.13E-05	0.17552	0.17904	0.17547	0	0	0	0.0027632	0	0	0.18616
35	PROPERTY		712059.8	4135124	NonCancerCh	0.28005	0.29704	0.0004433	0.00023176	6.59E-05	0.28009	0.2855	0.28001	0	0	0	0.0044028	0	0	0.29704
36	PROPERTY		712070.2	4135147	NonCancerCh	0.44512	0.47213	0.00070512	0.00036858	0.00010472	0.44518	0.45351	0.44505	0	0	0	0.0070012	0	0	0.47213
37	PROPERTY		712080.7	4135170	NonCancerCh	0.56062	0.5948	0.00089788	0.00046813	0.00013249	0.56069	0.57113	0.56053	0	0	0	0.0088964	0	0	0.5948
38	PROPERTY		712091.1	4135192	NonCancerCh	0.53045	0.56346	0.00088885	0.00045859	0.00012779	0.53051	0.54076	0.53036	0	0	0	0.0087338	0	0	0.56346
39	PROPERTY		712101.6	4135215	NonCancerCh	0.3947	0.42104	0.0007635	0.00038193	0.00010139	0.39476	0.40341	0.39464	0	0	0	0.0073212	0	0	0.42104
40	PROPERTY		712112.1	4135238	NonCancerCh	0.26641	0.28366	0.00048514	0.00024576	6.66E-05	0.26644	0.27203	0.26636	0	0	0	0.0046984	0	0	0.28366
41	PROPERTY		712122.5	4135261	NonCancerCh	0.17847	0.18973	0.00030742	0.00015763	4.35E-05	0.17849	0.18207	0.17844	0	0	0	0.003006	0	0	0.18973

**HARP - Air Dispersion Modeling and Risk Tool v19121
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REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVE	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	MAXHI
1	SENSITIV	W1	712100.8	4135272	NonCancerA	0.10103	0.10081	0.10466	0	0	0.10081	0.0010169	0	0	0	0	0	0	0	0.10466
2	SENSITIV	W2	712278.8	4135105	NonCancerA	0.11193	0.11168	0.11284	0	0	0.11168	0.0011195	0	0	0	0	0	0	0	0.11284
3	SENSITIV	W3	712204.2	4135002	NonCancerA	0.11129	0.11093	0.11186	0	0	0.11093	0.0011114	0	0	0	0	0	0	0	0.11186
4	SENSITIV	W4	712074.8	4134973	NonCancerA	0.083895	0.083655	0.084674	0	0	0.083655	0.00083888	0	0	0	0	0	0	0	0.084674
5	SENSITIV	W5	712269.6	4135272	NonCancerA	0.12869	0.12847	0.13016	0	0	0.12847	0.0012886	0	0	0	0	0	0	0	0.13016
6	SENSITIV	W6	711861.5	4135295	NonCancerA	0.034732	0.034652	0.035325	0	0	0.034652	0.00034805	0	0	0	0	0	0	0	0.035325
7	SENSITIV	W7	712059.1	4135181	NonCancerA	0.13289	0.13264	0.13561	0	0	0.13264	0.0013332	0	0	0	0	0	0	0	0.13561
8	PROPERTY		712142.5	4135304	NonCancerA	0.092619	0.092427	0.095261	0	0	0.092427	0.00093073	0	0	0	0	0	0	0	0.095261
9	PROPERTY		712165.1	4135293	NonCancerA	0.10218	0.10197	0.10491	0	0	0.10197	0.0010264	0	0	0	0	0	0	0	0.10491
10	PROPERTY		712187.8	4135283	NonCancerA	0.10681	0.10659	0.10953	0	0	0.10659	0.0010726	0	0	0	0	0	0	0	0.10953
11	PROPERTY		712210.4	4135272	NonCancerA	0.12143	0.12118	0.12386	0	0	0.12118	0.0012179	0	0	0	0	0	0	0	0.12386
12	PROPERTY		712233.1	4135262	NonCancerA	0.11989	0.11964	0.12195	0	0	0.11964	0.0012017	0	0	0	0	0	0	0	0.12195
13	PROPERTY		712255.7	4135251	NonCancerA	0.15177	0.15153	0.15352	0	0	0.15153	0.0015199	0	0	0	0	0	0	0	0.15352
14	PROPERTY		712278.3	4135240	NonCancerA	0.12134	0.12112	0.12274	0	0	0.12112	0.0012149	0	0	0	0	0	0	0	0.12274
15	PROPERTY		712284.1	4135238	NonCancerA	0.11379	0.11357	0.11508	0	0	0.11357	0.0011392	0	0	0	0	0	0	0	0.11508
16	PROPERTY		712273.8	4135215	NonCancerA	0.11655	0.1163	0.11811	0	0	0.1163	0.0011671	0	0	0	0	0	0	0	0.11811
17	PROPERTY		712263.4	4135192	NonCancerA	0.12957	0.12927	0.13104	0	0	0.12927	0.0012967	0	0	0	0	0	0	0	0.13104
18	PROPERTY		712253	4135169	NonCancerA	0.16122	0.16087	0.16269	0	0	0.16087	0.0016129	0	0	0	0	0	0	0	0.16269
19	PROPERTY		712242.7	4135147	NonCancerA	0.1952	0.19481	0.19667	0	0	0.19481	0.0019523	0	0	0	0	0	0	0	0.19667
20	PROPERTY		712232.3	4135124	NonCancerA	0.20921	0.20884	0.2104	0	0	0.20884	0.002092	0	0	0	0	0	0	0	0.2104
21	PROPERTY		712221.9	4135101	NonCancerA	0.20729	0.20693	0.20833	0	0	0.20693	0.0020725	0	0	0	0	0	0	0	0.20833
22	PROPERTY		712211.6	4135078	NonCancerA	0.18301	0.18262	0.18394	0	0	0.18262	0.0018292	0	0	0	0	0	0	0	0.18394
23	PROPERTY		712201.3	4135056	NonCancerA	0.16614	0.1657	0.16703	0	0	0.1657	0.0016601	0	0	0	0	0	0	0	0.16703
24	PROPERTY		712190.9	4135033	NonCancerA	0.15328	0.15281	0.15398	0	0	0.15281	0.0015308	0	0	0	0	0	0	0	0.15398
25	PROPERTY		712180.5	4135010	NonCancerA	0.12582	0.12529	0.12634	0	0	0.12529	0.0012553	0	0	0	0	0	0	0	0.12634
26	PROPERTY		712170.1	4134987	NonCancerA	0.10914	0.10874	0.10965	0	0	0.10874	0.0010895	0	0	0	0	0	0	0	0.10965
27	PROPERTY		712169.5	4134986	NonCancerA	0.10825	0.10786	0.10876	0	0	0.10786	0.0010807	0	0	0	0	0	0	0	0.10876
28	PROPERTY		712151.5	4135003	NonCancerA	0.13612	0.13561	0.13663	0	0	0.13561	0.0013584	0	0	0	0	0	0	0	0.13663
29	PROPERTY		712133.5	4135021	NonCancerA	0.16841	0.16785	0.1691	0	0	0.16785	0.0016813	0	0	0	0	0	0	0	0.1691
30	PROPERTY		712115.5	4135038	NonCancerA	0.1851	0.18448	0.18605	0	0	0.18448	0.0018483	0	0	0	0	0	0	0	0.18605
31	PROPERTY		712097.4	4135055	NonCancerA	0.15433	0.15379	0.15559	0	0	0.15379	0.001542	0	0	0	0	0	0	0	0.15559
32	PROPERTY		712079.4	4135073	NonCancerA	0.15171	0.15115	0.15311	0	0	0.15115	0.0015159	0	0	0	0	0	0	0	0.15311
33	PROPERTY		712061.4	4135090	NonCancerA	0.11937	0.119	0.12102	0	0	0.119	0.0011946	0	0	0	0	0	0	0	0.12102
34	PROPERTY		712049.3	4135102	NonCancerA	0.10602	0.10572	0.10733	0	0	0.10572	0.0010609	0	0	0	0	0	0	0	0.10733
35	PROPERTY		712059.8	4135124	NonCancerA	0.1363	0.13602	0.13814	0	0	0.13602	0.001365	0	0	0	0	0	0	0	0.13814
36	PROPERTY		712070.2	4135147	NonCancerA	0.15615	0.15586	0.15878	0	0	0.15586	0.0015652	0	0	0	0	0	0	0	0.15878
37	PROPERTY		712080.7	4135170	NonCancerA	0.16396	0.16369	0.16804	0	0	0.16369	0.0016468	0	0	0	0	0	0	0	0.16804
38	PROPERTY		712091.1	4135192	NonCancerA	0.19594	0.19565	0.20169	0	0	0.19565	0.0019703	0	0	0	0	0	0	0	0.20169
39	PROPERTY		712101.6	4135215	NonCancerA	0.14237	0.14207	0.14965	0	0	0.14207	0.001438	0	0	0	0	0	0	0	0.14965
40	PROPERTY		712112.1	4135238	NonCancerA	0.13774	0.13745	0.14319	0	0	0.13745	0.0013876	0	0	0	0	0	0	0	0.14319
41	PROPERTY		712122.5	4135261	NonCancerA	0.11893	0.11868	0.12318	0	0	0.11868	0.0011971	0	0	0	0	0	0	0	0.12318

APPENDIX B

EPA AP-42 Guidance Documents for Emission Factors

11.12 Concrete Batching

11.12.1 Process Description [1-5]

Concrete is composed essentially of water, cement, sand (fine aggregate) and coarse aggregate. Coarse aggregate may consist of gravel, crushed stone or iron blast furnace slag. Some specialty aggregate products could be either heavyweight aggregate (of barite, magnetite, limonite, ilmenite, iron or steel) or lightweight aggregate (with sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite, slag pumice, cinders, or sintered fly ash). Supplementary cementitious materials, also called mineral admixtures or pozzolan minerals may be added to make the concrete mixtures more economical, reduce permeability, increase strength, or influence other concrete properties. Typical examples are natural pozzolans, fly ash, ground granulated blast-furnace slag, and silica fume, which can be used individually with portland or blended cement or in different combinations. Chemical admixtures are usually liquid ingredients that are added to concrete to entrain air, reduce the water required to reach a required slump, retard or accelerate the setting rate, to make the concrete more flowable or other more specialized functions.

Approximately 75 percent of the U.S. concrete manufactured is produced at plants that store, convey, measure and discharge these constituents into trucks for transport to a job site. At most of these plants, sand, aggregate, cement and water are all gravity fed from the weight hopper into the mixer trucks. The concrete is mixed on the way to the site where the concrete is to be poured. At some of these plants, the concrete may also be manufactured in a central mix drum and transferred to a transport truck. Most of the remaining concrete manufactured are products cast in a factory setting. Precast products range from concrete bricks and paving stones to bridge girders, structural components, and panels for cladding. Concrete masonry, another type of manufactured concrete, may be best known for its conventional 8 x 8 x 16-inch block. In a few cases concrete is dry batched or prepared at a building construction site. Figure 11.12-1 is a generalized process diagram for concrete batching.

The raw materials can be delivered to a plant by rail, truck or barge. The cement is transferred to elevated storage silos pneumatically or by bucket elevator. The sand and coarse aggregate are transferred to elevated bins by front end loader, clam shell crane, belt conveyor, or bucket elevator. From these elevated bins, the constituents are fed by gravity or screw conveyor to weigh hoppers, which combine the proper amounts of each material.

11.12.2 Emissions and Controls [6-8]

Particulate matter, consisting primarily of cement and pozzolan dust but including some aggregate and sand dust emissions, is the primary pollutant of concern. In addition, there are emissions of metals that are associated with this particulate matter. All but one of the emission points are fugitive in nature. The only point sources are the transfer of cement and pozzolan material to silos, and these are usually vented to a fabric filter or "sock". Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer of sand and aggregate depends primarily on the surface moisture content of these materials. The extent of fugitive emission control varies widely from plant to plant. Particulate emission factors for concrete batching are give in Tables 11.12-1 and 11.12-2.

Types of controls used may include water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central duct collection systems, and the like. A major source of potential emissions, the movement of heavy trucks over unpaved or dusty surfaces in and around the plant, can be controlled by good maintenance and wetting of the road surface.

Predictive equations that allow for emission factor adjustment based on plant specific conditions are given in the Background Document for Chapter 11.12 and Chapter 13. Whenever plant specific data are available, they should be used with these predictive equations (e.g. Equations 11.12-1 through 11.12-3) in lieu of the general fugitive emission factors presented in Table 11.12-1, 11.12-2, and 11.12-5 through11.12-8 in order to adjust to site specific conditions, such as moisture levels and localized wind speeds.

11.12.3 Updates since the 5th Edition.

October 2001

– This major revision of the section replaced emissions factors based upon engineering judgment and poorly documented and performed source test reports with emissions tests conducted at modern operating truck mix and central mix facilities. Emissions factors for both total PM and total PM_{10} were developed from this test data.

June 2006

– This revision of the section supplemented the two source tests with several additional source tests of central mix and truck mix facilities. The measurement of the capture efficiency, local wind speed and fines material moisture level was improved over the previous two source tests. In addition to quantifying total PM and PM_{10}, $PM_{2.5}$ emissions were quantified at all of the facilities. Single value emissions factors for truck mix and central mix operations were revised using all of the data. Additionally, parameterized emissions factor equations using local wind speed and fines material moisture content were developed from the newer data.

February 2011

– This is an editorial revision of the section. Emissions factors in Tables 11.12-1, 11.12-2, 11.12-7 and 11.12-8 were corrected to agree with the emissions factors presented in the background report.

August 2011

- Equation 11.12-2 was corrected. An explanation was added under the equation.

January 2012

- This is an editorial revision of the section. Emissions factors for Uncontrolled factors in Table 11.12-3 for Total PM, PM_{10} and $PM_{10-2.5}$ were corrected to agree with the emissions factors presented in Table 11.12-2 and the emissions factors presented in the background report.

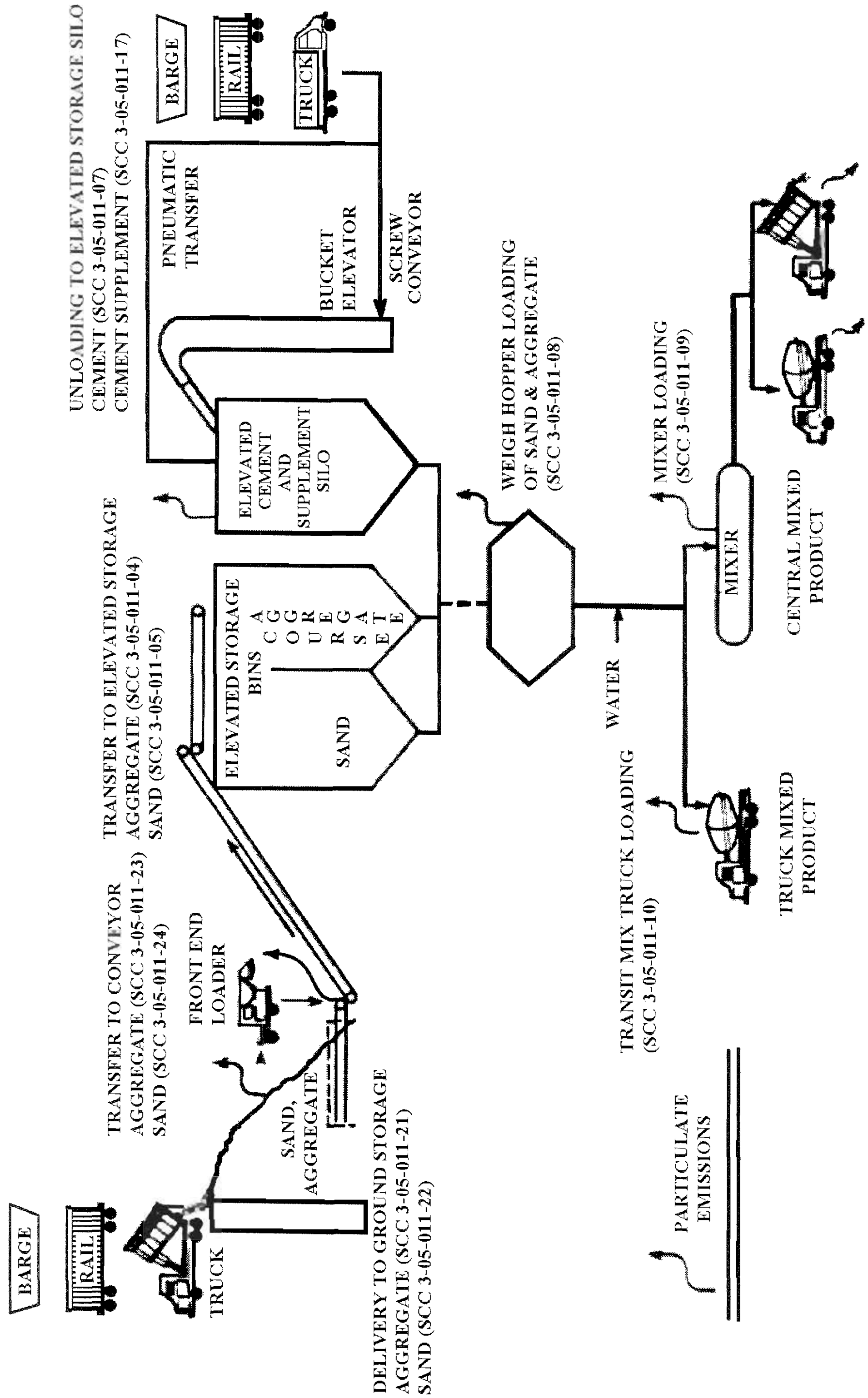

Figure 11.12-1. Typical Concrete Batching Process.

TABLE 11.12-1 (METRIC UNITS)
EMISSION FACTORS FOR CONCRETE BATCHING [a]

Source (SCC)	Uncontrolled				Controlled			
	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating
Aggregate transfer [b] (3-05-011-04,-21,23)	0.0035	D	0.0017	D	ND		ND	
Sand transfer [b] (3-05-011-05,22,24)	0.0011	D	0.00051	D	ND		ND	
Cement unloading to elevated storage silo (pneumatic)[c] (3-05-011-07)	0.36	E	0.24	E	0.00050	D	0.00017	D
Cement supplement unloading to elevated storage silo (pneumatic)[d] (3-05-011-17)	1.57	E	0.65	E	0.0045	D	0.0024	E
Weigh hopper loading [e] (3-05-011-08)	0.0026	D	0.0013	D	ND		ND	
Mixer loading (central mix)[f] (3-05-011-09)	0.286 or Eqn. 11.12-1	B	0.078 or Eqn. 11.12-1	B	0.0092 or Eqn. 11.12-1	B	0.0028 or Eqn. 11.12-1	B
Truck loading (truck mix)[g] (3-05-011-10)	0.559	B	0.155	B	0.049 or Eqn. 11.12-1	B	0.0131 or Eqn. 11.12-1	B
Vehicle traffic (paved roads)	See AP-42 Section 13.2.1, Paved Roads							
Vehicle traffic (unpaved roads)	See AP-42 Section 13.2.2, Unpaved Roads							
Wind erosion from aggregate and sand storage piles	See AP-42 Section 13.2.5, Industrial Wind Erosion							

ND = No data

[a] All emission factors are in kg of pollutant per Mg of material loaded unless noted otherwise. Loaded material includes course aggregate, sand, cement, cement supplement and the surface moisture associated with these materials. The average material composition of concrete batches presented in references 9 and 10 was 846 kg course aggregate, 648 kg sand, 223 kg cement and 33kg cement supplement. Approximately 75 liters of water was added to this solid material to produce 1826 kg of concrete.

[b] Reference 9 and 10. Emission factors are based upon an equation from AP-42, section 13.2.4 Aggregate Handling And Storage Piles, equation 1 with k_{PM-10} =.35, k_{PM} = .74, U = 10mph, $M_{aggregate}$ =1.77%, and M_{sand} = 4.17%. These moisture contents of the materials ($M_{aggregate}$ and M_{sand}) are the averages of the values obtained from Reference 9 and Reference 10.

[c] The uncontrolled PM & PM-10 emission factors were developed from Reference 9. The controlled emission factor for PM was developed from References 9, 10, 11, and 12. The controlled emission factor for PM-10 was developed from References 9 and 10.

[d] The controlled PM emission factor was developed from Reference 10 and Reference 12, whereas the controlled PM-10 emission factor was developed from only Reference 10.

[e] Emission factors were developed by using the AP-42 Section 13.2.4, Aggregate and Sand Transfer Emission Factors in conjunction with the ratio of aggregate and sand used in an average yard^3 of concrete. The unit for these emission factors is kg of pollutant per Mg of aggregate and sand.

[f] References 9, 10, and 14. The emission factor units are kg of pollutant per Mg of cement and cement supplement. The general factor is the arithmetic mean of all test data.

[g] Reference 9, 10, and 14. The emission factor units are kg of pollutant per Mg of cement and cement supplement. The general factor is the arithmetic mean of all test data.

TABLE 11.12-2 (ENGLISH UNITS)
EMISSION FACTORS FOR CONCRETE BATCHING [a]

Source (SCC)	Uncontrolled				Controlled			
	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating
Aggregate transfer [b] (3-05-011-04,-21,23)	0.0069	D	0.0033	D	ND		ND	
Sand transfer [b] (3-05-011-05,22,24)	0.0021	D	0.00099	D	ND		ND	
Cement unloading to elevated storage silo (pneumatic)[c] (3-05-011-07)	0.73	E	0.47	E	0.00099	D	0.00034	D
Cement supplement unloading to elevated storage silo (pneumatic)[d] (3-05-011-17)	3.14	E	1.10	E	0.0089	D	0.0049	E
Weigh hopper loading [e] (3-05-011-08)	0.0048	D	0.0028	D	ND		ND	
Mixer loading (central mix)[f] (3-05-011-09)	0.572 or Eqn. 11.12-1	B	0.156 or Eqn. 11.12-1	B	0.0184 or Eqn. 11.12-1	B	0.0055 or Eqn. 11.12-1	B
Truck loading (truck mix)[g] (3-05-011-10)	1.118	B	0.310	B	0.098 or Eqn. 11.12-1	B	0.0263 or Eqn. 11.12-1	B
Vehicle traffic (paved roads)	See AP-42 Section 13.2.1, Paved Roads							
Vehicle traffic (unpaved roads)	See AP-42 Section 13.2.2, Unpaved Roads							
Wind erosion from aggregate and sand storage piles	See AP-42 Section 13.2.5, Industrial Wind Erosion							

ND = No data

[a] All emission factors are in lb of pollutant per ton of material loaded unless noted otherwise. Loaded material includes course aggregate, sand, cement, cement supplement and the surface moisture associated with these materials. The average material composition of concrete batches presented in references 9 and 10 was 1865 lbs course aggregate, 1428 lbs sand, 491 lbs cement and 73 lbs cement supplement. Approximately 20 gallons of water was added to this solid material to produce 4024 lbs (one cubic yard) of concrete.

[b] Reference 9 and 10. Emission factors are based upon an equation from AP-42, section 13.2.4 Aggregate Handling And Storage Piles, equation 1 with k_{PM-10} =.35, k_{PM} = .74, U = 10mph, $M_{aggregate}$ =1.77%, and M_{sand} = 4.17%. These moisture contents of the materials ($M_{aggregate}$ and M_{sand}) are the averages of the values obtained from Reference 9 and Reference 10.

[c] The uncontrolled PM & PM-10 emission factors were developed from Reference 9. The controlled emission factor for PM was developed from References 9, 10, 11, and 12. The controlled emission factor for PM-10 was developed from References 9 and 10.

[d] The controlled PM emission factor was developed from Reference 10 and Reference 12, whereas the controlled PM-10 emission factor was developed from only Reference 10.

[e] Emission factors were developed by using the Aggregate and Sand Transfer Emission Factors in conjunction with the ratio of aggregate and sand used in an average $yard^3$ of concrete. The unit for these emission factors is lb of pollutant per ton of aggregate and sand.

[f] References 9, 10, and 14. The emission factor units are lb of pollutant per ton of cement and cement supplement. The general factor is the arithmetic mean of all test data.

[g] Reference 9, 10, and 14. The emission factor units are lb of pollutant per ton of cement and cement supplement. The general factor is the arithmetic mean of all test data.

The particulate matter emissions from truck mix and central mix loading operations are calculated in accordance with the values in Tables 11.12-1 or 11.12-2 or by Equation 11.12-1[14] when site specific data are available.

$$E = k\,(0.0032)\left[\frac{U^a}{M^b}\right] + c \qquad \text{Equation 11.12-1}$$

E	=	Emission factor in lbs./ton of cement and cement supplement
k	=	Particle size multiplier (dimensionless)
U	=	Wind speed at the material drop point, miles per hour (mph)
M	=	Minimum moisture (% by weight) of cement and cement supplement
a, b	=	Exponents
c	=	Constant

The parameters for Equation 11.12-1 are summarized in Tables 11.12-3 and 11.12-4.

Table 11.12-3. Equation Parameters for Truck Mix Operations

Condition	Parameter Category	k	a	b	c
Controlled[1]	Total PM	0.8	1.75	0.3	0.013
	PM_{10}	0.32	1.75	0.3	0.0052
	$PM_{10\text{-}2.5}$	0.288	1.75	0.3	0.00468
	$PM_{2.5}$	0.048	1.75	0.3	0.00078
Uncontrolled[1]	Total PM	1.118			
	PM_{10}	0.310			
	$PM_{10\text{-}2.5}$	0.260			
	$PM_{2.5}$	0.050			

Table 11.12-4. Equation Parameters for Central Mix Operations

Condition	Parameter Category	k	a	b	c
Controlled[1]	Total PM	0.19	0.95	0.9	0.0010
	PM_{10}	0.13	0.45	0.9	0.0010
	$PM_{10\text{-}2.5}$	0.12	0.45	0.9	0.0009
	$PM_{2.5}$	0.03	0.45	0.9	0.0002
Uncontrolled[1]	Total PM	5.90	0.6	1.3	0.120
	PM_{10}	1.92	0.4	1.3	0.040
	$PM_{10\text{-}2.5}$	1.71	0.4	1.3	0.036
	$PM_{2.5}$	0.38	0.4	1.3	0

1. Emission factors expressed in lbs/tons of cement and cement supplement

To convert from units of lbs/ton to units of kilograms per mega gram, the emissions calculated by Equation 11.12-1 should be divided by 2.0.

Particulate emission factors per yard of concrete for an average batch formulation at a typical facility are given in Tables 11.12-5 and 11.12-6. For truck mix loading and central mix loading, the emissions of PM, PM-10, PM-10-2.5, and PM-2.5 are calculated by multiplying the emission factor calculated using Equation 11.12-2 by a factor of 0.140 to convert from emissions per ton of cement and cement supplement to emissions per yard of concrete. This equation is based on a typical concrete formulation of 564 pounds of cement and cement supplement in a total of 4,024 pounds of material (including aggregate, sand, and water). This calculation is summarized in Equation 11.12-2.

$$\text{PM, PM10, PM10-2.5, PM2.5 emissions}\left(\frac{\text{pounds}}{\text{yd}^3\text{ of concrete}}\right) = 0.282^* \quad (\text{Equation 11.12}-1\ \text{factor or Table 11.12-2 Factor})$$

Equation 11.12-2

*NOTE: August 8, 2011. The equation was corrected.
The basis of this conversion constant is:

EF (pounds / ton <u>cem</u>) * (ton <u>cem</u> / 2,000 pounds <u>cem</u>) * (564 pounds <u>cem</u> / yd^3 concrete) = EF (pounds / yd^3 concrete)

Where:

<u>cem</u> is the sum of cement (491 pounds) and cement supplement (73 pounds).

Metals emission factors for concrete batching are given in Tables 11.12-7 and 11.12-8. Alternatively, the metals emissions from ready mix plants can be calculated based on (1) the weighted average concentration of the metal in the cement and the cement supplement (i.e. flyash) and (2) on the total particulate matter emission factors calculated in accordance with Equation 11.12-3. Emission factors calculated using Equation 11.12-3 are rated D.

$$\text{Metal}_{EF} = \text{PM}_{EF}\left(\frac{aC + bS}{C + S}\right)$$

Equation 11.12-3

Where:

Metal_{EF}	=	Metal Emissions, Lbs. As per Ton of Cement and Cement Supplement
PM_{EF}	=	Controlled Particulate Matter Emission Factor (PM, PM10, or PM2.5) Lbs. per Ton of Cement and Cement Supplement
a	=	ppm of Metal in Cement
C	=	Quantity of Cement Used, Lbs. per hour
b	=	ppm of Metal in Cement Supplement
S	=	Quantity of Cement Supplement Used, Lbs. per hour

This equation is based on the assumption that 100% of the particulate matter emissions are material entrained from the cement and cement supplement streams. Equation 11.12-3 over-estimates total metal emissions to the extent that sand and fines from aggregate contribute to the total particulate matter emissions.

TABLE 11.12-5 (ENGLISH UNITS)
PLANT WIDE EMISSION FACTORS PER YARD OF TRUCK MIX CONCRETE [a]

	Uncontrolled		Controlled	
	PM (lb/yd^3)	PM-10 (lb/yd^3)	PM (lb/yd^3)	PM-10 (lb/yd^3)
Aggregate delivery to ground storage (3-05-011-21)	0.0064	0.0031	0.0064	0.0031
Sand delivery to ground storage (3-05-011-22)	0.0015	0.0007	0.0015	0.0007
Aggregate transfer to conveyor (3-05-011-23)	0.0064	0.0031	0.0064	0.0031
Sand transfer to conveyor (3-05-011-24)	0.0015	0.0007	0.0015	0.0007
Aggregate transfer to elevated storage (3-05-011-04)	0.0064	0.0031	0.0064	0.0031
Sand transfer to elevated storage (3-05-011-05)	0.0015	0.0007	0.0015	0.0007
Cement delivery to Silo (3-05-011-07 controlled)	0.0002	0.0001	0.0002	0.0001
Cement supplement delivery to Silo (3-05-011-17 controlled)	0.0003	0.0002	0.0003	0.0002
Weigh hopper loading (3-05-011-08)	0.0079	0.0038	0.0079	0.0038
Truck mix loading (3-05-011-10)	See Equation 11.12-2			

TABLE 11.12-6 (ENGLISH UNITS)
PLANT WIDE EMISSION FACTORS PER YARD OF CENTRAL MIX CONCRETE [a]

	Uncontrolled		Controlled	
	PM (lb/yd^3)	PM-10 (lb/yd^3)	PM (lb/yd^3)	PM-10 (lb/yd^3)
Aggregate delivery to ground storage (3-05-011-21)	0.0064	0.0031	0.0064	0.0031
Sand delivery to ground storage (3-05-011-22)	0.0015	0.0007	0.0015	0.0007
Aggregate transfer to conveyor (3-05-011-23)	0.0064	0.0031	0.0064	0.0031
Sand transfer to conveyor (3-05-011-24)	0.0015	0.0007	0.0015	0.0007
Aggregate transfer to elevated storage (3-05-011-04)	0.0064	0.0031	0.0064	0.0031
Sand transfer to elevated storage (3-05-011-05)	0.0015	0.0007	0.0015	0.0007
Cement delivery to Silo (3-05-011-07 controlled)	0.0002	0.0001	0.0002	0.0001
Cement supplement delivery to Silo (3-05-011-17 controlled)	0.0003	0.0002	0.0003	0.0002
Weigh hopper loading (3-05-011-08)	0.0079	0.0038	0.0079	0.0038
Central mix loading (3-05-011-09)	See Equation 11.12-2			

[a] Total facility emissions are the sum of the emissions calculated in Tables 11.12-4 or 11.12-5. Total facility emissions do not include road dust and wind blown dust. The emission factors in Tables 11.12-5 and 11.12-6 are based upon the following composition of one yard of concrete.

Coarse Aggregate	1865. pounds
Sand	1428. pounds
Cement	491. pounds
Cement Supplement	73. pounds
Water	20. gallons (167 pounds)

TABLE 11.12-7 (METRIC UNITS)
CONCRETE BATCH PLANT METAL EMISSION FACTORS [a]

	Arsenic	Beryllium	Cadmium	Total Chromium	Lead	Manganese	Nickel	Total Phosphorus	Selenium	Emission Factor Rating
Cement Silo Filling [b] (SCC 3-05-011-07) w/ Fabric Filter	8.38e-07 2.12e-09	8.97e-09 2.43e-10	1.17e-07 ND	1.26e-07 1.45e-08	3.68e-07 5.46e-09	1.01e-04 5.87e-08	8.83e-06 2.09e-08	5.88e-05 ND	ND ND	E E
Cement Supplement Silo Filling [c] (SCC 3-05-011-17) w/ Fabric Filter	ND 5.02e-07	ND 4.52e-08	ND 9.92e-09	ND 6.10e-07	ND 2.60e-07	ND 1.28e-07	ND 1.14e-06	ND 1.77e-06	ND 3.62e-08	E E
Central Mix Batching [d] (SCC 3-05-011-09) w/ Fabric Filter	4.19e-06 1.48e-07	ND ND	5.92e-09 3.55e-10	7.11e-07 6.34e-08	1.91e-07 1.83e-08	3.06e-05 1.89e-06	1.64e-06 1.24e-07	1.01e-05 6.04e-07	ND ND	E E
Truck Loading [e] (SCC 3-05-011-10) w/ Fabric Filter	6.09e-06 3.01e-07	1.22e-07 5.18e-08	1.71e-08 4.53e-09	5.71e-06 2.05e-06	1.81e-06 7.67e-07	3.06e-05 1.04e-05	5.99e-06 2.39e-06	1.92e-05 6.16e-06	1.31e-06 5.64e-08	E E

ND=No data

[a] All emission factors are in kg of pollutant per Mg of material loaded unless noted otherwise. Loaded material includes course aggregate, sand, cement, cement supplement and the surface moisture associated with these materials. The average material composition of concrete batches presented in references 9 and 10 was 846 Kg course aggregate, 648 kg sand, 223 kg cement and 33kg cement supplement. Approximately 75 liters of water was added to this solid material to produce 1826 kg of concrete.

[b] The uncontrolled emission factors were developed from Reference 9. The controlled emission factors were developed form Reference 9 and 10. Although controlled emissions of phosphorous compounds were below detection, it is reasonable to assume that the effectiveness is comparable to the average effectiveness (98%) for the other metals.

[c] Reference 10.

[d] Reference 9. The emission factor units are kg of pollutant per Mg of cement and cement supplement. Emission factors were developed from a typical central mix operation. The average estimate of the percent of emissions captured during each run is 94%.

[e] Reference 9 and 10. The emission factor units are kg of pollutant per Mg of cement and cement supplement. Emission factors were developed from two typical truck mix loading operations. Based upon visual observations of every loading operation during the two test programs, the average capture efficiency during the testing was 71%.

TABLE 11.12-8 (ENGLISH UNITS)
CONCRETE BATCH PLANT METAL EMISSION FACTORS [a]

	Arsenic	Beryllium	Cadmium	Total Chromium	Lead	Manganese	Nickel	Total Phosphorus	Selenium	Emission Factor Rating
Cement Silo Filling [b] (SCC 3-05-011-07)	1.68e-06	1.79e-08	2.34e-07	2.52e-07	7.36e-07	2.02e-04	1.76e-05	1.18e-05	ND	E
w/ Fabric Filter	4.24e-09	4.86e-10	ND	2.90e-08	1.09e-08	1.17e-07	4.18e-08	ND	ND	E
Cement Supplement Silo Filling [c] (SCC 3-05-011-17)	ND	ND	ND	ND	ND	ND	ND	ND	ND	E
w/ Fabric Filter	1.00e-06	9.04e-08	1.98e-10	1.22e-06	5.20e-07	2.56e-07	2.28e-06	3.54e-06	7.24e-08	E
Central Mix Batching [d] (SCC 3-05-011-09)	8.38e-06	ND	1.18e-08	1.42e-06	3.82e-07	6.12e-05	3.28e-06	2.02e-05	ND	E
w/ Fabric Filter	2.96e-07	ND	7.10e-10	1.27e-07	3.66e-08	3.78e-06	2.48e-07	1.20e-06	ND	E
Truck Loading [e] (SCC 3-05-011-10)	1.22e-05	2.44e-07	3.42e-08	1.14e-05	3.62e-06	6.12e-05	1.19e-05	3.84e-05	2.62e-06	E
w/ Fabric Filter	6.02e-07	1.04e-07	9.06e-09	4.10e-06	1.53e-06	2.08e-05	4.78e-06	1.23e-05	1.13e-07	E

ND=No data

[a] All emission factors are in lb of pollutant per ton of material loaded unless noted otherwise. Loaded material includes course aggregate, sand, cement, cement supplement and the surface moisture associated with these materials. The average material composition of concrete batches presented in references 9 and 10 was 1865 lbs course aggregate, 1428 lbs sand, 491 lbs cement and 73 lbs cement supplement. Approximately 20 gallons of water was added to this solid material to produce 4024 lbs (one cubic yard) of concrete.

[b] The uncontrolled emission factors were developed from Reference 9. The controlled emission factors were developed form Reference 9 and 10. Although controlled emissions of phosphorous compounds were below detection, it is reasonable to assume that the effectiveness is comparable to the average effectiveness (98%) for the other metals.

[c] Reference 10.

[d] Reference 9. The emission factor units are lb of pollutant per ton of cement and cement supplement. Emission factors were developed from a typical central mix operation. The average estimate of the percent of emissions captured during each test run is 94%.

[e] Reference 9 and 10. The emission factor units are lb of pollutant per ton of cement and cement supplement. Emission factors were developed from two typical truck mix loading operations. Based upon visual observations of every loading operation during the two test programs, the average capture efficiency during the testing was 71%.

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11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

11.19.2.1 Process Description [24, 25]

Crushed Stone Processing

Major rock types processed by the crushed stone industry include limestone, granite, dolomite, traprock, sandstone, quartz, and quartzite. Minor types include calcareous marl, marble, shell, and slate. Major mineral types processed by the pulverized minerals industry, a subset of the crushed stone processing industry, include calcium carbonate, talc, and barite. Industry classifications vary considerably and, in many cases, do not reflect actual geological definitions.

Rock and crushed stone products generally are loosened by drilling and blasting and then are loaded by power shovel or front-end loader into large haul trucks that transport the material to the processing operations. Techniques used for extraction vary with the nature and location of the deposit. Processing operations may include crushing, screening, size classification, material handling and storage operations. All of these processes can be significant sources of PM and PM-10 emissions if uncontrolled.

Quarried stone normally is delivered to the processing plant by truck and is dumped into a bin. A feeder is used as illustrated in Figure 11.19.2-1. The feeder or screens separate large boulders from finer rocks that do not require primary crushing, thus reducing the load to the primary crusher. Jaw, impactor, or gyratory crushers are usually used for initial reduction. The crusher product, normally 7.5 to 30 centimeters (3 to 12 inches) in diameter, and the grizzly throughs (undersize material) are discharged onto a belt conveyor and usually are conveyed to a surge pile for temporary storage or are sold as coarse aggregates.

The stone from the surge pile is conveyed to a vibrating inclined screen called the scalping screen. This unit separates oversized rock from the smaller stone. The undersized material from the scalping screen is considered to be a product stream and is transported to a storage pile and sold as base material. The stone that is too large to pass through the top deck of the scalping screen is processed in the secondary crusher. Cone crushers are commonly used for secondary crushing (although impact crushers are sometimes used), which typically reduces material to about 2.5 to 10 centimeters (1 to 4 inches). The material (throughs) from the second level of the screen bypasses the secondary crusher because it is sufficiently small for the last crushing step. The output from the secondary crusher and the throughs from the secondary screen are transported by conveyor to the tertiary circuit, which includes a sizing screen and a tertiary crusher.

Tertiary crushing is usually performed using cone crushers or other types of impactor crushers. Oversize material from the top deck of the sizing screen is fed to the tertiary crusher. The tertiary crusher output, which is typically about 0.50 to 2.5 centimeters (3/16th to 1 inch), is returned to the sizing screen. Various product streams with different size gradations are separated in the screening operation. The products are conveyed or trucked directly to finished product bins, to open area stock piles, or to other processing systems such as washing, air separators, and screens and classifiers (for the production of manufactured sand).

Some stone crushing plants produce manufactured sand. This is a small-sized rock product with a maximum size of 0.50 centimeters (3/16 th inch). Crushed stone from the tertiary sizing screen is sized in a vibrating inclined screen (fines screen) with relatively small mesh sizes.

Oversized material is processed in a cone crusher or a hammermill (fines crusher) adjusted to produce small diameter material. The output is returned to the fines screen for resizing.

In certain cases, stone washing is required to meet particulate end product specifications or demands.

Pulverized Mineral Processing

Pulverized minerals are produced at specialized processing plants. These plants supply mineral products ranging from sizes of approximately 1 micrometer to more than 75 micrometers aerodynamic diameter. Pharmaceutical, paint, plastics, pigment, rubber, and chemical industries use these products. Due to the specialized characteristics of the mineral products and the markets for these products, pulverized mineral processing plants have production rates that are less than 5% of the production capacities of conventional crushed stone plants. Two alternative processing systems for pulverized minerals are summarized in Figure 11-19.2-2.

In dry processing systems, the mineral aggregate material from conventional crushing and screening operations is subject to coarse and fine grinding primarily in roller mills and/or ball mills to reduce the material to the necessary product size range. A classifier is used to size the ground material and return oversized material that can be pulverized using either wet or dry processes. The classifier can either be associated with the grinding operation, or it can be a stand-alone process unit. Fabric filters control particulate matter emissions from the grinding operation and the classifier. The products are stored in silos and are shipped by truck or in bags.

In wet processing systems, the mineral aggregate material is processed in wet mode coarse and fine grinding operations. Beneficiation processes use flotation to separate mineral impurities. Finely ground material is concentrated and flash dried. Fabric filters are used to control particulate matter emissions from the flash dryer. The product is then stored in silos, bagged, and shipped.

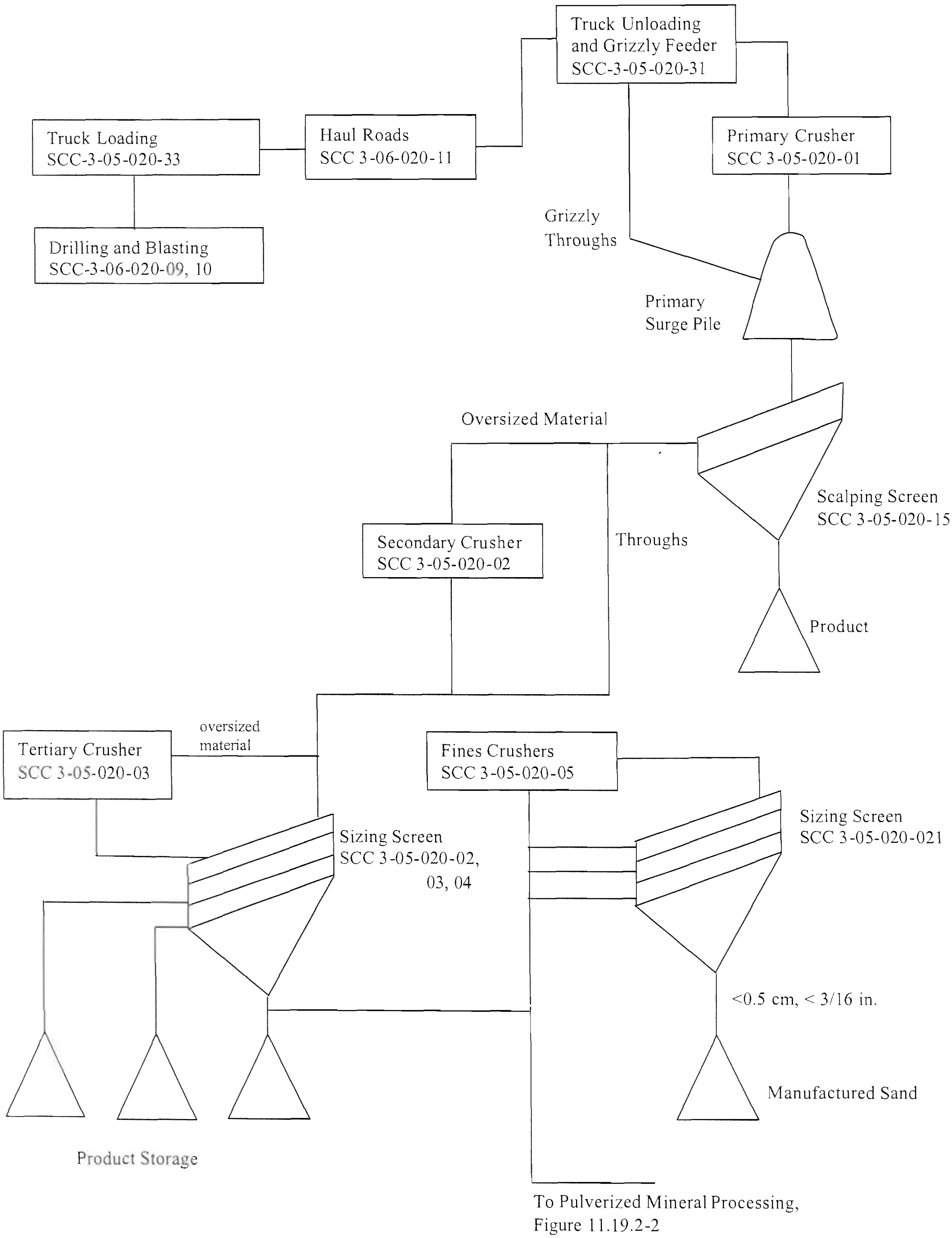

Figure 11.19.2-1. Typical stone processing plant

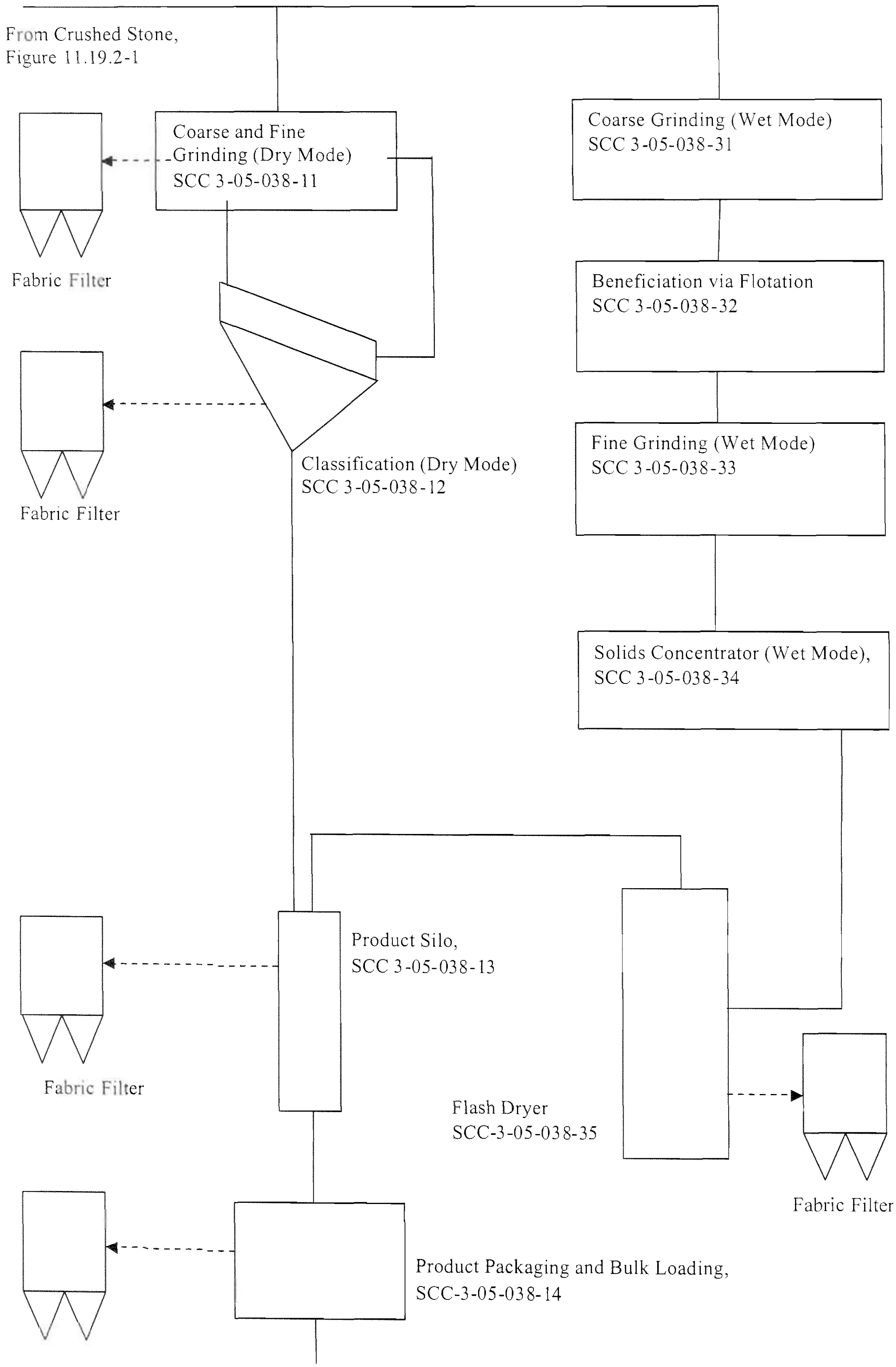

Figure 11.19.2-2 Flowchart for Pulverized Mineral Processing

11.19.2.2 Emissions and Controls [10, 11, 12, 13, 14, and 26]

Crushed Stone Processing

Emissions of PM, PM-10, and PM-2.5 occur from a number of operations in stone quarrying and processing. A substantial portion of these emissions consists of heavy particles that may settle out within the plant. As in other operations, crushed stone emission sources may be categorized as either process sources or fugitive dust sources. Process sources include those for which emissions are amenable to capture and subsequent control. Fugitive dust sources generally involve the reentrainment of settled dust by wind or machine movement. Emissions from process sources should be considered fugitive unless the sources are vented to a baghouse or are contained in an enclosure with a forced-air vent or stack. Factors affecting emissions from either source category include the stone size distribution and the surface moisture content of the stone processed, the process throughput rate, the type of equipment and operating practices used, and topographical and climatic factors.

Of graphical and seasonal factors, the primary variables affecting uncontrolled PM emissions are wind and material moisture content. Wind parameters vary with geographical location, season, and weather. It can be expected that the level of emissions from unenclosed sources (principally fugitive dust sources) will be greater during periods of high winds. The material moisture content also varies with geographical location, season, and weather. Therefore, the levels of uncontrolled emissions from both process emission sources and fugitive dust sources generally will be greater in arid regions of the country than in temperate ones and greater during the summer months because of a higher evaporation rate.

The moisture content of the material processed can have a substantial effect on emissions. This effect is evident throughout the processing operations. Surface wetness causes fine particles to agglomerate on or to adhere to the faces of larger stones, with a resulting dust suppression effect. However, as new fine particles are created by crushing and attrition and as the moisture content is reduced by evaporation, this suppressive effect diminishes and may disappear. Plants that use wet suppression systems (spray nozzles) to maintain relatively high material moisture contents can effectively control PM emissions throughout the process. Depending on the geographical and climatic conditions, the moisture content of mined rock can range from nearly zero to several percent. Because moisture content is usually expressed on a basis of overall weight percent, the actual moisture amount per unit area will vary with the size of the rock being handled. On a constant mass-fraction basis, the per-unit area moisture content varies inversely with the diameter of the rock. The suppressive effect of the moisture depends on both the absolute mass water content and the size of the rock product. Typically, wet material contains >1.5 percent water.

A variety of material, equipment, and operating factors can influence emissions from crushing. These factors include (1) stone type, (2) feed size and distribution, (3) moisture content, (4) throughput rate, (5) crusher type, (6) size reduction ratio, and (7) fines content. Insufficient data are available to present a matrix of rock crushing emission factors detailing the above classifications and variables. Available data indicate that PM-10 and PM-2.5 emissions from limestone and granite processing operations are similar. Therefore, the emission factors developed from the emissions data gathered at limestone and granite processing facilities are considered to be representative of typical crushed stone processing operations. Emission factors for filterable PM, PM-10, and PM-2.5 emissions from crushed stone processing operations are presented in Tables 11.19.2-1 (Metric units) and 11.19.2-2 (English units.)

Table 11.19.2-1 (Metric Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (kg/Mg)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0027[d]	E	0.0012[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0006[d]	E	0.00027[p]	C	0.00005[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0195[e]	E	0.0075[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0015[f]	E	0.0006[f]	E	0.000035[q]	E
Screening (SCC 3-05-020-02, 03)	0.0125[c]	E	0.0043[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0011[d]	E	0.00037[m]	C	0.000025[q]	E
Fines Screening (SCC 3-05-020-21	0.15[g]	E	0.036[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0018[g]	E	0.0011[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0015[h]	E	0.00055[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00007[i]	E	2.3×10^{-5}[i]	D	6.5×10^{-6}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		4.0×10^{-5}[j]	E	ND	
Truck Unloading - Fragmented Stone (SCC 3-05-020-31)	ND		8.0×10^{-6}[j]	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		5.0×10^{-5}[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in kg/Mg of material throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

Note: Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32) was corrected to Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32). October 1, 2010.

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[g]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[i]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in lb/Ton of material of throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with an appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

Note: Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32) was corrected to Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32). October 1, 2010.

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Emission factor estimates for stone quarry blasting operations are not presented because of the sparsity and unreliability of available tests. While a procedure for estimating blasting emissions is presented in Section 11.9, Western Surface Coal Mining, that procedure should not be applied to stone quarries because of dissimilarities in blasting techniques, material blasted, and size of blast areas. Emission factors for fugitive dust sources, including paved and unpaved roads, materials handling and transfer, and wind erosion of storage piles, can be determined using the predictive emission factor equations presented in AP-42 Section 13.2.

The data used in the preparation of the controlled PM calculations was derived from the individual A-rated tests for PM-2.5 and PM-10 summarized in the Background Support Document. For conveyor transfer points, the controlled PM value was derived from A-rated PM-2.5, PM-10, and PM data summarized in the Background Support Document.

The extrapolation line was drawn through the PM-2.5 value and the mean of the PM-10 values. PM emission factors were calculated for PM-30, PM-50, and PM-100. Each of these particle size limits is used by one or more regulatory agencies as the definition of total particulate matter. The graphical extrapolations used in calculating the emission factors are presented in Figures 11.19.2-3, -4, -5, and -6.

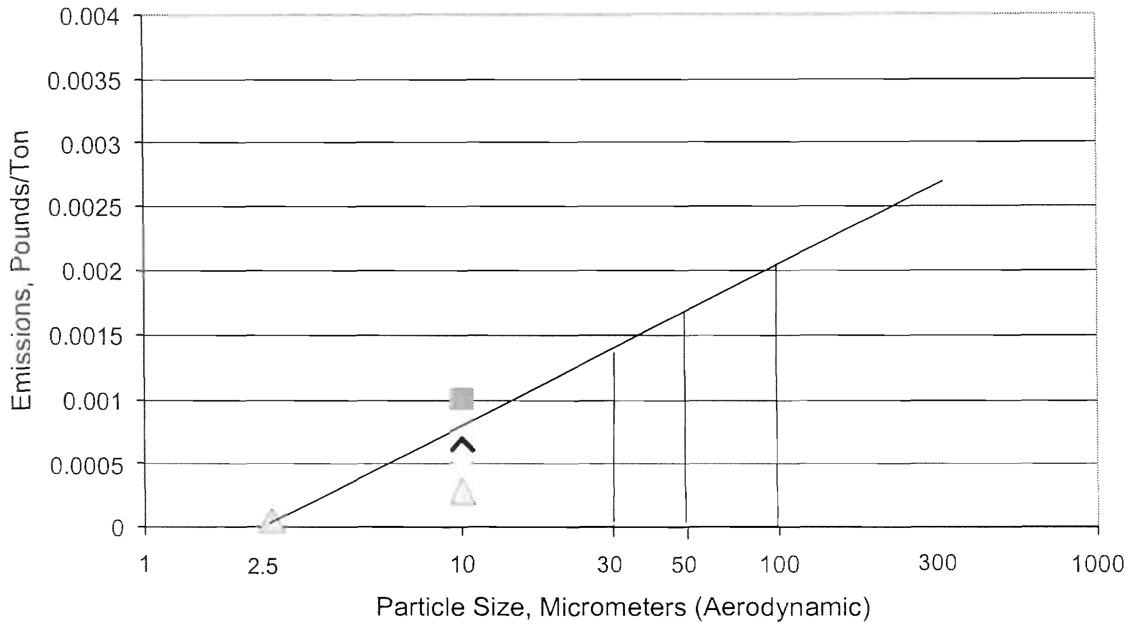

Figure 11-19-3. PM Emission Factor Calculation, Screening (Controlled)

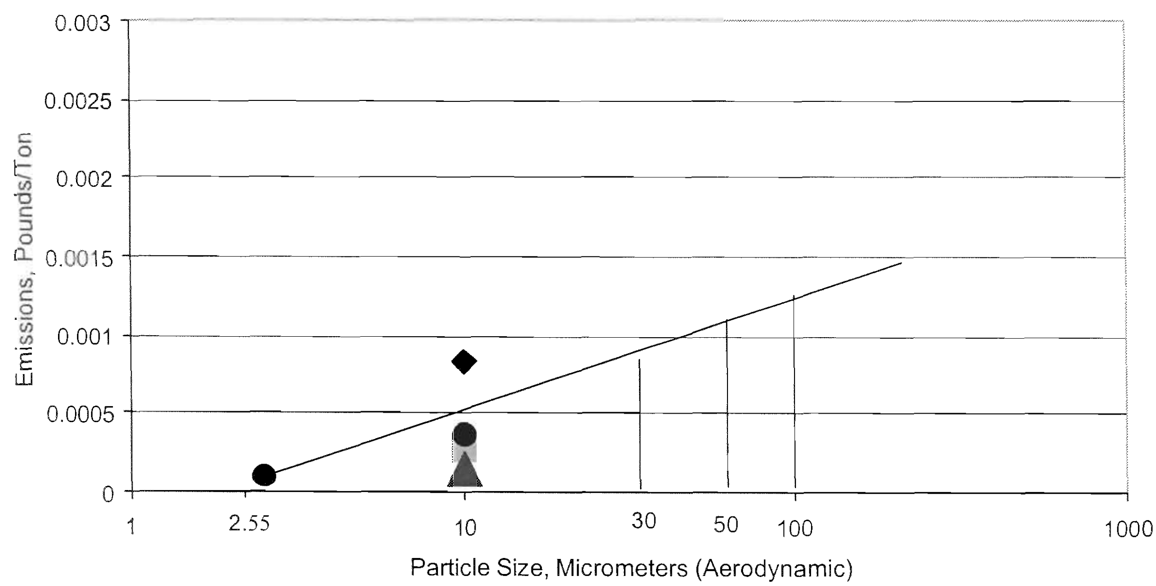

Figure 11.19-4. PM Emission Factor Calculation, Tertiary Crushing (Controlled)

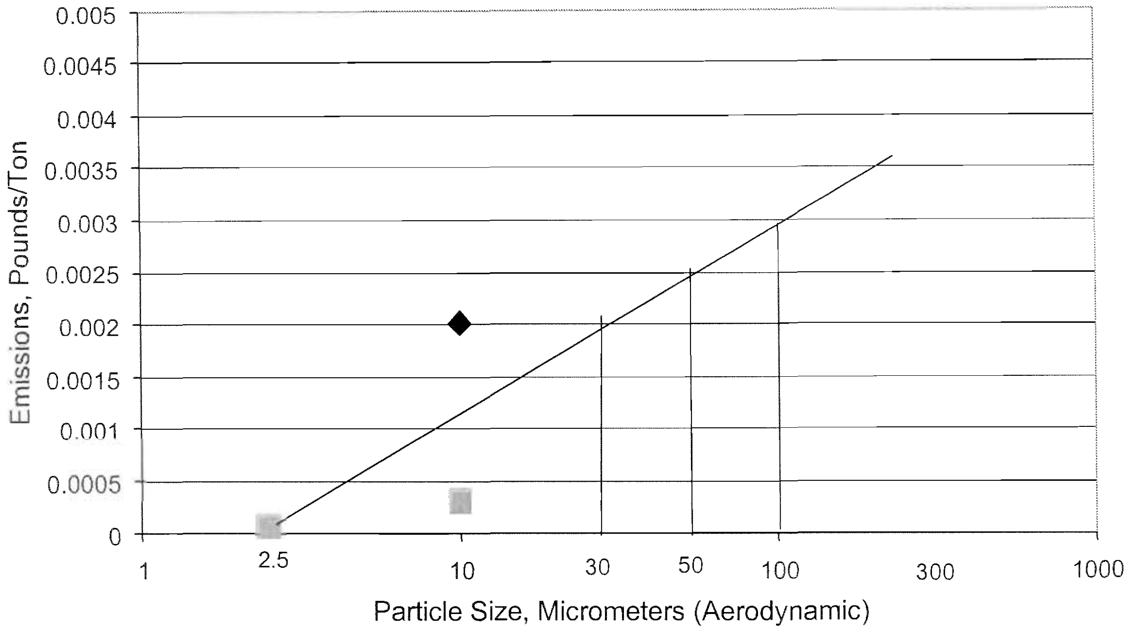

Figure 11-19.5. PM Emission Factor Calculation, Fines Crushing (Controlled)

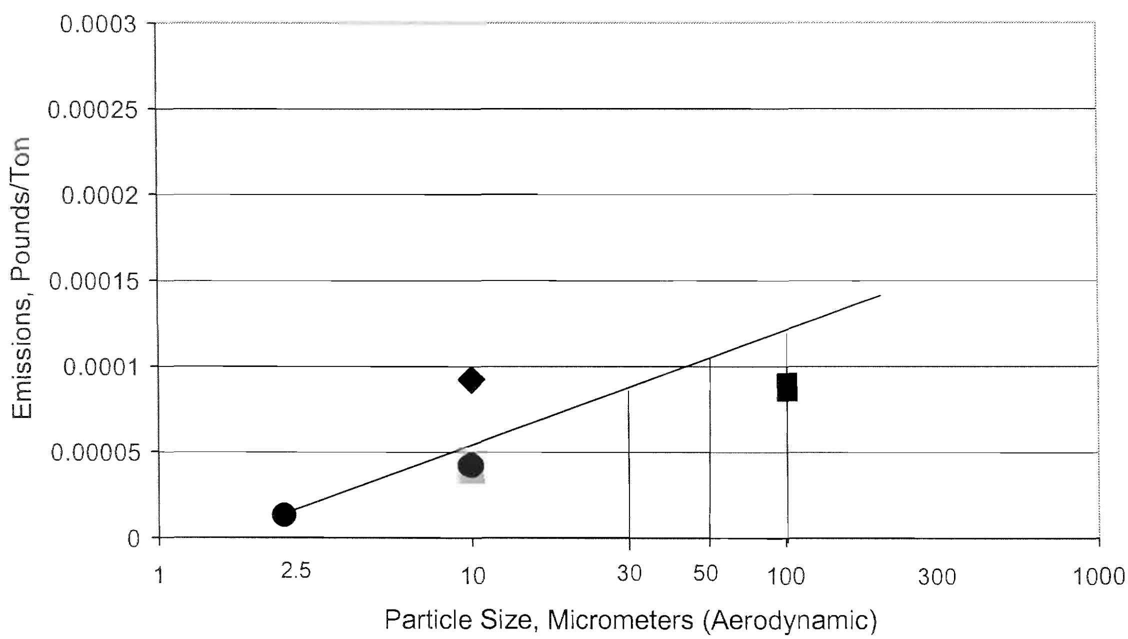

Figure 11.19-6. PM Emission Factor Calculation, Conveyor Transfer Points (Controlled)

The uncontrolled PM emission factors have been calculated from the controlled PM emission factors calculated in accordance with Figures 11.19.2-3 through 11.19.2-6. The PM-10 control efficiencies have been applied to the PM controlled emission factor data to calculate the uncontrolled PM emission rates.

Screening PM-10

Controlled = 0.00073 Lbs./Ton.

Uncontrolled = 0.00865 Lbs./Ton.

Efficiency = 91.6%

Tertiary Crushing PM-10

Controlled = 0.00054

Uncontrolled = 0.00243

Efficiency = 77.7%

Fines Crushing PM-10:

Controlled = 0.0012

Uncontrolled = 0.015

Efficiency = 92.0%

Conveyor Transfer Points PM-10

Controlled = 0.000045

Uncontrolled = 0.0011

Efficiency = 95.9%

The uncontrolled total particulate matter emission factor was calculated from the controlled total particulate matter using Equation 1:

$$\text{Uncontrolled emission factor} = \frac{\text{Controlled total particulate emission factor}}{(100\% - \text{PM-10 Efficiency }\%)/100\%} \qquad \text{Equation 1}$$

The Total PM emission factors calculated using Figures 11.19.2-3 through 11.19.2-6 were developed because (1) there are more A-rated test data supporting the calculated values and (2) the extrapolated values provide the flexibility for agencies and source operators to select the most appropriate definition for Total PM. All of the Total PM emission factors have been rated as E due to the limited test data and the need to estimate emission factors using extrapolations of the PM-2.5 and PM-10 data.

Pulverized Mineral Processing

Emissions of particulate matter from dry mode pulverized mineral processing operations are controlled by pulse jet and envelope type fabric filter systems. Due to the low-to-moderate gas temperatures generated by the processing equipment, conventional felted filter media are used. Collection efficiencies for fabric filter-controlled dry process equipment exceed 99.5%. Emission factors for pulverized mineral processing operations are presented in Tables 11.19.2-3 and 11.19.2-4.

Table 11.19.2-3 (Metric Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0202	D	0.0169	B	0.0060	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0112	E	0.0052	E	0.0020	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0134	C	0.0073	C	0.0042	C
Product Storage with Fabric Filter Control (SCC 3-05-38-13)	0.0055	E	0.0008	E	0.0003	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in kg/Mg of material throughput.

b. Date from references 16 through 23

Table 11.19.2-4 (English Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0404	D	0.0339	B	0.0121	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0225	E	0.0104	E	0.0041	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0268	C	0.0146	C	0.0083	C
Product Storage with Fabric Filter Control (SCC 3-05-038-13)	0.0099	E	0.0016	E	0.0006	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in lb/Ton of material throughput.

b. Data from references 16 through 23

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[1] References 1 through 23 are identical to References 1 through 23 in the Background Support Document for AP-42, Section 11.19-2.

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15. T. Brozell, T. Holder, and J. Richards, *Measurement of PM-10 and PM2.5 Emission Factors at a Stone Crushing Plant*, National Stone Association, December 1996.

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13.2.2 Unpaved Roads

13.2.2.1 General

When a vehicle travels an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

The particulate emission factors presented in the previous draft version of this section of AP-42, dated October 2001, implicitly included the emissions from vehicles in the form of exhaust, brake wear, and tire wear as well as resuspended road surface material[25]. EPA included these sources in the emission factor equation for unpaved public roads (equation 1b in this section) since the field testing data used to develop the equation included both the direct emissions from vehicles and emissions from resuspension of road dust.

This version of the unpaved public road emission factor equation only estimates particulate emissions from resuspended road surface material [23, 26]. The particulate emissions from vehicle exhaust, brake wear, and tire wear are now estimated separately using EPA's MOBILE6.2 [24]. This approach eliminates the possibility of double counting emissions. Double counting results when employing the previous version of the emission factor equation in this section and MOBILE6.2 to estimate particulate emissions from vehicle traffic on unpaved public roads. It also incorporates the decrease in exhaust emissions that has occurred since the unpaved public road emission factor equation was developed. The previous version of the unpaved public road emission factor equation includes estimates of emissions from exhaust, brake wear, and tire wear based on emission rates for vehicles in the 1980 calendar year fleet. The amount of PM released from vehicle exhaust has decreased since 1980 due to lower new vehicle emission standards and changes in fuel characteristics.

13.2.2.2 Emissions Calculation And Correction Parameters[1-6]

The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic. Field investigations also have shown that emissions depend on source parameters that characterize the condition of a particular road and the associated vehicle traffic. Characterization of these source parameters allow for "correction" of emission estimates to specific road and traffic conditions present on public and industrial roadways.

Dust emissions from unpaved roads have been found to vary directly with the fraction of silt (particles smaller than 75 micrometers [µm] in diameter) in the road surface materials.[1] The silt fraction is determined by measuring the proportion of loose dry surface dust that passes a 200-mesh screen, using the ASTM-C-136 method. A summary of this method is contained in Appendix C of AP-42. Table 13.2.2-1 summarizes measured silt values for industrial unpaved roads. Table 13.2.2-2 summarizes measured silt values for public unpaved roads. It should be noted that the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is strongly discouraged when it is feasible to obtain locally gathered data.

Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions. As a conservative approximation, the silt content of the parent soil in the area can be used. Tests, however, show that road silt content is normally lower than in the surrounding parent soil, because the fines are continually removed by the vehicle traffic, leaving a higher percentage of coarse particles.

Other variables are important in addition to the silt content of the road surface material. For example, at industrial sites, where haul trucks and other heavy equipment are common, emissions are highly correlated with vehicle weight. On the other hand, there is far less variability in the weights of cars and pickup trucks that commonly travel publicly accessible unpaved roads throughout the United States. For those roads, the moisture content of the road surface material may be more dominant in determining differences in emission levels between, for example a hot, desert environment and a cool, moist location.

The PM-10 and TSP emission factors presented below are the outcomes from stepwise linear regressions of field emission test results of vehicles traveling over unpaved surfaces. Due to a limited amount of information available for PM-2.5, the expression for that particle size range has been scaled against the result for PM-10. Consequently, the quality rating for the PM-2.5 factor is lower than that for the PM-10 expression.

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	No. Of Samples	Silt Content (%)	
				Range	Mean
Copper smelting	Plant road	1	3	16 - 19	17
Iron and steel production	Plant road	19	135	0.2 - 19	6.0
Sand and gravel processing	Plant road	1	3	4.1 - 6.0	4.8
	Material storage area	1	1	-	7.1
Stone quarrying and processing	Plant road	2	10	2.4 - 16	10
	Haul road to/from pit	4	20	5.0-15	8.3
Taconite mining and processing	Service road	1	8	2.4 - 7.1	4.3
	Haul road to/from pit	1	12	3.9 - 9.7	5.8
Western surface coal mining	Haul road to/from pit	3	21	2.8 - 18	8.4
	Plant road	2	2	4.9 - 5.3	5.1
	Scraper route	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Construction sites	Scraper routes	7	20	0.56-23	8.5
Lumber sawmills	Log yards	2	2	4.8-12	8.4
Municipal solid waste landfills	Disposal routes	4	20	2.2 - 21	6.4

[a]References 1,5-15.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\ (s/12)^{a}(W/3)^{b} \tag{1a}$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\ (s/12)^{a}(S/30)^{d}}{(M/0.5)^{c}} - C \tag{1b}$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (*C*) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range as shown in Table 13.2.2-4

Table 13.2.2-4. EMISSION FACTOR FOR 1980'S VEHICLE FLEET EXHAUST, BRAKE WEAR AND TIRE WEAR

Particle Size Range[a]	*C*, Emission Factor for Exhaust, Brake Wear and Tire Wear[b] lb/VMT
$PM_{2.5}$	0.00036
PM_{10}	0.00047
PM_{30}[c]	0.00047

[a] Refers to airborne particulate matter (PM-x) with an aerodynamic diameter equal to or less than x micrometers.

[b] Units shown are pounds per vehicle mile traveled (lb/VMT).

[c] PM-30 is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for TSP.

It is important to note that the vehicle-related source conditions refer to the average weight, speed, and number of wheels for all vehicles traveling the road. For example, if 98 percent of traffic on the road are 2-ton cars and trucks while the remaining 2 percent consists of 20-ton trucks, then the mean weight is 2.4 tons. More specifically, Equations 1a and 1b are *not* intended to be used to calculate a separate emission factor for each vehicle class within a mix of traffic on a given unpaved road. That is, in the example, one should *not* determine one factor for the 2-ton vehicles and a second factor for the 20-ton trucks. Instead, only one emission factor should be calculated that represents the "fleet" average of 2.4 tons for all vehicles traveling the road.

Moreover, to retain the quality ratings when addressing a group of unpaved roads, it is necessary that reliable correction parameter values be determined for the road in question. The field and laboratory procedures for determining road surface silt and moisture contents are given in AP-42 Appendices C.1 and C.2. Vehicle-related parameters should be developed by recording visual observations of traffic. In some cases, vehicle parameters for industrial unpaved roads can be determined by reviewing maintenance records or other information sources at the facility.

In the event that site-specific values for correction parameters cannot be obtained, then default values may be used.In the absence of site-specific silt content information, an appropriate mean value from Table 13.2.2-1 may be used as a default value, but the quality rating of the equation is reduced by two letters. Because of significant differences found between different types of road surfaces and between different areas of the country, use of the default moisture content value of 0.5 percent in Equation 1b is discouraged. The quality rating should be downgraded two letters when the default moisture content value is used. (It is assumed that readers addressing industrial roads have access to the information needed to develop average vehicle information in Equation 1a for their facility.)

The effect of routine watering to control emissions from unpaved roads is discussed below in Section 13.2.2.3, “Controls”. However, all roads are subject to some natural mitigation because of rainfall and other precipitation. The Equation 1a and 1b emission factors can be extrapolated to annual average uncontrolled conditions (but including natural mitigation) under the simplifying assumption that annual average emissions are inversely proportional to the number of days with measurable (more than 0.254 mm [0.01 inch]) precipitation:

$$E_{ext} = E\ [(365 - P)/365] \qquad (2)$$

where:

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = emission factor from Equation 1a or 1b

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation (see below)

Figure 13.2.2-1 gives the geographical distribution for the mean annual number of "wet" days for the United States.

Equation 2 provides an estimate that accounts for precipitation on an annual average basis for the purpose of inventorying emissions. It should be noted that Equation 2 does not account for differences in the temporal distributions of the rain events, the quantity of rain during any event, or the potential for the rain to evaporate from the road surface. In the event that a finer temporal and spatial resolution is desired for inventories of public unpaved roads, estimates can be based on a more complex set of assumptions. These assumptions include:

1. The moisture content of the road surface material is increased in proportion to the quantity of water added;
2. The moisture content of the road surface material is reduced in proportion to the Class A pan evaporation rate;
3. The moisture content of the road surface material is reduced in proportion to the traffic volume; and
4. The moisture content of the road surface material varies between the extremes observed in the area. The CHIEF Web site (http://www.epa.gov/ttn/chief/ap42/ch13/related/c13s02-2.html) has a file which contains a spreadsheet program for calculating emission factors which are temporally and spatially resolved. Information required for use of the spreadsheet program includes monthly Class A pan evaporation values, hourly meteorological data for precipitation, humidity and snow cover, vehicle traffic information, and road surface material information.

It is emphasized that <u>the simple assumption underlying Equation 2 and the more complex set of assumptions underlying the use of the procedure which produces a finer temporal and spatial resolution</u> have not been verified in any rigorous manner. For this reason, the quality ratings for either approach should be downgraded one letter from the rating that would be applied to Equation 1.

13.2.2.3 Controls[18-22]

A wide variety of options exist to control emissions from unpaved roads. Options fall into the following three groupings:

1. <u>Vehicle restrictions</u> that limit the speed, weight or number of vehicles on the road;

2. Surface improvement, by measures such as (a) paving or (b) adding gravel or slag to a dirt road; and

3. Surface treatment, such as watering or treatment with chemical dust suppressants.

Available control options span broad ranges in terms of cost, efficiency, and applicability. For example, traffic controls provide moderate emission reductions (often at little cost) but are difficult to enforce. Although paving is highly effective, its high initial cost is often prohibitive. Furthermore, paving is not feasible for industrial roads subject to very heavy vehicles and/or spillage of material in transport. Watering and chemical suppressants, on the other hand, are potentially applicable to most industrial roads at moderate to low costs. However, these require frequent reapplication to maintain an acceptable level of control. Chemical suppressants are generally more cost-effective than water but not in cases of temporary roads (which are common at mines, landfills, and construction sites). In summary, then, one needs to consider not only the type and volume of traffic on the road but also how long the road will be in service when developing control plans.

Vehicle restrictions. These measures seek to limit the amount and type of traffic present on the road or to lower the mean vehicle speed. For example, many industrial plants have restricted employees from driving on plant property and have instead instituted bussing programs. This eliminates emissions due to employees traveling to/from their worksites. Although the heavier average vehicle weight of the busses increases the base emission factor, the decrease in vehicle-miles-traveled results in a lower overall emission rate.

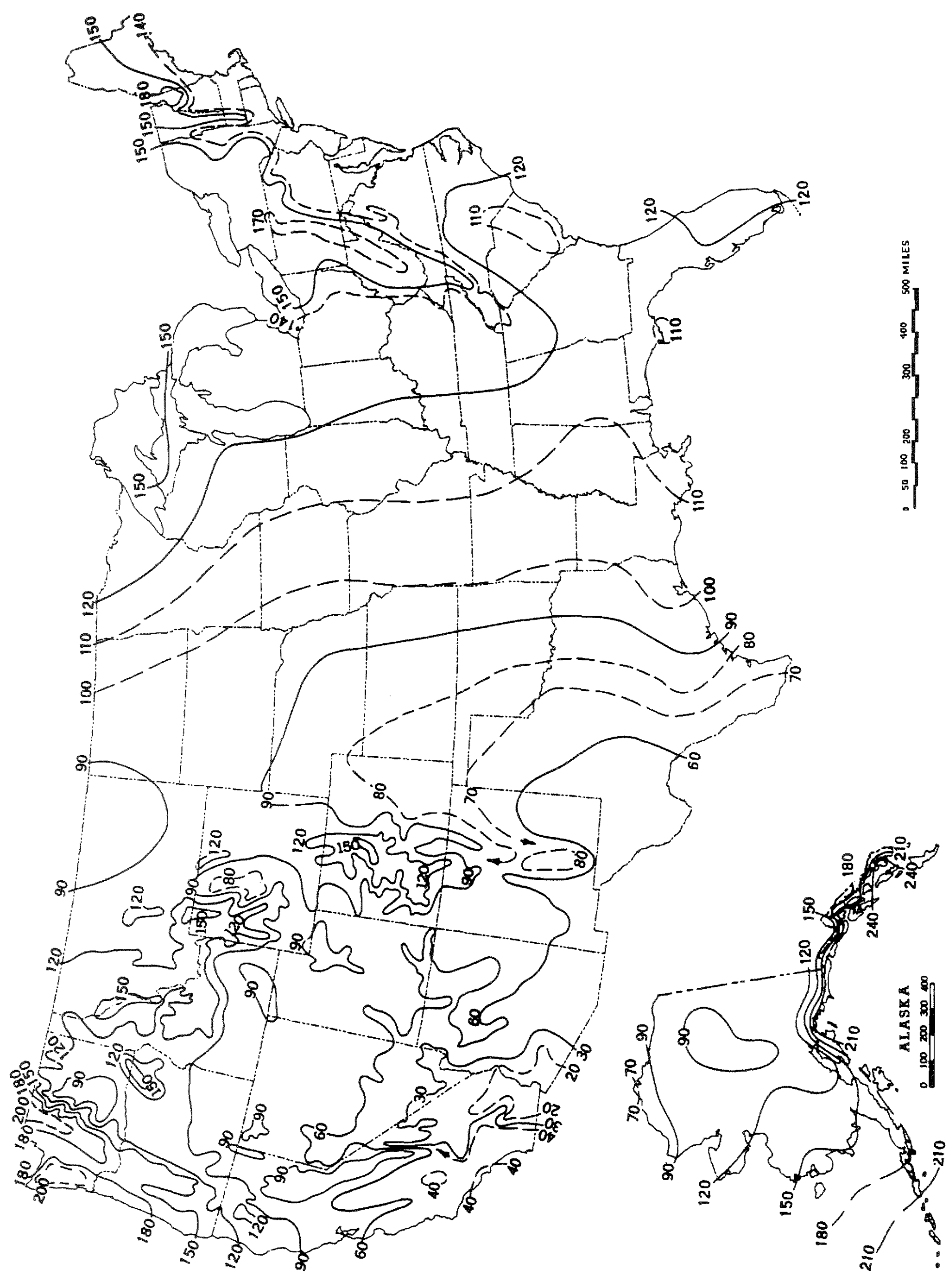

Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

Surface improvements. Control options in this category alter the road surface. As opposed to the "surface treatments" discussed below, improvements are relatively "permanent" and do not require periodic retreatment.

The most obvious surface improvement is paving an unpaved road. This option is quite expensive and is probably most applicable to relatively short stretches of unpaved road with at least several hundred vehicle passes per day. Furthermore, if the newly paved road is located near unpaved areas or is used to transport material, it is essential that the control plan address routine cleaning of the newly paved road surface.

The control efficiencies achievable by paving can be estimated by comparing emission factors for unpaved and paved road conditions. The predictive emission factor equation for paved roads, given in Section 13.2.1, requires estimation of the silt loading on the traveled portion of the paved surface, which in turn depends on whether the pavement is periodically cleaned. Unless curbing is to be installed, the effects of vehicle excursion onto unpaved shoulders (berms) also must be taken into account in estimating the control efficiency of paving.

Other improvement methods cover the road surface with another material that has a lower silt content. Examples include placing gravel or slag on a dirt road. Control efficiency can be estimated by comparing the emission factors obtained using the silt contents before and after improvement. The silt content of the road surface should be determined after 3 to 6 months rather than immediately following placement. Control plans should address regular maintenance practices, such as grading, to retain larger aggregate on the traveled portion of the road.

Surface treatments refer to control options which require periodic reapplication. Treatments fall into the two main categories of (a) "wet suppression" (i. e., watering, possibly with surfactants or other additives), which keeps the road surface wet to control emissions and (b) "chemical stabilization/ treatment", which attempts to change the physical characteristics of the surface. The necessary reapplication frequency varies from several minutes for plain water under summertime conditions to several weeks or months for chemical dust suppressants.

Watering increases the moisture content, which conglomerates particles and reduces their likelihood to become suspended when vehicles pass over the surface. The control efficiency depends on how fast the road dries after water is added. This in turn depends on (a) the amount (per unit road surface area) of water added during each application; (b) the period of time between applications; (c) the weight, speed and number of vehicles traveling over the watered road during the period between applications; and (d) meteorological conditions (temperature, wind speed, cloud cover, etc.) that affect evaporation during the period.

Figure 13.2.2-2 presents a simple bilinear relationship between the instantaneous control efficiency due to watering and the resulting increase in surface moisture. The moisture ratio "M" (i.e., the x-axis in Figure 13.2.2-2) is found by dividing the surface moisture content of the watered road by the surface moisture content of the uncontrolled road. As the watered road surface dries, both the ratio M and the predicted instantaneous control efficiency (i.e., the y-axis in the figure) decrease. The figure shows that between the uncontrolled moisture content and a value twice as large, a small increase in moisture content results in a large increase in control efficiency. Beyond that, control efficiency grows slowly with increased moisture content.

Given the complicated nature of how the road dries, characterization of emissions from watered roadways is best done by collecting road surface material samples at various times between water truck passes. (Appendices C.1 and C.2 present the sampling and analysis procedures.) The moisture content measured can then be associated with a control efficiency by use of Figure 13.2.2-2. Samples that reflect average conditions during the watering cycle can take the form of either a series of samples between water applications or a single sample at the midpoint. It is essential that samples be collected during periods with active traffic on the road. Finally, because of different evaporation rates, it is recommended that samples be collected at various times during the year. If only one set of samples is to be collected, these must be collected during hot, summertime conditions.

When developing watering control plans for roads that do not yet exist, it is strongly recommended that the moisture cycle be established by sampling similar roads in the same geographic area. If the moisture cycle cannot be established by similar roads using established watering control plans, the more complex methodology used to estimate the mitigation of rainfall and other precipitation can be used to estimate the control provided by routine watering. An estimate of the maximum daytime Class A pan evaporation (based upon daily evaporation data published in the monthly Climatological Data for the state by the National Climatic Data Center) should be used to insure that adequate watering capability is available during periods of highest evaporation. The hourly precipitation values in the spreadsheet should be replaced with the equivalent inches of precipitation (where the equivalent of 1 inch of precipitation is provided by an application of 5.6 gallons of water per square yard of road). Information on the long term average annual evaporation and on the percentage that occurs between May and October was published in the Climatic Atlas (Reference 16). Figure 13.2.2-3 presents the geographical distribution for "Class A pan evaporation" throughout the United States. Figure 13.2.2-4 presents the geographical distribution of the percentage of this evaporation that occurs between May and October. The U. S. Weather Bureau Class A evaporation pan is a cylindrical metal container with a depth of 10 inches and a diameter of 48 inches. Periodic measurements are made of the changes of the water level.

The above methodology should be used <u>only for prospective analyses</u> and for designing watering programs for existing roadways. The quality rating of an emission factor for a watered road that is based on this methodology should be downgraded two letters. Periodic road surface samples should be collected and analyzed to verify the efficiency of the watering program.

As opposed to watering, chemical dust suppressants have much less frequent reapplication requirements. These materials suppress emissions by changing the physical characteristics of the existing road surface material. Many chemical unpaved road dust suppressants form a hardened surface that binds particles together. After several applications, a treated road often resembles a paved road except that the surface is not uniformly flat. Because the improved surface results in more grinding of small particles, the silt content of loose material on a highly controlled surface may be substantially higher than when the surface was uncontrolled. For this reason, the models presented as Equations 1a and 1b cannot be used to estimate emissions from chemically stabilized roads. Should the road be allowed to return to an uncontrolled state with no visible signs of large-scale cementing of material, the Equation 1a and 1b emission factors could then be used to obtain conservatively high emission estimates.

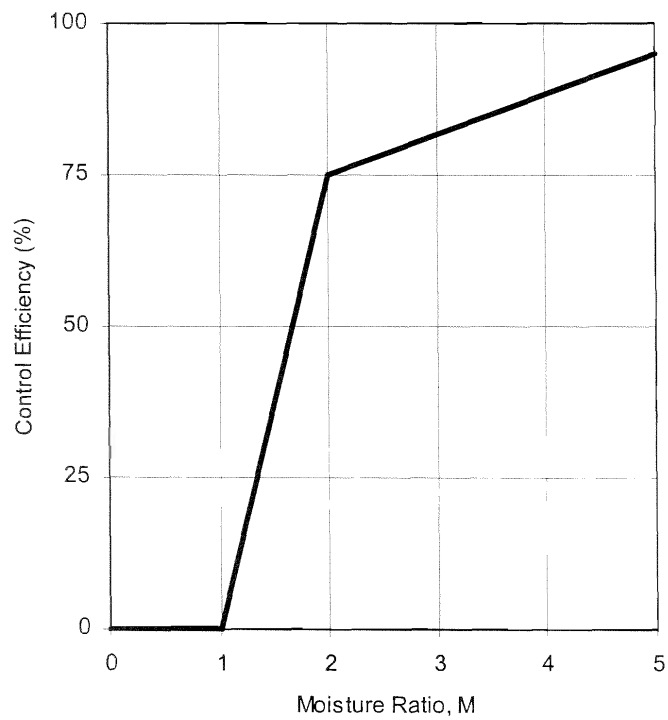

Figure 13.2.2-2. Watering control effectiveness for unpaved travel surfaces

The control effectiveness of chemical dust suppressants appears to depend on (a) the dilution rate used in the mixture; (b) the application rate (volume of solution per unit road surface area); (c) the time between applications; (d) the size, speed and amount of traffic during the period between applications; and (e) meteorological conditions (rainfall, freeze/thaw cycles, etc.) during the period. Other factors that affect the performance of dust suppressants include other traffic characteristics (e. g., cornering, track-on from unpaved areas) and road characteristics (e. g., bearing strength, grade). The variabilities in the above factors and differences between individual dust control products make the control efficiencies of chemical dust suppressants difficult to estimate. Past field testing of emissions from controlled unpaved roads has shown that chemical dust suppressants provide a PM-10 control efficiency of about 80 percent when applied at regular intervals of 2 weeks to 1 month.

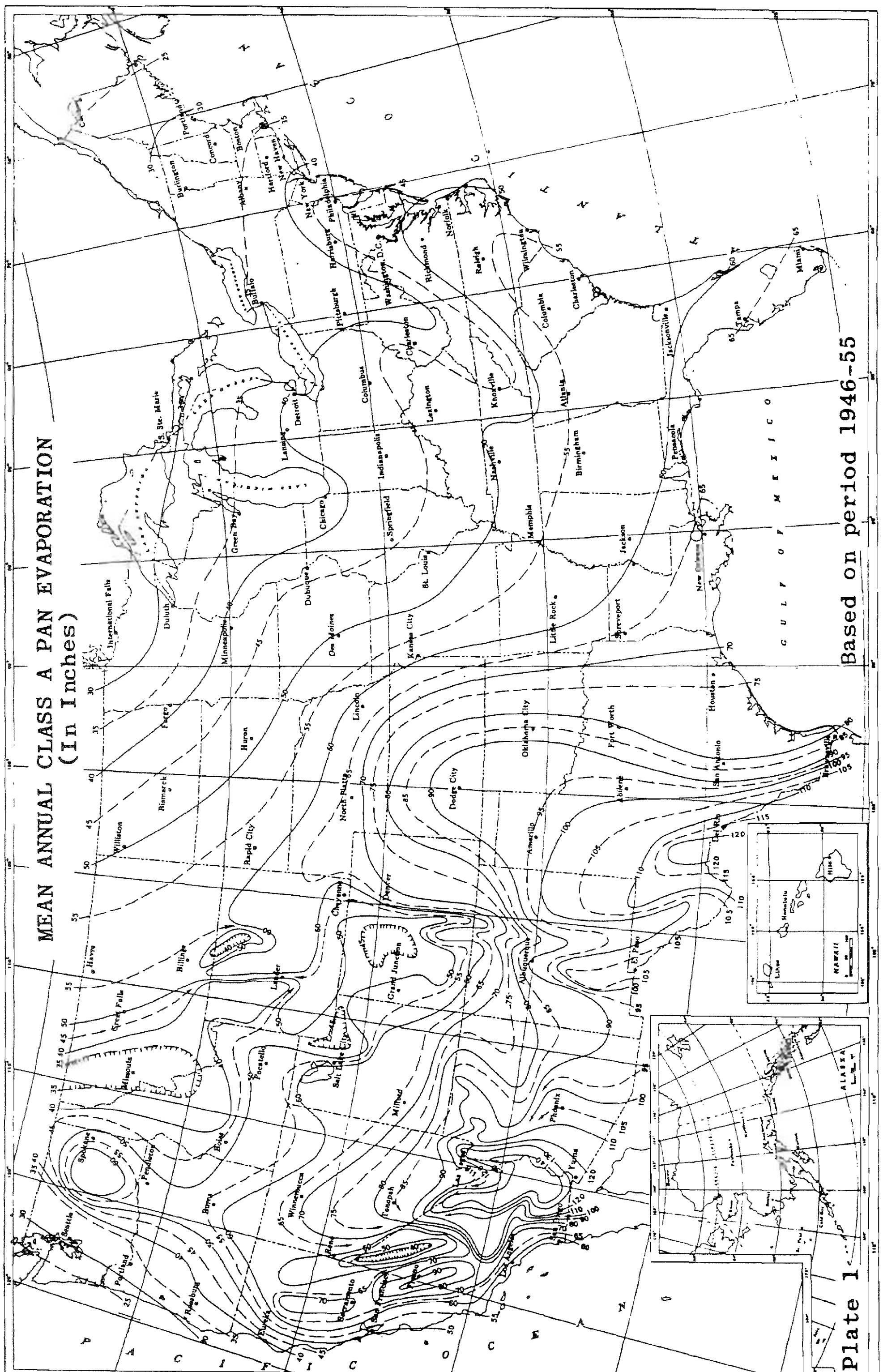

Figure 13.2.2-3. Annual evaporation data.

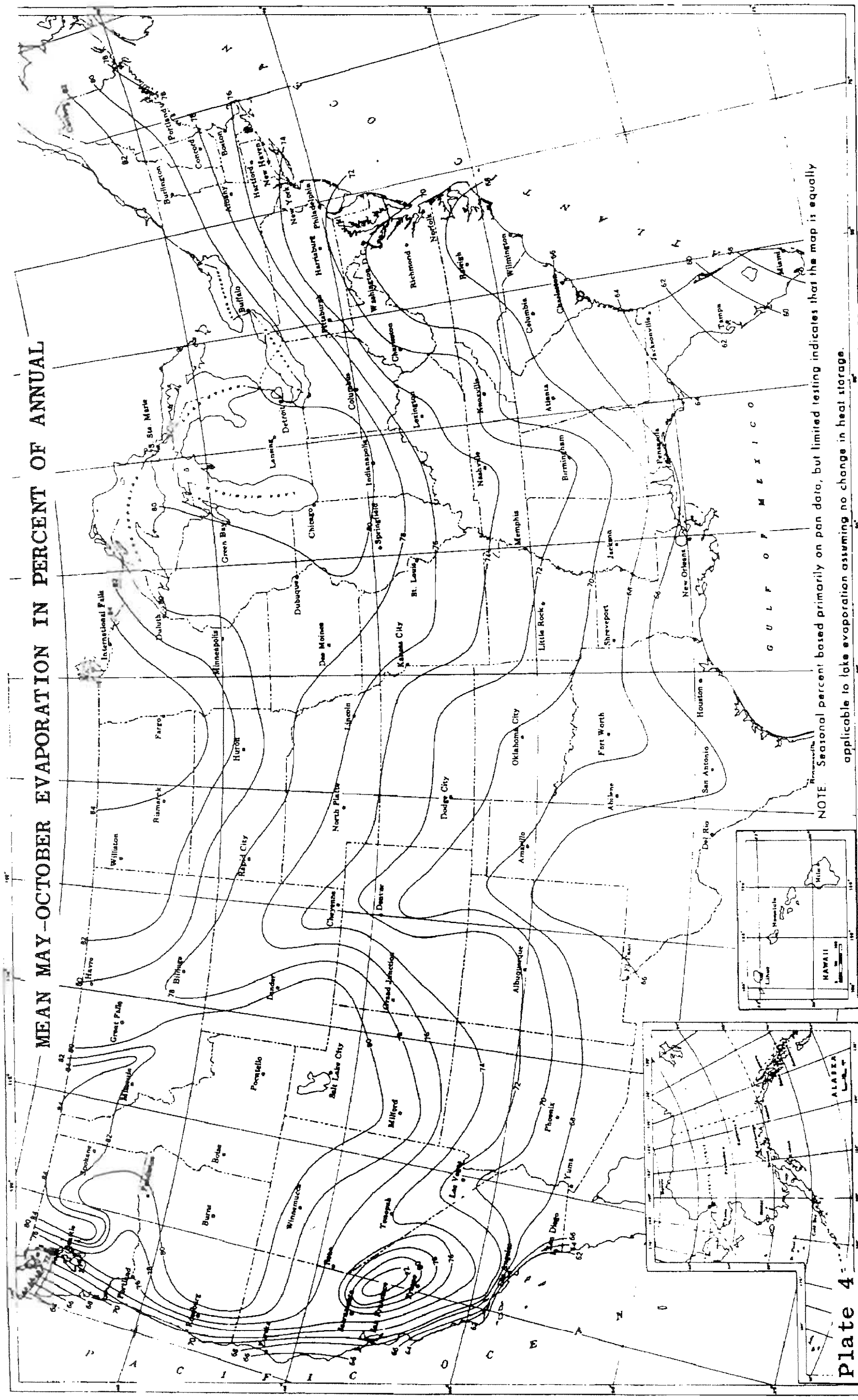

Figure 13.2.2-4. Geographical distribution of the percentage of evaporation occurring between May and October.

Petroleum resin products historically have been the dust suppressants (besides water) most widely used on industrial unpaved roads. Figure 13.2.2-5 presents a method to estimate average control efficiencies associated with petroleum resins applied to unpaved roads.[20] Several items should be noted:

1. The term "ground inventory" represents the total volume (per unit area) of petroleum resin concentrate (*not solution*) applied since the start of the dust control season.

2. Because petroleum resin products must be periodically reapplied to unpaved roads, the use of a time-averaged control efficiency value is appropriate. Figure 13.2.2-5 presents control efficiency values averaged over two common application intervals, 2 weeks and 1 month. Other application intervals will require interpolation.

3. Note that zero efficiency is assigned until the ground inventory reaches 0.05 gallon per square yard (gal/yd^2). Requiring a minimum ground inventory ensures that one must apply a reasonable amount of chemical dust suppressant to a road before claiming credit for emission control. Recall that the ground inventory refers to the amount of petroleum resin concentrate rather than the total solution.

As an example of the application of Figure 13.2.2-5, suppose that Equation 1a was used to estimate an emission factor of 7.1 lb/VMT for PM-10 from a particular road. Also, suppose that, starting on May 1, the road is treated with 0.221 gal/yd^2 of a solution (1 part petroleum resin to 5 parts water) on the first of each month through September. Then, the average controlled emission factors, shown in Table 13.2.2-5, are found.

Table 13.2-2-5. EXAMPLE OF AVERAGE CONTROLLED EMISSION FACTORS FOR SPECIFIC CONDITIONS

Period	Ground Inventory, gal/yd^2	Average Control Efficiency, %[a]	Average Controlled Emission Factor, lb/VMT
May	0.037	0	7.1
June	0.073	62	2.7
July	0.11	68	2.3
August	0.15	74	1.8
September	0.18	80	1.4

[a] From Figure 13.2.2-5, $\leq$10 µm. Zero efficiency assigned if ground inventory is less than 0.05 gal/yd^2. 1 lb/VMT = 281.9 g/VKT. 1 gal/yd^2 = 4.531 L/m^2.

Besides petroleum resins, other newer dust suppressants have also been successful in controlling emissions from unpaved roads. Specific test results for those chemicals, as well as for petroleum resins and watering, are provided in References 18 through 21.

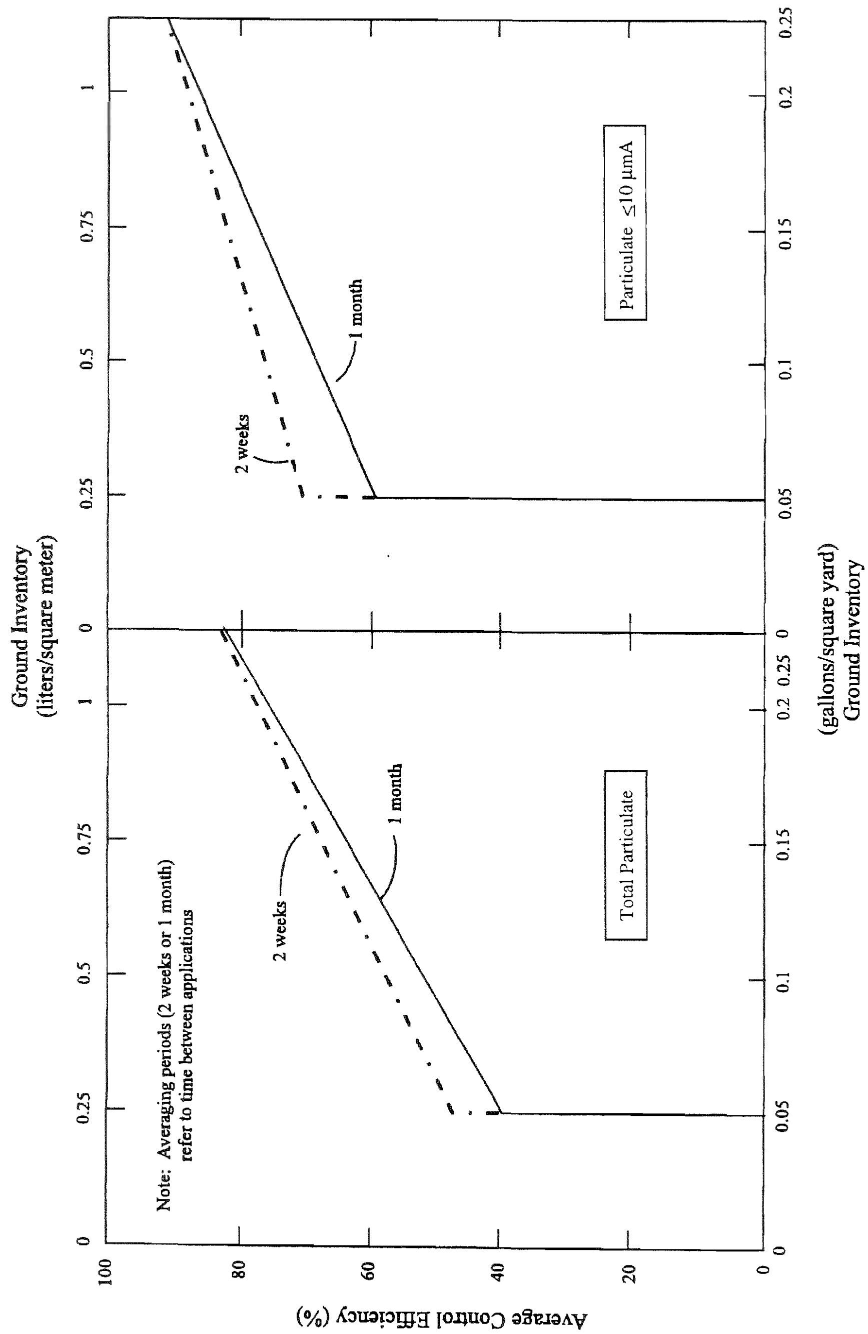

Figure 13.2.2-5. Average control efficiencies over common application intervals.

13.2.2.4 Updates Since The Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below. For further detail, consult the background report for this section (Reference 6).

October 1998 (Supplement E)– This was a major revision of this section. Significant changes to the text and the emission factor equations were made.

October 2001 – Separate emission factors for unpaved surfaces at industrial sites and publicly accessible roads were introduced. Figure 13.2.2-2 was included to provide control effectiveness estimates for watered roads.

December 2003 – The public road emission factor equation (equation 1b) was adjusted to remove the component of particulate emissions from exhaust, brake wear, and tire wear. The parameter C in the new equation varies with aerodynamic size range of the particulate matter. Table 13.2.2-4 was added to present the new coefficients.

January 2006 – The PM-2.5 particle size multipliers (i.e., factors) in Table 13.2.2-2 were modified and the quality ratings were upgraded from C to B based on the wind tunnel studies of a variety of dust emitting surface materials.

References For Section 13.2.2

1. C. Cowherd, Jr., *et al., Development Of Emission Factors For Fugitive Dust Sources,* EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

2. R. J. Dyck and J. J. Stukel, "Fugitive Dust Emissions From Trucks On Unpaved Roads", *Environmental Science And Technology, 10*(10):1046-1048, October 1976.

3. R. O. McCaldin and K. J. Heidel, "Particulate Emissions From Vehicle Travel Over Unpaved Roads", Presented at the 71st Annual Meeting of the Air Pollution Control Association, Houston, TX, June 1978.

4. C. Cowherd, Jr, *et al., Iron And Steel Plant Open Dust Source Fugitive Emission Evaluation*, EPA-600/2-79-013, U. S. Environmental Protection Agency, Cincinnati, OH, May 1979.

5. G. Muleski, *Unpaved Road Emission Impact*, Arizona Department of Environmental Quality, Phoenix, AZ, March 1991.

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8. *Improved Emission Factors For Fugitive Dust From Western Surface Coal Mining Sources*, 2 Volumes, EPA Contract No. 68-03-2924, Office of Air Quality Planning and Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC.

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11. C. Cowherd, Jr., and P. Englehart, *Size Specific Particulate Emission Factors For Industrial And Rural Roads*, EPA-600/7-85-038, U. S. Environmental Protection Agency, Cincinnati, OH, September 1985.

12. *PM-10 Emission Inventory Of Landfills In The Lake Calumet Area*, EPA Contract 68-02-3891, Work Assignment 30, Midwest Research Institute, Kansas City, MO, September 1987.

13. *Chicago Area Particulate Matter Emission Inventory — Sampling And Analysis*, EPA Contract No. 68-02-4395, Work Assignment 1, Midwest Research Institute, Kansas City, MO, May 1988.

14. *PM-10 Emissions Inventory Data For The Maricopa And Pima Planning Areas*, EPA Contract No. 68-02-3888, Engineering-Science, Pasadena, CA, January 1987.

15. *Oregon Fugitive Dust Emission Inventory*, EPA Contract 68-D0-0123, Midwest Research Institute, Kansas City, MO, January 1992.

16. *Climatic Atlas Of The United States*, U. S. Department Of Commerce, Washington, DC, June 1968.

17. National Climatic Data Center, *Solar And Meteorological Surface Observation Network 1961-1990*; 3 Volume CD-ROM. Asheville, NC, 1993.

18. C. Cowherd, Jr. *et al., Control Of Open Fugitive Dust Sources*, EPA-450/3-88-008, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.

19. G. E. Muleski, *et al., Extended Evaluation Of Unpaved Road Dust Suppressants In The Iron And Steel Industry*, EPA-600/2-84-027, U. S. Environmental Protection Agency, Cincinnati, OH, February 1984.

20. C. Cowherd, Jr., and J. S. Kinsey, *Identification, Assessment And Control Of Fugitive Particulate Emissions*, EPA-600/8-86-023, U. S. Environmental Protection Agency, Cincinnati, OH, August 1986.

21. G. E. Muleski and C. Cowherd, Jr., *Evaluation Of The Effectiveness Of Chemical Dust Suppressants On Unpaved Roads*, EPA-600/2-87-102, U. S. Environmental Protection Agency, Cincinnati, OH, November 1986.

22. *Fugitive Dust Background Document And Technical Information Document For Best Available Control Measures*, EPA-450/2-92-004, Office Of Air Quality Planning And Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1992.

23. Written communication (Technical Memorandum) from P. Hemmer, E.H. Pechan & Associates, Inc., Durham, NC to B. Kuykendal, U. S. Environmental Protection Agency, Research Triangle Park, NC, August, 21, 2003.

24. MOBILE6 User Guide, United States Environmental Protection Agency, Office of Transportation and Air Quality. EPA420-R-02-028, October 2002.

25. Written communication (Technical Memorandum) from G. Muleski, Midwest Research Institute, Kansas City, MO, to B. Kuykendal, U. S. Environmental Protection Agency, Research Triangle Park, NC, Subject "Unpaved Roads", September 27, 2001.

26. Written communication (Technical Memorandum) from W. Kuykendal, U. S. Environmental Protection Agency, to File, Subject "Decisions on Final AP-42 Section 13.2.2 Unpaved Roads", November 24, 2003.

27. C. Cowherd, *Background Document for Revisions to Fine Fraction Ratios &sed for AP-42 Fugitive Dust Emission Factors*. Prepared by Midwest Research Institute for Western Governors Association, Western Regional Air Partnership, Denver, CO, February 1, 2006.

13.2.4 Aggregate Handling And Storage Piles

13.2.4.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, such as material loading onto the pile, disturbances by strong wind currents, and loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

13.2.4.2 Emissions And Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Emissions also depend on 3 parameters of the condition of a particular storage pile: age of the pile, moisture content, and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, the potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents, either from aggregate transfer itself or from high winds. As the aggregate pile weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and then the drying process is very slow.

Silt (particles equal to or less than 75 micrometers [µm] in diameter) content is determined by measuring the portion of dry aggregate material that passes through a 200-mesh screen, using ASTM-C-136 method.[1] Table 13.2.4-1 summarizes measured silt and moisture values for industrial aggregate materials.

Table 13.2.4-1. TYPICAL SILT AND MOISTURE CONTENTS OF MATERIALS AT VARIOUS INDUSTRIES[a]

Industry	No. Of Facilities	Material	Silt Content (%)			Moisture Content (%)		
			No. Of Samples	Range	Mean	No. Of Samples	Range	Mean
Iron and steel production	9	Pellet ore	13	1.3 - 13	4.3	11	0.64 - 4.0	2.2
		Lump ore	9	2.8 - 19	9.5	6	1.6 - 8.0	5.4
		Coal	12	2.0 - 7.7	4.6	11	2.8 - 11	4.8
		Slag	3	3.0 - 7.3	5.3	3	0.25 - 2.0	0.92
		Flue dust	3	2.7 - 23	13	1	—	7
		Coke breeze	2	4.4 - 5.4	4.9	2	6.4 - 9.2	7.8
		Blended ore	1	—	15	1	—	6.6
		Sinter	1	—	0.7	0	—	—
		Limestone	3	0.4 - 2.3	1.0	2	ND	0.2
Stone quarrying and processing	2	Crushed limestone	2	1.3 - 1.9	1.6	2	0.3 - 1.1	0.7
		Various limestone products	8	0.8 - 14	3.9	8	0.46 - 5.0	2.1
Taconite mining and processing	1	Pellets	9	2.2 - 5.4	3.4	7	0.05 - 2.0	0.9
		Tailings	2	ND	11	1	—	0.4
Western surface coal mining	4	Coal	15	3.4 - 16	6.2	7	2.8 - 20	6.9
		Overburden	15	3.8 - 15	7.5	0	—	—
		Exposed ground	3	5.1 - 21	15	3	0.8 - 6.4	3.4
Coal-fired power plant	1	Coal (as received)	60	0.6 - 4.8	2.2	59	2.7 - 7.4	4.5
Municipal solid waste landfills	4	Sand	1	—	2.6	1	—	7.4
		Slag	2	3.0 - 4.7	3.8	2	2.3 - 4.9	3.6
		Cover	5	5.0 - 16	9.0	5	8.9 - 16	12
		Clay/dirt mix	1	—	9.2	1	—	14
		Clay	2	4.5 - 7.4	6.0	2	8.9 - 11	10
		Fly ash	4	78 - 81	80	4	26 - 29	27
		Misc. fill materials	1	—	12	1	—	11

[a] References 1-10. ND = no data.

13.2.4.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

The quantity of particulate emissions generated by either type of drop operation, per kilogram (kg) (ton) of material transferred, may be estimated, with a rating of A, using the following empirical expression:[11]

$$E = k(0.0016)\,\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \quad \text{(kg/megagram [Mg])}$$

$$E = k(0.0032)\,\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \quad \text{(pound [lb]/ton)} \tag{1}$$

where:

E = emission factor
k = particle size multiplier (dimensionless)
U = mean wind speed, meters per second (m/s) (miles per hour [mph])
M = material moisture content (%)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) For Equation 1				
< 30 µm	< 15 µm	< 10 µm	< 5 µm	< 2.5 µm
0.74	0.48	0.35	0.20	0.053[a]

[a] Multiplier for < 2.5 µm taken from Reference 14.

The equation retains the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equation, as follows. Note that silt content is included, even though silt content does not appear as a correction parameter in the equation. While it is reasonable to expect that silt content and emission factors are interrelated, no significant correlation between the 2 was found during the derivation of the equation, probably because most tests with high silt contents were conducted under lower winds, and vice versa. It is recommended that estimates from the equation be reduced 1 quality rating level if the silt content used in a particular application falls outside the range given:

Ranges Of Source Conditions For Equation 1			
Silt Content (%)	Moisture Content (%)	Wind Speed	
		m/s	mph
0.44 - 19	0.25 - 4.8	0.6 - 6.7	1.3 - 15

To retain the quality rating of the equation when it is applied to a specific facility, reliable correction parameters must be determined for specific sources of interest. The field and laboratory procedures for aggregate sampling are given in Reference 3. In the event that site-specific values for correction parameters cannot be obtained, the appropriate mean from Table 13.2.4-1 may be used, but the quality rating of the equation is reduced by 1 letter.

For emissions from equipment traffic (trucks, front-end loaders, dozers, etc.) traveling between or on piles, it is recommended that the equations for vehicle traffic on unpaved surfaces be used (see Section 13.2.2). For vehicle travel between storage piles, the silt value(s) for the areas among the piles (which may differ from the silt values for the stored materials) should be used.

Worst-case emissions from storage pile areas occur under dry, windy conditions. Worst-case emissions from materials-handling operations may be calculated by substituting into the equation appropriate values for aggregate material moisture content and for anticipated wind speeds during the worst case averaging period, usually 24 hours. The treatment of dry conditions for Section 13.2.2, vehicle traffic, "Unpaved Roads", follows the methodology described in that section centering on parameter p. A separate set of nonclimatic correction parameters and source extent values corresponding to higher than normal storage pile activity also may be justified for the worst-case averaging period.

13.2.4.4 Controls[12-13]

Watering and the use of chemical wetting agents are the principal means for control of aggregate storage pile emissions. Enclosure or covering of inactive piles to reduce wind erosion can also reduce emissions. Watering is useful mainly to reduce emissions from vehicle traffic in the storage pile area. Watering of the storage piles themselves typically has only a very temporary slight effect on total emissions. A much more effective technique is to apply chemical agents (such as surfactants) that permit more extensive wetting. Continuous chemical treating of material loaded onto piles, coupled with watering or treatment of roadways, can reduce total particulate emissions from aggregate storage operations by up to 90 percent.[12]

References For Section 13.2.4

1. C. Cowherd, Jr., *et al., Development Of Emission Factors For Fugitive Dust Sources*, EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

2. R. Bohn, *et al., Fugitive Emissions From Integrated Iron And Steel Plants*, EPA-600/2-78-050, U. S. Environmental Protection Agency, Cincinnati, OH, March 1978.

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4. *Evaluation Of Open Dust Sources In The Vicinity Of Buffalo, New York*, EPA Contract No. 68-02-2545, Midwest Research Institute, Kansas City, MO, March 1979.

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7. *Improved Emission Factors For Fugitive Dust From Western Surface Coal Mining Sources,* 2 Volumes, EPA Contract No. 68-03-2924, PEDCo Environmental, Kansas City, MO, and Midwest Research Institute, Kansas City, MO, July 1981.

8. *Determination Of Fugitive Coal Dust Emissions From Rotary Railcar Dumping,* TRC, Hartford, CT, May 1984.

9. *PM-10 Emission Inventory Of Landfills In the Lake Calumet Area*, EPA Contract No. 68-02-3891, Midwest Research Institute, Kansas City, MO, September 1987.

10. *Chicago Area Particulate Matter Emission Inventory — Sampling And Analysis*, EPA Contract No. 68-02-4395, Midwest Research Institute, Kansas City, MO, May 1988.

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12. G. A. Jutze, *et al., Investigation Of Fugitive Dust Sources Emissions And Control,* EPA-450/3-74-036a, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

13. C. Cowherd, Jr., *et al., Control Of Open Fugitive Dust Sources*, EPA-450/3-88-008, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.

14. C. Cowherd, *Background Document for Revisions to Fine Fraction Ratios &sed for AP-42 Fugitive Dust Emission Factors*. Prepared by Midwest Research Institute for Western Governors Association, Western Regional Air Partnership, Denver, CO, February 1, 2006.

APPENDIX E

ISR Worksheets

Emissions Estimator Worksheet

3/9/2020

Applicant/Business Name:	**Jim Brisco Enterprises, Inc.**
Project Name:	**Ready-Mix Concrete Batch Plant Project**
Project Location:	**City of Atwater**
District Project ID No.:	

Project Construction Emissions

If applicant selected Construction Clean Fleet Mitigation Measure - Please select "Yes" from dropdown menu: **No**

			NOx					PM10				
Project Phase Name	**ISR Phase**	**Construction Start Date**	**Unmitigated Baseline[1] (TPY)**	**Mitigated Baseline[2] (TPY)**	**Achieved On-site Reductions[3] (tons)**	**Required Off-site Reductions[4] (tons)**	**Emission Reductions Required by Rule[5]**	**Unmitigated Baseline[1] (TPY)**	**Mitigated Baseline[2] (TPY)**	**Achieved On-site Reductions[3] (tons)**	**Required Off-site Reductions[4] (tons)**	**Emission Reductions Required by Rule[5]**
Project Development	1	1/1/2021	4.2685	4.2685	0.0000	0.8537	0.8537	0.4733	0.4733	0.0000	0.2130	0.2130
	2				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	3				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	4				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	5				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	6				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	7				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	8				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	9				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	10				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
		Total	**4.2685**	**4.2685**	**0.0000**	**0.8537**	0.8537	**0.4733**	**0.4733**	**0.0000**	**0.2130**	0.2130

Total Achieved On-Site Reductions (tons)

ISR Phase	NOx	PM10
1	0.0000	0.0000
2	0.0000	0.0000
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
6	0.0000	0.0000
7	0.0000	0.0000
8	0.0000	0.0000
9	0.0000	0.0000
10	0.0000	0.0000
Total	**0.0000**	**0.0000**

Project Operations Emissions (Area + Mobile)

			NOx						PM10					
Project Phase Name	**ISR Phase**	**Operation Start Date**	**Unmitigated Baseline[1] (TPY)**	**Mitigated Baseline[2] (TPY)**	**Achieved On-site Reductions[3] (tons)**	**Required Off-site Reductions[4] (tons)**	**Total Emission Reductions Required by Rule[6]**	**Average Annual Emission Reductions Required by Rule[7]**	**Unmitigated Baseline[1] (TPY)**	**Mitigated Baseline[2] (TPY)**	**Achieved On-site Reductions[3] (tons)**	**Required Off-site Reductions[4] (tons)**	**Total Emission Reductions Required by Rule[6]**	**Average Annual Emission Reductions Required by Rule[7]**
Project Development	1	1/1/2022	2.4500	2.4500	0.0000	6.1250	6.1250	0.6125	0.0800	0.0800	0.0000	0.4000	0.4000	0.0400
	2				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	3				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	4				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	5				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	6				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	7				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	8				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	9				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	10				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
		Total	**2.4500**	**2.4500**	**0.0000**	**6.1250**	**6.1250**	**0.6125**	**0.0800**	**0.0800**	**0.0000**	**0.4000**	**0.4000**	**0.0400**

Total Required Off-Site Reductions (tons)

ISR Phase	NOx	PM10
1	6.9787	0.6130
2	0.0000	0.0000
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
6	0.0000	0.0000
7	0.0000	0.0000
8	0.0000	0.0000
9	0.0000	0.0000
10	0.0000	0.0000
Total	**6.9787**	**0.6130**

Notes:

TPY: Tons Per Year

(1) **Unmitigated Baseline:** The project's baseline emissions generated with no on-site emission reduction measures.

(2) **Mitigated Baseline:** The project's baseline emissions generated after on-site emisison reduction measures have been applied.

(3) **Achieved On-site Reductions:** The project's emission reductions achieved after on-site emission reduction measures have been applied.

(4) **Required Off-site Reductions:** The project's remaining emission reductions required by Rule 9510 if on-site emission reduction measures did not achieive the required rule reductions.

(5) **Emission Reductions Required by Rule:** The project's emission reductions required (20% NOx and 45% PM10) for construction from the unmitigated baseline.

(6) **Total Emission Reductions Required by Rule:** The project's emission reductions required (33.3% NOx and 50% PM10) for operations from the unmitigated baseline over a 10-year period.

(7) **Average Annual Emission Reductions Required by Rule:** The project's total emission reduction for operations required by Rule 9510 divided by 10 years.

Fee Estimator Worksheet

3/9/2020

Applicant/Business Name:	**Jim Brisco Enterprises, Inc.**
Project Name:	**Ready-Mix Concrete Batch Plant Project**
Project Location:	**City of Atwater**
District Project ID No.:	

NOTES:

(1) The start date for each ISR phase is shown in TABLE 1.

(2) If you have chosen a **ONE-TIME** payment for the project, then the total amount due for ALL PHASES is shown under TABLE 2.

(3) If you have chosen a **DEFERRED** payment schedule or would like to propose a **DEFERRED** payment schedule for the project, the total amount due for a specific year is shown in TABLE 3 according to the schedule in TABLE 1.

***** If you have not provided a proposed payment date, the District sets a default invoice date of 60 days prior to start of the ISR phase.

If applicant selected Fee Deferral Schedule - Please select "Yes" from dropdown menu	Yes

TABLE 1 - PROJECT INFORMATION

Project Phase Name	ISR Phase	Start Date per Phase	Scheduled Payment Date*
0	1	1/1/21	FALSE
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
TOTAL (tons)			

TABLE 2 - No Fee Deferral Schedule (FDS) / **TABLE 2 - NO FDS**

Pollutant	Required Offsite Reductions (tons)	2020
NOx	6.9787	6.9787
PM10	0.6130	0.6130
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	6.9787	6.9787
PM10	0.6130	0.6130

Offsite Fee by Pollutant ($)	NOx	$65,250
	PM10	$5,523
Administrative Fee ($)		$2,830.92
Offsite Fee ($)		$70,773.00
Total Project Offsite Fee ($)		$73,603.92

TABLE 3 - APPROVED FEE DEFERRAL SCHEDULE (FDS) BY PAYMENT YEAR

2020	2021	2022	2023	2024	2025	2026	2027	2028
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
$0	$0	$0	$0	$0	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0	$0	$0	$0
$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
			$0.00					

Rule 9510 Fee Schedule ($/ton)		
Year	Nox	PM10
2020 and Beyond	$9,350	$9,011