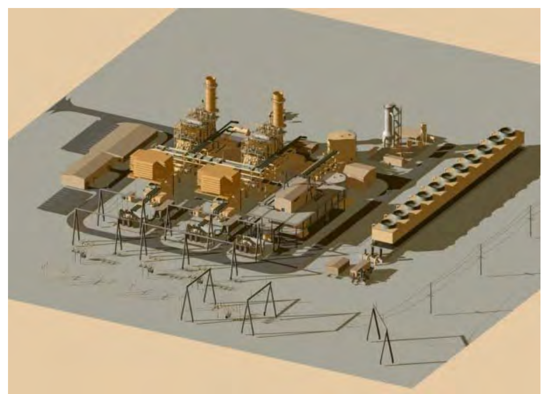
BLYTHE ENERGY PROJECT PHASE II

AMENDMENT
(02-AFC-1C)



Submitted to the:

California Energy Commission

Submitted by:

Caithness Blythe II, LLC

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SECTION 1

Introduction

1.1 Background

On February 18, 2002, Caithness Blythe II, LLC (Caithness), submitted an Application for Certification (AFC) to the California Energy Commission (CEC or Commission), for the Blythe Energy Project, Phase II (BEP II or Project). The Commission certified the Project in its Decision dated December 14, 2005, Docket Number 02-AFC-1.

The BEP II is licensed as a nominally rated 520-megawatt (MW) combined-cycle facility with a maximum output of 538 MWs. The Project is located within the City of Blythe, approximately five miles west of the center of the City. The BEP II site boundary is located on approximately a 76 acre site immediately adjacent to the operational Blythe Energy Project (BEP I), owned and operated by a subsidiary of FPL Energy. This transfer of ownership was approved by the Commission on January 4, 2002. To date Caithness has no ownership or control interest remaining in the BEP I.

The Project Objectives as stated in the PMPD remain valid for the BEP II project;

1. Use a project site adjacent to BEP I;
2. Use a site that is in close proximity to existing electrical transmission and natural gas facilities;
3. Utilize a site that has environmental compatibility with an expected low impact on the environment, given its proximity to the industrial lands at the airport and BEP I, remoteness from residential areas, elevation above most populated areas, and low traffic conditions;
4. Develop a maximally efficient merchant power plant; and
5. Produce electricity to sell competitively into the regional markets in Southern California and Arizona.

If those objectives were written today, they would include BEP II ability to reinforce the grid for over 5000 MW of renewable filings in the immediate Blythe area. The Blythe region is one of the largest solar resource areas with multiple filings at the CEC currently under review, and over 2000 MW of solar power purchase agreements under contract with utilities. The CAISO has proposed over $2.5 billion in modifications to the Eastern Bulk System electrical grid to incorporate these resource. The Colorado River Substation, a key feature of the Desert Southwest Transmission Project, and now the current point of origination of the Devers II 500 kV line, is a major collection hub for the delivery of solar and BEP II to the CAISO. BEP II is a critical resource to the stability of the grid in the Eastern Bulk delivery area and a source of low cost highly efficient clean energy.

1.2 Purpose and Need for Amendment

The primary purpose and need for this Amendment is to define the point of interconnection for the BEP II project in accordance with the direction provided in the PMPD. A description of the electrical interconnection in the PMPD is as follows:

> BEP II proposes to connect to Western's Buck Boulevard Substation adjacent to BEP I. In order to handle all of BEP II's generation, Western will need to complete permitting review and construct its Desert Southwest Transmission Project (DSWTP), which will connect to SCE's Devers Substation. Western's System Impact Study concluded that BEP II and the DSWTP present no negative impact to Western's system, provided Remedial Action Schemes are implemented to prevent no more than 520 MW from BEP I and BEP II to flow to the existing 161 kV system in the event the DSWTP line suffers an outage. Western will be proceeding with the required System Facilities Study to determine the specific interconnection requirements and costs for BEP II's interconnection at the Buck Boulevard Substation.
>
> The Applicant **will not begin construction** of the project until the DSWTP (or an equivalent) has obtained all necessary permits. In addition, the BEP I and BEP II projects **would not deliver more than 520 MW until the DSWTP (or an equivalent) is in operation**.

The final electrical interconnection configuration and associated studies for the BEP II project are nearly in place after 4 years of working with the California ISO and Southern California Edison. BEP II was permitted with a proposed point of electrical interconnection at the Buck Blvd. Substation. However, at the time of Licensing, the point of interconnection was still under investigation and included an alternative at the proposed Keim Station. Keim Station was still undergoing permitting as part of the proposed Desert Southwest Transmission Project (DSWTP). The DSWTP has since completed full environmental analysis and received its Record of Decision from the Department of the Interior and completed an Environmental Impact Report with the Imperial Irrigation District as the lead CEQA Agency. The DSWTP included the construction and operation of a new substation/switching station called Keim. The Keim Station, located north of Interstate 10 and south of Hobsonway, will better enable the BEP II to deliver power into Sothern California. The LGIA is the final document to be completed for the project. BEP II has been held back from moving forward until this electrical interconnection could be perfected and CEC License amended to incorporate the necessary changes. The purpose and need for this amendment is very clear.

The amount of time and resources expended on this effort were not insignificant. Caithness Energy remains committed to the completion of the BEP II plant and recognizes that other changes to the License are required to bring the project in line with current technology generating equipment. The combustion turbines and associated equipment contained in the current License are obsolete and no longer commercially available. This equipment has been updated and replaced with newer generation combustion turbines which are more efficient and generate greater capacity for a similar footprint.

The BEP II was permitted and was designed to deliver the highest efficiency gas-fired base load power to California markets. Caithness has actively marketed BEP II and participated in several Request For Proposal offerings from California and Arizona utilities. However, market needs have changed in the CAISO with the focus on renewable generation and the drop in load growth. Southern California Utilities now need high efficiency, fast start gas fired generation to provide grid support in remote areas where renewable generation has been proposed in the thousands of megawatts. In addition, new generation constraints have emerged in load pocket areas which further limit options for suitable locations for generation.

Caithness wishes to amend the BEP II project to be a fully dispatchable, high efficiency quick start facility to meet the current and project market demands for Southern California. To accommodate this energy and capacity profile, BEP II is proposing to incorporate new fast start technology within the framework of the originally permitted 2 on 1 combined cycle plant. The modifications will use the latest combustion turbine technology and will move away from the originally proposed Siemens V84.3a combustion turbines, which are no longer commercially available. The modified project will incorporate an auxiliary boiler and provide for increased duct firing capability thereby making the BEP II a more versatile generating facility with the ability to work as an intermittent load to help integrate renewable power.

In addition to proposed Project modifications described in this Petition and pursuant to Section 1720.3 of the California Energy Commission's Rules of Practice and Procedures, Caithness seeks an extension of the deadline for the commencement of construction of the BEP II. The Commission Decision for the BEP II was adopted December 14, 2005, which places the current deadline for commencement of construction at December 14, 2010. Caithness hereby requests a three year extension of the deadline for commencement of construction for the BEP II to December 14, 2013. Good cause exists for this extension request because Caithness has been unable to secure a Power Purchase Agreement to date despite aggressively participating in utility procurement Requests For Offers. In addition, the BEP II is in a unique position to help integrate renewable energy currently proposed in the Blythe area. The Project will be one of the only fast start fully dispatchable project's able to deliver into the Southern California region. Caithness is proposing these modifications to the BEP II Project in order to respond to the changing needs of the Southern California electricity market. The shrinking economy in California has pushed out the demands for additional energy, but the call for a 33% Renewable Portfolio Standard will require firm quick start capacity to integrate this level of solar and wind resources into the electrical grid in the future. The location of the BEP II Project is critical to this integration of renewable resources and the proposed extension would allow the Project to more competitively compete for a Power Purchase Agreement in a time frame which is compatible to the build out of the renewable resources.

The proposed modifications will:

1. Define the point of electrical interconnection at the new Keim Station.

2. Replace the permitted turbines which are no longer commercially available with latest technology combustion turbines now commercially available.

3. Incorporate fast-start technology.

Combustion Turbine Technology - The BEP II was originally permitted with two Siemens Westinghouse V84.3a 170 MW combustion turbines, which are no longer commercially available. The new Siemens SGT6-5000F turbine generators are higher efficiency and provide more capacity and fast start capability for a similar frame design.

Fast Start Technology - Gas fired fast start technology is a product of "smart" modifications to the entire plant design which includes changes to plant controls, addition of an auxiliary boiler, and modifications to the HRSG' which will incorporate proven Bensen™ technology. Fast start features will provide for multiple daily starts, substantially reduced start up emissions, quick ramp rates to meet regulation demands of the growing renewable market, and will provide a fully dispatchable high efficient resource to meet the desired operating profile of the Southern California electricity market.

This amendment contains all of the information that is required pursuant to the CEC's Siting Regulations Title 20, Section 1769, Post Certification Amendments and Changes. The information necessary to fulfill the requirements of Section 1769 is contained in Sections 1.0 through 7.0 and their associated appendices.

1.3 Project Amendment Benefits

The BEP II Project as modified for fast-start capability and additional duct firing would provide the following benefits.

- The fast start modifications proposed to the BEP II will substantially reduce start times and therefore start-up emissions. The first 150 MW for each combustion turbine (total 300 MW) will be reached in 10 minutes on a warm or hot start. The start time to more efficient combined cycle operation is reduced to approximately 60 minutes for "hot" and "warm" start conditions. The plant is designed for hundreds of starts a year to allow CAISO the flexibility needed to integrate wind and solar resources into the grid. These reduced start times will improve the emissions profile of the plant.

- The BEP II has been modified with a more flexible and dispatchable operating profile including faster ramping rates, larger dispatchable load following range with lower emissions, quicker cycle times between unit starts and stops, all with more efficient operation over the entire range of operation.

- BEP II has a CAISO approved point of interconnection in the serial queue which has been declared fully deliverable and uses the existing transmission system. It has taken Caithness II several years in working with the CAISO, Edison and other stakeholders to define the point of interconnection which best meets the needs of the electrical grid. Since this process was initiated, Midpoint Station as proposed by BEP II, now re-named the Colorado River Substation (CRS), is the collector hub for over 5000 MW of proposed renewable resources emanating from the Transition Cluster LGIP. The CRS is also now the proposed start of the 500 kV Palo Verde-Devers II transmission line, now the California only CRS-Devers 500 kV transmission line designed to bring new renewable generation into the LA load center.

- BEP II will support deliveries of capacity, energy and ancillary services into the South Coast Basin without further degradation of the LA Basin air shed or need for SCAQMD Priority Reserve banked emission reduction credits (ERC's). The South Coast Air Quality Management District has experienced an extreme shortage of air emission reduction credits ("ERCs") and due to ongoing lawsuits has been unable to allocate the use of ERCs contained within its Priority Reserve bank to power generation facilities located within its air basin. The BEP II, as modified will be one of the few permitted power plants that can deliver the type of power Sothern California needs to the South Coast Region without being affected by the current shortage of ERCs and associated lawsuits.

- The Project has a completed system impact study with a serial queue position enabling the Project to be one of only three projects within the State of California which is one hundred percent (100) deliverable into the CAISO.

1.4 Proposed Additional Capacity

The Project proposes to install Siemens Westinghouse SGT6-5000F Combustion Turbine Generators (CTGs) in place of the Siemens Westinghouse V84.3a 170 MW combustion turbines, which are no longer commercially available. The total output of the facility will be increased by less than 50 MWs. Currently, as shown in Figure 2.0-6F, the Project's total permitted maximum output is 538 MWs[1]with a nominal capacity of 520 MWs. As shown in Figure 1-3 the Project as modified would have a maximum output of 587 MWs[2] and a increased nominal rating of 569 MWs. See Appendix 1.0 for a description of the calculation method for the increased output.

1.5 Consistency of Changes with Certification

Pursuant to Section 1769(a)(1)(D) of the CEC Siting Regulations this petition discusses the proposed modifications and demonstrates consistency with the applicable laws, ordinances, regulations and standards (LORS). Additionally the petition demonstrates that the proposed modifications are based upon new information that does not change or undermines the assumptions, rationale, findings, or other bases of the Final Decision. Section 2 of this petition provides a detailed description of each proposed modification. Section 5 of this petition provides the analysis of the proposed modifications demonstrating that the modifications would comply with all LORS and will not result in significant environmental impacts.

1.6 Proposed Modifications to the Conditions of Certification

Pursuant to the CEC Siting Regulations Section 1769 (a)(1)(A), this Petition addresses the need to modify existing Conditions of Certification to reflect the proposed modifications. All proposed modifications to the Conditions of Certification can be found within their corresponding subject areas, with the exception of air quality. This amendment includes a change in turbine technology coupled with a change in emissions and therefore an amended application has been submitted to the Mojave Desert Air Quality Management District for Modified Authority to Construct. The District evaluation of the new ATC will include modifications to the Air Quality Conditions of Certification, which will need to be incorporated into CEC Staff's analysis. Since the District has just begun its processing of the ATC request, the changes to Conditions of Certification are not yet available.

[1] Measured at 95 degrees F at 40% humidity

[2] Ibid.

SECTION 2

Description of Project Amendment

2.1 Project Description Modifications

This Section describes the proposed modifications to the BEP II Project.

The amended BEP II will include:

- Define new point of interconnection into the proposed Keim Station
- Replacement of the Siemens Westinghouse V84.3a turbines with Siemens SGT6-5000F turbines
- Modification of the combustion turbine and steam turbine enclosure
- Incorporation of an auxiliary boiler to allow fast start technology
- Addition of 1,020 sq. ft. of cooling tower
- Optimization of the General Arrangement

The Project proposes to install Siemens SGT6-5000F Combustion Turbine Generators (CTGs) in place of the Siemens Westinghouse V84.3a combustion turbines which will utilize the Siemens Flex Plant™ 30 rapid start technology. The turbine units will be housed in separate enclosures as opposed to one large enclosure. As part of the updated Project design, one 60 MMBtu/hr auxiliary boiler will be utilized. Additionally, the cooling tower will be increased in size by 1,020 square feet to improve the efficiency and performance of the plant at higher temperatures. There will be no additional consumptive use of water above already permitted levels.

The General Arrangement of the plant will be modified to optimize the location of the facilities with the Siemens SGT6-5000F turbine generators, larger steam turbine generator and their respective enclosures.

- Relocation of the demineralized water storage tank
- Creation of two additional parking lots
- Relocation of the structure for the power control center
- Relocation of the workshop/ storage area
- Slight relocation of the general layout of the facility to the east
- Relocation of the control room building
- Relocation of the raw water storage tank

Shifting the BEP II slightly east within the 76 acre site will allow the proposed transmission route to run north-south on the western portion of the Project site and connect directly into the permitted Keim Station, located just south of the site. Moving the plant slightly east moves the plant further from the airport and helps minimize the transmission footprint. The Project's revised site plan and general arrangement is shown on Figure 1-1.

Other structures such as the control building will be moved from the west side of the power block to the east side. The parking lot associated with the control building will move as well, and additional parking is proposed just north of the revised control room building location. The raw water storage tank was originally permitted and located south of the turbine enclosure and north of the evaporation ponds and will be moved slightly to the northwest placing it on the northeast corner of the wastewater treatment area. The demineralized water storage tank was located west of the raw water storage tank and east of the waste water treatment area. It has now been moved north and is located just south of the steam turbine. The power control center, which will house motor control and regulate the power distribution to the cooling tower will now be located just northeast of the cooling tower. A workshop storage area is also proposed and will be located north of the power control room.

SECTION 3

List of Property Owners

Pursuant to the CEC Siting Regulations Section 1769(a)(1)(H) the petition must list all "property owners potentially affected by the modification." This section lists those property owners within 1000 feet of the project site who may be potentially affected by the proposed Project modifications.

Caithness researched the town hall property records in June of 2009 and found that ownership within 1,000 feet of the Project site has not changed since the original permitting effort. Below is a list of the property owners within 1,000 feet of the Project site and within 500 feet of the Project's linear.

Assessor Parcel Number	Owner	Mailing Address	
824-101-016	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-101-008	USA 824	US Dept Of Interior	Washington DC 21401
824-101-009	USA 824	US Dept Of Interior	Washington DC 21401
824-101-015	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-102-023	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-102-027	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-102-020	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-102-026	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-102-025	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-080-003	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-080-004	County of Riverside	3525 14th St	Riverside, CA 92501
824-080-005	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
821-110-004	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
821-120-028	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
821-120-038	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380
824-101-007	County of Riverside	3133 7th St	Riverside, CA 92501
824-090-028	Sun World Intl. Inc.	P.O. Box 80298	Bakersfield, CA 93380

SECTION 4

Potential Effects on Property Owners

The CEC Siting Regulations Section 1769(a)(1)(I), requires the project owners address any potential effects the proposed amendment may have on nearby property owners, the public, and parties to the proceeding.

As demonstrated in Section 5, the proposed Project modifications will not result in impacts different than analyzed in the original Decision and will be less than significant. Since the Project was originally licensed, no new property owners have moved within 1,000 feet of the Project site. Therefore the proposed modifications will not result in new or different effects to new or existing property owners.

SECTION 5

Environmental Analysis of the Project Changes

5.1 Introduction

5.1.1 Regulatory Requirements

Pursuant to Section 1769(a)(1)(E) of the CEC Siting Regulations this section addresses the potential for significant environmental impacts resulting from the proposed Project modifications and discusses the need for additional mitigation measures beyond those contained in the Final Decision. Additionally, pursuant to Section 1769(a)(1)(F) of the Siting Regulations this petition discusses how the Project after modification will continue to comply with applicable LORS.

5.2 Air Quality

5.2.1 Introduction

This section presents the methodology and results of an analysis performed to assess potential impacts of airborne emissions from the construction and routine operation of the Blythe Energy Project II (BEP II or Project) modification. Section 5.2.1 presents the introduction, applicant information, and the basic Mojave Desert Air Quality Management District (MDAQMD) rules applicable to the Project. Section 5.2.2 presents the Project description, both current and proposed. Section 5.2.3 presents data on the emissions of criteria and air toxic pollutants from the Project. Section 5.2.4 discusses the Best Available Control Technology (BACT) evaluation for the Project. Section 5.2.5 presents the air quality impact analysis for the Project. Section 5.2.6 presents applicable laws, ordinances, regulations, and standards (LORS). Section 5.2.6 presents agency contacts, and Section 5.2.6 presents permit requirements and schedules. Section 5.2.7 contains references cited or consulted in preparing this section.

Caithness Blythe II, LLC, the Applicant, is proposing modify the BEP II project which will increase the generation of the project from 520 MW up to 569 MW (nominal rated). The modification will replace the previously permitted turbines with the updated Siemens SGT6-5000F Combustion Turbine Generators which will utilize the Siemens Flex Plant^{TM} 30 rapid start technology. As part of the updated Project design, one 60 MMBtu/hr auxiliary boiler will be utilized. Additionally, the two Heat Recovery Steam Generators (HRSGs) will include duct burners and the cooling tower size will be increased by 1,020 square feet.

Although the Project is expected to be dispatched daily with an annual operating level of approximately 6000 hours the Project has been analyzed as a fast start dispatchable plant as well as if it were a base load combined cycle unit with 8,510 hours of operation per year. The Project will consist of the following:

- Two Siemens Westinghouse SGT6-5000F Combustion Turbine Generators, each rated at a nominal 190 MW,
- Two Heat Recovery Steam Generators (HRSGs) with duct burners rated at 221.6 MMBtu/hr,
- An auxiliary boiler to improve start up efficiency,

- A single condensing steam turbine,
- An eleven cell wet mechanical draft cooling tower,
- A diesel fired fire pump engine, and,
- Necessary support systems and processes (see Section 2.0).

The Project design will incorporate the air pollution emission controls designed to meet MDAQMD BACT determinations. These controls will include DLN combustors in the CTG to limit nitrogen oxide (NO_x) production, Selective Catalytic Reduction (SCR) with anhydrous ammonia for additional NO_x reduction in the HRSG, an oxidation catalyst to control carbon monoxide (CO) and volatile organic compounds (VOC) emissions. Fuels to be used will be pipeline specification natural gas in the turbines/HRSGs and auxiliary boiler, and California low sulfur diesel fuel in the fire pump engine**.** Low NO_x burners will be incorporated into the HRSGs and auxiliary boiler. The cooling tower will be equipped with high efficiency drift eliminators.

Based upon the new Project design, the Project will result in a net decrease in emissions for NOx, SO_2, and CO. Emissions of VOC and PM10/2.5 are expected to slightly increase.

5.2.1.1 Regulatory Items Affecting New Source

Although a regulatory compliance analysis (LORS) is presented in Section 5.2.6, there are several MDAQMD regulations that directly affect the permitting and review process, such as the Determination of Compliance for the modification as follows:

- New Source Review (NSR) Regulation XIII Rule 1303 requires that Best Available Control Technology (BACT) be applied to all proposed new or modified sources not exempted from the permitting requirements which have the potential to emit any nonattainment pollutant in excess of 25 lbs per day or 25 tons per year.
- Per Regulation XIII Rule 1303, provide all required emissions mitigations prior to the commencement of construction of the source.
- Provide an impact analysis per Regulation XIII Rule 1302.
- Per Regulation XIII Rule 1302, demonstrate prior to the issuance of the Authority to Construct (ATC) that all major stationary sources owned or operated by the Applicant, which are subject to emissions limitations, are either in compliance or on a schedule for compliance with all applicable emissions limitations under the Clean Air Act (CAA).
- The MDAQMD does not, at this time, have authority for the PSD permitting process. As such, a PSD permitting application comprised of the following AFC amendment sections and appendices will be submitted separately to EPA Region IX as the PSD application; Section 2.0-Project Description, Section 5.2-Air Quality, Section 5.9-Public Health, and Appendices 5.2A through 5.2I.

5.2.2 Project Description

5.2.2.1 Current Site and Facilities

The BEP II site is located within the City of Blythe, approximately five miles west of the center of the City. The Project site is on an intermediate plateau, about 70 feet in elevation above and west of the Colorado River Valley and the City of Blythe. The topography of the Project site is flat. (See Section 2.0 for site location maps.)

5.2.2.2 Project Equipment Specifications

The facility will consist of the following equipment.

- Two Siemens Westinghouse SGT6-5000F Combustion Turbine Generators, each rated at a nominal 190 MW,
- Two Heat Recovery Steam Generators (HRSGs) with duct burners (221.6 MMBtu/hr),
- A 60 MMBtu/hr auxiliary boiler used to improve start up efficiency,
- A single condensing steam turbine,
- An 11 cell wet mechanical draft cooling tower,
- A diesel fired fire pump engine, and,
- Necessary support systems and processes (see Section 2.0).

All power from the facility will be sold to the California power grid under the control of the California Independent System Operator (CAISO).

The turbine/HRSG equipment output specifications are summarized in Table 5.2-1 as follows:

Table 5.2-1
Combustion Equipment Output Specifications

Parameter	Maximum	Nominal
Facility Output, MW	587	569

Equipment specifications are summarized as follows:

Combustion Turbines (2)

Manufacturer: Siemens-Westinghouse

Model: SGT6-5000F

Fuel: Natural gas

Heat Input: 2019.6 MMBtu/hr at 60^{o}F (Case 3 ISO)

Fuel consumption: up to ~96,608 lbs per hour

Exhaust flow: <=4,296,073 lbs/hr

Exhaust temperature: <=300 degrees Fahrenheit (°F) at the HRSG stack top exit

Heat Recovery Steam Generators (2)

Manufacturer: TBD

Model: Nooter Erikson, Vogt, NEM or equivalent

Fuel: Natural gas

Duct Burner Heat Input : up to 221.6 MMBtu/hr (HHV)

Duct Burner Manufacturer: John Zink or equivalent

Cooling Tower (1)

Manufacturer: SPX or equivalent

Number of Cells: 11

Number of Fans: 11 (~123,350 actual cubic feet per minute each)

Water circulation rate: 108,000 gallons per minute

Drift rate: 0.0005 percent (0.000005 fraction)

Expected total dissolved solids (TDS): ~5,050 parts per million by weight (ppmw)

Auxiliary Boiler (1)

- Manufacturer: Cleaver Brooks or equivalent
- Fuel: Natural Gas
- Heat input: 60 MMBtu/hr

Fire Pump (1)

- Manufacturer: Clarke model number JW6H-UFAD80 (Tier 3)
- Fuel: Ultra low sulfur diesel
- Horsepower: 300 BHP

The natural gas will meet the Public Utility Commission (PUC) grade specifications. The diesel fuel sulfur will be limited to 15 ppm, and will meet all California low sulfur diesel specifications. Table 5.2-2, presents a fuel use summary for the facility. Fuel use values are based on the maximum heat rating of each system, fuel specifications, and maximum operational scenario. Fuel analysis data for both natural gas and diesel fuel is presented in Appendix 5.2A.

Table 5.2-2
Estimated Fuel Use Summary for the Project

System	Fuel	Per Hour, mmscf	Per Day, mmscf	Per Year, mmscf
Combustion Turbine-1	Natural gas	2.0682	49.634	17,600.38
Combustion Turbine-2	Natural gas	2.0682	49.634	17,600.38
HRSG-Duct Burner-1	Natural gas	0.2112	5.068	464.64
HRSG-Duct Burner-2	Natural gas	0.2112	5.068	464.64
Aux Boiler	Natural gas	0.0572	1.373	143.00
System	**Fuel**	**Per Hour, gals**	**Per Day, gals**	**Per Year, gals**
Diesel Fire Pump	Diesel Fuel	20	20	1,040

Duct burners can operate up to 24 hours per day, 2200 hours per year
Auxiliary boiler expected to operate 24-hours per day, 2500 hours per year
Fire pump will be tested up to 1 hour per day and 1 day per week, or 52 hours per year
HHV of fuel is 1049 BTU/SCF

5.2.2.3 Climate and Meteorology

The Project site in the Blythe, California area, within the eastern portion of Riverside County, experiences the following climate and meteorology patterns.

The Mojave Desert Air Basin (MDAB) is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north. Air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada Mountains in the north by the Tehachapi Pass (3,800 ft elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriel's by the Cajon Pass (4,200 ft). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley).

The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 ft) between the San Bernardino and San Jacinto Mountains.

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate (BWh), with portions classified as dry-very hot desert (BWhh), to indicate at least three months have maximum average temperatures over 100.4° F.

The climatic pattern for the Project region is a typical desert climate within the Mediterranean climate classification. The warmest month for the region is typically July, with the coldest month being December. The month with the highest precipitation is usually February. The eastern Mojave Desert region experiences a large number of days each year with sunshine, generally 345+ days per year. The region also traditionally experiences excellent visibility, i.e., greater than 10 miles or more 95 percent of the time.

Representative climatic data for the Project Area was derived from the Blythe CAA Airport Station (#040927, Period of Record 7-1-1948 to 12-31-2008) located to the west of the Project Site. A summary of data from this site indicates the following:

- Average maximum daily temperature 87.7°F
- Average minimum daily temperature 59.7°F
- Highest mean maximum annual temperature 111.1°F

- Lowest mean minimum annual temperature 32.3°F
- Mean annual precipitation 4.02 inches

Air quality is determined primarily by the type and amount of pollutants emitted into the atmosphere, the nature of the emitting source, the topography of the air basin, and the local meteorological conditions. In the Project Area, inversions and light winds can result in conditions for pollutants to accumulate in the region. Annual and quarterly wind roses for the Blythe Airport station for the period 2002-2006 are presented in Appendix 5.2B. The wind pattern in the Project area is primarily from the south (southeast through southwest), with a secondary component from the north-northwest. Calm winds occur approximately 16.43% of the time on an annual average basis.

5.2.3 Emissions Evaluation

5.2.3.1 Current Facility Emissions and Permit Limitations

The 76 acre site is currently vacant, and consists of open desert lands. There are no emitting activities on the proposed site (except for naturally occurring emissions), and there are no facilities on the current site that are permitted by the MDAQMD. The BEP I project, owned and operated by Florida Power and Light Energy, LLC is operational and is located adjacent to and northeast of the proposed BEP II site. Caithness Energy, LLC has no ownership interest in BEP I. Therefore, the BEP II proposed amendment is not considered a modification to the BEP I project.

5.2.3.2 Facility Emissions

Installation and operation of the Project will result in a change in the emissions signature for the site and will be considered a major source under the MDAQMD rules. The Project will trigger the major new source thresholds for Prevention of Significant Deterioration. Criteria pollutant emissions from the new combustion turbines/HRSGs, fire pump system, and cooling tower cells are delineated in the following sections, while emissions of hazardous air pollutants are delineated in Section 5.16. Support data for both the criteria and hazardous air pollutant emission calculations are provided in Appendix 5.2A.

The emissions calculations presented in the application represent the highest potential emissions based on the proposed operational scenarios.

5.2.3.3 Normal Operations

Operation of the proposed process and equipment systems will result in emissions to the atmosphere of both criteria and toxic air pollutants. Criteria pollutant emissions will consist primarily of NO_x, CO, VOCs, sulfur oxides (SO_x), total suspended particulates (TSP), PM10, and PM2.5. Air toxic pollutants will consist of a combination of toxic gases and toxic PM species. Table 5.2-3, lists the pollutants that may potentially be emitted from the Project.

Table 5.2-3
Criteria and Toxic Pollutants Potentially Emitted from the Project

Criteria Pollutants	Toxic Pollutants (cont'd)
NO_x	Hexane (n-Hexane)
CO	Naphthalene Propylene
VOCs	Propylene Oxide
SO_x	Toluene
TSP	Xylene
PM10/2.5	Arsenic
Lead	Aluminum
	Cadmium
Toxic Pollutants	Chromium VI
Ammonia	Copper
PAHs	Iron
Acetaldehyde	Mercury
Acrolein	Manganese
Benzene	Nickel
1-3 Butadiene	Silver
Ethylbenzene	Zinc
Formaldehyde	

5.2.3.4 Criteria Pollutant Emissions

Tables 5.2-4, 5.2-5, 5.2-6, and 5.2-7 present data on the criteria pollutant emissions expected from the facility equipment and systems under normal operating scenarios. The maximum hourly emissions are based on either "cold day" operations or are based on cold start maximum hourly emission rate. A cold start is defined as a three hour event with the turbine in BACT compliance at the end of hour three (3). A warm and hot start is defined as a 30 minute event. The worst case day is defined as follows:

- 3 hours in cold start mode
- 1 hour of base load operations w/o duct firing
- 17.5 hours of base load operations w/duct firing
- 0.5 hours in warm start mode
- 2 hours in shutdown mode

The annual emissions profile assumes that the plant will operate 8,510 hours per year, which is based on 5,820 hours per year of turbine operation without duct firing, 2,200 hours per year with duct firing, 10 cold starts, 300 warm starts, and 310 shutdowns (490 hours in startup/shutdown mode). Because the facility will utilize the Siemens Flex Start design, the cold starts will not exceed 3 hours with the warm/hot starts lasting 30 minutes. Associated with the Flex Start design will be an auxiliary boiler which will operate approximately 2,500 hours per year.

Table 5.2-4
Combustion Turbine/HRSG Emissions for the Project
(Steady State Operation-Per Turbine/HRSG)

Pollutant	Emission Factor and Units	Max Hour Emissions without Duct Firing (lbs)	Max Hour Emissions with Duct Firing (lbs)	Max Daily Emissions (lbs)*
NO_x	2.0 ppmvd	16.0	18.0	432.0
CO	3.0 ppmvd	15.0	16.0	384.0
VOC	1 ppmvd (unfired) 2 ppmvd (w/duct firing)	2.9	6.3	151.2
SOx[1]	0.75 gr S/100scf	3.2	3.6	86.4
SOx[2]	0.2 gr S/100scf	1.52	1.52	-
PM10/2.5	<=0.00661 lbs/MMBtu	6.0	7.5	180.0
NH_3	10.0 ppmvd[3]	32.07	32.07	769.68

* Assumes 24-hours of full load with duct firing (no startup/shutdown)
[1] short term fuel sulfur limit
[2] long term fuel sulfur limit
[3] Once the slip exceeds 5 ppm, the catalyst will be scheduled for replacement

Table 5.2-5
Combustion Turbine Startup and Shutdown Emissions

Parameter/Mode	Cold Startup	Warm/Hot Startup	Shutdown
NO_x, lbs/event	120.9	81.9	29.7
CO, lbs/event	140.4	58.5	25.3
VOC, lbs/event	50.7	46.8	20.9
PM10/2.5, lbs/event	22.5	7.5	7.5
SO_x, lbs/event	10.8	1.8	1.8
Event Time, minutes (hours)	180 minutes (3 hours)	30 minutes (0.5 hour)	30 minutes (0.5 hours)
Number of Events/Year	10	300	310

Table 5.2-6
Combustion Turbine/HRSG Emissions for the Project (Including Base Load, Cold and Warm/Hot Startup and Shutdown, Whichever is Greater)

Pollutant	Emission Factor	Max Hour Emissions (pounds)	Max Daily Emissions (pounds)	Max Annual Emissions (tons)
NO_x	N/A	83.2	593.2	83.8
CO	N/A	137.8	544.5	74.6
VOCs	N/A	46.8	252.5	25.0
SOx	N/A	3.6	84.6	5.8
PM10/2.5	N/A	7.5	173.3	27.4

See Appendix 5.2A, for detailed emissions and operational data.

Table 5.2-7
Cooling Tower, Fire Pump Engine, and Aux Boiler Emissions for the Project

Cooling Tower				
Pollutant	**TDS, mg/L***	**Max Hour Emissions (pounds)**	**Max Daily Emissions (pounds)**	**Max Annual Emissions (tons)**
PM10/2.5	5050	1.37	32.8	5.98
Fire Pump Engine				
Pollutant	**g/hp-hr**	**Max Hour Emissions (pounds)**	**Max Daily Emissions (pounds)**	**Max Annual Emissions (tons)**
PM10/2.5	0.103	0.07	0.07	0.0018
NOx	2.61	1.74	1.74	0.045
SOx	15 ppmw	0.004	0.004	0.0001
CO	0.84	0.556	0.556	0.015
VOC	0.104	0.212	0.212	0.006
Auxiliary Boiler				
Pollutant	**Emissions Factor**	**Max Hour Emissions (pounds)**	**Max Daily Emissions (pounds)**	**Max Annual Emissions (tons)**
PM10/2.5	0.0045 lbs/MMBtu	0.27	6.5	0.338
NOx	9.0 ppmvd	0.55	13.2	0.688
SOx	0.00233 lbs/MMBtu	0.14	3.36	0.175
CO	50.0 ppmvd	1.85	44.4	2.31
VOC	5.0 ppmvd	0.11	2.6	0.138

Notes:
*The TDS presented in the Air Section is the maximum expected in the cooling tower circulating water.
Drift fraction = 0.0005 percent
Aux boiler emissions based on 24-hours per day during turbine off days

Table 5.2-8 presents a summary of the total proposed facility operational emissions.

Table 5.2-8
Summary of Facility Emissions for the Project

Pollutant	pounds/hour	pounds/day	tons/year
NO_x	141.19	1,186.40	168.44
CO	158.47	1,089.22	151.62
VOCs	57.32	505.11	51.90
SO_x	7.34	169.2	11.84
TSP/PM10/2.5	15.26	346.62	61.0
NH_3	64.4	1,545.60	272.91

Table 5.2-8
Summary of Facility Emissions for the Project

Pollutant	pounds/hour	pounds/day	tons/year

Including startup and shutdown emissions, fire pump engine, aux boiler, and cooling tower PM10.

Table 5.2-9 compares the proposed potential to emit for the new Project to the inventoried actual emissions for the current site activities.

Table 5.2-9
Proposed Project Potential to Emit (Tons/Year)

Pollutant	Current Permitted Site Emissions	Project Increase, PTE*	Total PTE
NO_x	202.0	(-33.56)	168.44
CO	685.0	(-533.38)	151.62
VOCs	25.0	26.90	51.90
SO_x	23.0	(-11.16)	11.84
TSP/PM10	61.0	0	61.0
PM2.5	61.0	0	61.0

Notes:
*Calculated emissions based on increases and decreases.

Greenhouse Gas Emissions

Operational emissions of greenhouse gases (GHG) will be primarily from the combustion of fuels in the turbine/HRSG and aux boiler. Appendix 5.2A contains the support data for the GHG emissions evaluation. Estimated carbon dioxide (CO_{2e}) emissions for the new portion of the Project are as follows:

CO_{2e} = 1,870,000 – 1,930,000 metric tons/year

NSR/PSD Facility Status

Currently, the MDAQMD air basin is Federal and State attainment/unclassified for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM2.5, and CO. The area is in attainment for the federal PM10 standards as well as the 8-hour ozone (O_3) standard. It is non-attainment for State PM10 and O_3 standards. Based on the values in Tables 5.2-8, and 5.2-9, the new facility will be a major new stationary source per MDAQMD New Source Review (NSR) Regulation XIII. Detailed emissions data on the facility are presented in Appendix 5.2A. Based upon the annual emissions presented in Table 5.2-8, the facility will trigger the Prevention of Significant Deterioration (PSD) program requirements for the following pollutants: NO_x, VOC, TSP, PM10/2.5, and CO. Therefore a PSD increment analysis protocol, and a Class I impact assessment will be required (see Appendix 5.2C). The closest Class I area is Joshua Tree National Park, located approximately 95 kilometers northwest of the Project site. The facility will be required to obtain offsets pursuant to the MDAQMD regulations. The proposed criteria pollutant mitigation strategy for the Project was presented in the original Blythe II AFC and was adopted by the MDAQMD as well as the CEC. This Project will use the same ERC/mitigation program (see Appendix 5.2G).

5.2.3.5 Hazardous Air Pollutants

See Section 5.16, Public Health, for a detailed discussion and quantification of HAP emissions from the Project and the results of the health risk assessment. See Appendix 5.2D, for the public health analysis health risk assessment (HRA) support materials. Section 5.16, Public Health, also discusses the need for Risk Management Plans pursuant to 40 CFR 68 and the California Accidental Release Program regulations.

5.2.3.6 Construction

Construction-related emissions are based on the following:

- The Applicant owns the current Project Site. Construction of the new combustion turbine/HRSG facility is expected to result in the temporary disturbance of approximately 76 acres. A 25 acre Construction Laydown and Parking Area will also be used for materials storage and craft labor parking.
- Moderate site preparation will be required prior to construction of the turbine/HRSG, and cooling tower cells, building foundations, support structures, etc.
- Construction activity is expected to last for a total of 16 months (not including startup and commissioning).

Construction-related issues and emissions at the Project Site are consistent with issues and emissions encountered at any construction site. Compliance with the provisions of the following permits will generally result in minimal site emissions: (1) grading permit, (2) Stormwater Pollution Prevention Plan (SWPPP) requirements (construction site provisions), (3) use permit, (4) building permits, and (5) the MDAQMD Permit to Construct (PTC), which will require compliance with the provisions of all applicable fugitive dust rules that pertain to the site construction phase. An analysis of construction site emissions is presented in Appendix 5.2E. This analysis incorporates the following mitigation measures or control strategies:

- The Applicant will have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.
- All unpaved roads and disturbed areas in the Project and Construction Laydown and Parking Area will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a minimum schedule of every two hours during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.
- On-site vehicle speeds will be limited to 5 mph on unpaved areas within the Project construction site.
- The construction site entrance will be posted with visible speed limit signs.
- All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.
- Gravel ramps will be provided at the tire cleaning area.

- All unpaved exits from the construction site will be graveled or treated to reduce track-out to public roadways.
- All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been provided.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction SWPPP to prevent runoff to roadways.
- All paved roads within the construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.
- The first 500 feet of any public roadway exiting the construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air-filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of 2 feet will be required on all bulk materials transport.
- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed.
- To mitigate exhaust emissions from construction equipment, the Applicant is proposing the following:
    - The Applicant will work with the general contractor to utilize to the extent feasible, Environmental Protection Agency (EPA)/Air Resources Board Tier II/Tier III engine compliant equipment for equipment over 100 horsepower.
    - Ensure periodic maintenance and inspections per the manufacturers specifications.
    - Reduce idling time through equipment and construction scheduling.
    - Use California low sulfur diesel fuels (<=15 ppmw Sulfur).

Based on the temporary nature and the time frame for construction, the Applicant believes that these measures will reduce construction emissions and impacts to levels that are less than significant. Use of these mitigation measures and control strategies will ensure that the site does not cause any violations of existing air quality standards as a result of construction-related activities. Appendix 5.2E, presents the evaluation of construction related emissions as well as data on the construction related ambient air quality impacts.

Table 5.2-10 presents data on the regional air quality significance thresholds currently being implemented by the MDAQMD. The specific construction and operational thresholds were derived from the MDAQMD California Environmental Quality Act (CEQA) guidance.

Table 5.2-10
MDAQMD CEQA Significance Thresholds

Pollutant	Annual Thresholds	Daily Thresholds
NO_x	25 tons/yr	137 lbs/day
CO	100 tons/yr	548 lbs/day

VOCs	25 tons/yr	137 lbs/day
SO_x	25 tons/yr	137 lbs/day
PM10	15 tons/yr	82 lbs/day
PM2.5	15 tons/yr	82 lbs/day

Source: MDAQMD CEQA Guidelines, 2/09.

Construction emissions, from all onsite and offsite activities are expected to exceed the MDAQMD CEQA thresholds for NOx only on a daily and annual basis.

Operational emissions from all onsite activities are expected to exceed the daily and annual threshold values for NOx, CO, VOC, and $PM_{10/2.5}$, while SOx emissions will exceed only the daily threshold value. These emissions will be mitigated to a level of "less than significant" pursuant to the MDAQMD rules and the CEC conditions of certification.

In addition to the local significance criteria, the following general conformity analysis thresholds are as follows in accordance with Code of Federal Regulations (40 CFR Parts 6 and 51), and MDAQMD Rule 2002:

- NO_x – 50 tons per year
- VOCs – 50 tons per year
- CO – 100 tons per year
- SO_x – 100 tons per year
- PM10 – 100 tons per year
- PM2.5 – 100 tons per year

Emissions from the construction phase are not estimated to exceed the conformity levels noted above. Emissions from the operational phase are subject to the MDAQMD NSR and EPA PSD permitting provisions, and as such, are exempt from a conformity determination or analysis.

5.2.4 Best Available Control Technology Evaluation

5.2.4.1 Current Facility Control Technologies

Table 5.2-11 summarizes the control technologies currently proposed for use on combustion turbines/HRSGs.

Table 5.2-11
BACT Values for Combustion Turbines/HRSGs

Pollutant	BACT Emissions Range[1]	Proposed BACT
NO_x	2.0 – 2.5 ppmvd	2.0 ppmvd
CO	3.0 – 6.0 ppmvd	3.0 ppmvd
VOCs	1 - 2.0 ppmvd	1 ppmvd
SO_x Natural Gas	<=0.75 gr S/100 scf (short term) <=0.20 gr S/100 scf (long term)	0.50 gr S/100 scf (short term) 0.20 gr S/100 scf (long term)

Table 5.2-11
BACT Values for Combustion Turbines/HRSGs

Pollutant	BACT Emissions Range[1]	Proposed BACT
PM10/PM2.5	0.003 – 0.009 lbs/MMBtu	<= 0.0066 lbs/MMBtu

Source: CARB, MDAQMD, SDAPCD, SJVUAPCD, and BAAQMD BACT Guidelines.
[1] Data derived from CARB, MDAQMD, SDAPCD, SJVUAPCD, and BAAQMD.

5.2.4.2 Proposed Best Available Control Technology

Table 5.2-12 presents the proposed BACT for the new combustion turbines/HRSGs. The new combustion turbine/HRSGs will utilize ammonia as the primary reactant in the SCR system.

Table 5.2-12
Proposed BACT for the Combustion Turbine/HRSG

Pollutant	Proposed BACT Emissions Level	Proposed BACT System(s)	Meets Current BACT Requirements
NO_x	2.0 ppmvd	DLN (turbine) and low NOx burners (HRSG) with SCR and Flex-Start	Yes
CO	3.0 ppmvd	Oxidation Catalyst for both turbine and HRSG, and Flex-Start	Yes
VOCs	2.0 ppmvd	Oxidation Catalyst for both turbine and HRSG,a nd Flex-Start	Yes
SO_x	0.50 gr S/100 scf (short term) 0.20 gr S/100 scf (long term)	Natural Gas	Yes
PM10/ PM2.5	<= 8 lbs/hr	Gaseous Fuels	Yes
NH_3	5.0 ppmvd	Reagent for SCR System	Yes

Source: CARB, MDAQMD, SDAPCD, SJVUAPCD, and BAAQMD BACT Guidelines.

Cooling Tower BACT

MDAQMD Rule 219 does not exempt the cooling tower from the permit process and is therefore subject to the BACT requirements of Regulation 13. BACT for the new cooling tower cells will be high efficiency drift eliminators rated at 0.000005 drift fraction (0.0005 percent).

Auxiliary Boiler BACT

The proposed auxiliary boiler is rated at 60 MMBtu/hr (HHV), and will be used for a maximum of 24 hours per day (during plant shutdowns), and 1,500 hours per year. The auxiliary boiler will be fired exclusively on natural gas, and will be equipped with low NOx burners and employ good combustion practices. Exhaust concentrations of NOx and CO will be limited to 9 and 50 ppmvd at 3% O2 respectively. VOC emissions will be controlled to a level of 5 ppmvd, while PM10 emissions are estimated to be 0.0045 lbs/MMBtu (HHV). These emissions levels meet the MDAQMD BACT limits for limited use small boilers firing clean fuels such as natural gas.

Fire Pump Engine BACT

The fire pump engine will be fired exclusively on California certified ultra low sulfur diesel fuel, and will meet all the emissions standards as specified in; (1) CARB ATCM, (2) EPA/CARB Tier III, and (3) NSPS Subpart IIII. Due to the low use rate of the engine for testing and maintenance, as well as its intended use for emergency fire protection, the engine meets the current BACT requirements of the MDAQMD.

Summary

Based on the above data, the proposed emissions levels for the new combustion turbines/HRSGs, cooling tower, and fire pump engine satisfy the BACT requirements of the MDAQMD under Regulation 13. The proposed emission levels for the cooling tower cells are expected to meet the BACT requirements of the CEC.

5.2.5 Air Quality Impact Analysis

This section describes the results, in both magnitude and spatial extent of ground level concentrations resulting from emissions from the Project. The maximum-modeled concentrations were added to the maximum background concentrations to calculate a total impact.

Potential air quality impacts were evaluated based on air quality dispersion modeling, as described herein and presented in a modeling protocol previously submitted and approved by the MDAQMD, EPA Region 9, and the CEC. A copy of the modeling protocol is included in Appendix 5.2B. All input and output modeling files are contained on a CD-ROM disk provided to the MDAQMD and CEC Staff under separate cover. All modeling analyses were performed using the techniques and methods as discussed with the MDAQMD, EPA and CEC through development of a modeling protocol.

5.2.5.1 Dispersion Modeling

For modeling the potential impact of the Project in terrain that is both below and above stack top (defined as simple terrain when the terrain is below stack top and complex terrain when it is above stack top) the United States Environmental Protection Agency (USEPA) guideline model AERMOD (version 07026) was used as well as the latest versions of the AERMOD preprocessors to determine surface characteristics (AERSURFACE version 08009), to process meteorological data (AERMET version 06341), and to determine receptor slope factors (AERMAP version 09040). The purpose of the AERMOD modeling analysis was to evaluate compliance with the California state and Federal air quality standards.

The surface meteorological data processed for AERMOD were five recent years (2002-2006) of Automated Surface Observing Systems (ASOS) data from Blythe Airport. Due to its proximity, the Blythe Airport data are considered to be representative of dispersion conditions for the Project site. These five years of surface data were selected because they are the most recent five years available at the time of the data processing that also met the minimum 90% data recovery rate requirement (for each calendar year) after combining with concurrent upper-air data. ASOS surface data for Blythe Airport were ordered and downloaded from the National Climatic Data Center (NCDC) website in CDO-3505 format, converted to SAMSON format using the Russ Lee freeware program NCDC-CNV (which also interpolates missing data in accordance with USEPA procedures [Lee and Atkinson 1992]), and then combined with upper-air data from Tucson, Arizona (upper air sounding data were downloaded from the NOAA/RAOB website for the same time period and processed by AERMET in accordance the latest USEPA guidance cited above).

The data was pre-processed for direct use by the AERMET (version 06341) preprocessor model. Upper air data for the same time period was taken from the closest representative National Weather Service radiosonde station that, when combined with the proposed surface dataset, met the USEPA required data recovery rates of 90 percent. This radiosonde station is the Tucson, Arizona radiosonde station. As part of the AERMET input requirements, Albedo, Bowen Ratio, and Surface Roughness must be classified by season. These values were determined with the AERSURFACE using the latest USEPA guidance (i.e., *AERMOD Implementation Guide*, revised January 9, 2008, and the *AERSURFACE User's Guide* [EPA-454/B-08-001]) as described later.

AERMOD input data options are listed below. Use of these options follows the USEPA's modeling guidance. Default model option[3] for temperature gradients, wind profile exponents, and calm processing, which includes final plume rise, stack-tip downwash, and elevated receptor (complex terrain) heights option. All sources were modeled as rural sources.

5.2.5.2 Model Selection

Several other USEPA models and programs were used to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations. The models used were Building Profile Input Program for PRIME (BPIP-PRIME, current version 04274), the HARP On-Ramp preprocessor, and the SCREEN3 (version 96043) dispersion model for fumigation impacts. These models, along with options for their use and how they are used, are discussed below.

- Comparison of impacts to significant impact levels (SILs).
- Compliance with state and federal ambient air quality standards (AAQS).
- Calculation of health risk effects through the use of HARP and the HARP On-Ramp program.

5.2.5.3 Good Engineering Practice Stack Height Analysis

Formula Good Engineering Practice (GEP) stack height was calculated at 212.5 feet (64.77 meters) due to the HRSG structures for both turbine stacks, the auxiliary boiler stack, and ten (10) of the eleven (11) cooling tower cells. GEP stack heights for the firepump and eleventh cooling tower cell were 197.15 and 107.48 feet (60.09 and 32.76 meters), respectively, due to one of the HRSGs and the cooling tower deck height, respectively. The design stack heights are less than these GEP stack heights, so downwash effects were included in the modeling analysis.

BPIP-PRIME was used to generate the wind-direction-specific building dimensions for input into AERMOD. Figure 5.2B-4 in Appendix 5.2B, shows the structures included in the BPIP-PRIME downwash analysis.

5.2.5.4 Receptor Grid Selection and Coverage

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[3]To reduce run times for the area source modeled for fugitive dust and the large number of point sources modeled for mobile combustion source equipment, the TOXICS keyword was used for modeling construction impacts.

Receptor and source base elevations were determined from the U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data using 30-meter spacing between grid nodes (the finest spacing for all necessary quadrangles). All coordinates were referenced to UTM North American Datum 1927 (NAD27), Zone 11. Except for fenceline receptors, the receptor locations and elevations from the DEM files were placed exactly on the DEM nodes (AERMAP was used to interpolate fenceline receptor elevations and to determine receptor slope factors). Every effort was made to maintain receptor spacing across DEM file boundaries.

Cartesian coordinate receptor grids are used to provide adequate spatial coverage surrounding the Project Area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. The receptor grids used in this analysis are listed below.

- 30-meter resolution from the Project fenceline and extending outwards in all directions at least 500-meters from the turbine stacks and 200-meters from the Project fenceline. This is called the downwash grid. In addition, receptors were placed at approximately 30-meter intervals along the Project fenceline.90-meter resolution that extends outwards from the edge of the downwash grid to two (2) kilometers (km) in all directions from the turbine stacks. This is referred to as the intermediate grid.
- 210-meter resolution that extends outwards from the edge of the intermediate grid to 10 km from the turbine stacks in all directions. This is referred to as the coarse grid.
- 30-meter resolution around any location on the coarse and intermediate grids where a maximum impact is modeled that is above the concentrations on the downwash grid.
- For the HARP On-Ramp program, the minimum receptor spacing was changed to 100 meter resolution in order to maximize the receptor grid size in the sparsely populated desert surroundings.

Concentrations within the facility fenceline will not be calculated. When and if initial maximum impacts occurred in the 90-meter or 210-meter spaced grids, additional 30-meter refined grids were modeled in these areas to determine overall maximum impacts. Receptor grid figures located in Appendix 5.2B, displays the receptors grids used in the modeling assessment. The Project fenceline is also shown in the figures in Appendix 5.2B. Since maximum impacts due to fugitive emissions from construction activities are expected to occur at or near the property boundary, only the 30-meter spaced downwash and fenceline receptor grids were used for modeling construction impacts.

5.2.5.5 Meteorological Data Selection

The use of the five (5) years of NCDC surface meteorological data collected at the Blythe Airport ASOS monitoring location would satisfy the definition of on-site data. USEPA defines the term “on-site data” to mean data that would be representative of atmospheric dispersion conditions at the source and at locations where the source may have a significant impact on air quality. Specifically, the meteorological data requirement originates from the Clean Air Act in Section 165(e)(1), which requires an analysis “of the ambient air quality at the proposed site and in areas which may be affected by emissions from such facility for each pollutant subject to regulation under [the Act] which will be emitted from such facility.” This requirement and USEPA’s guidance on the use of on-site monitoring data are also outlined in the On-Site Meteorological Program Guidance for Regulatory Modeling Applications (USEPA, 1987). The representativeness of meteorological data is dependent upon: (a) the proximity of the meteorological monitoring site to the area under consideration; (b) the complexity of the topography of the area; (c) the exposure of the meteorological sensors; and (d) the period of time during which the data are collected.

First, the meteorological monitoring site and Project location are in close proximity, at approximately the same elevation and with exactly the same topography surrounding each location. Second, the ASOS monitoring site and Project location are located roughly about the same distance and in the same orientation to significant terrain features that might influence wind flow patterns. In addition, there are no nearby (localized) significant terrain features between or surrounding the Project site and/or the meteorological monitoring site that would limit the use of the meteorological data for the proposed Project. Third, as discussed below, the surface characteristics roughness length, Bowen ratio, and albedo are relatively consistent throughout the area and are nearly identical between the Project site and the ASOS location.

Representativeness is defined in the document "Workshop on the Representativeness of Meteorological Observations" (Nappo et. al., 1982) as "the extent to which a set of measurements taken in a space-time domain reflects the actual conditions in the same or different space-time domain taken on a scale appropriate for a specific application." Judgments of representativeness should be made only when sites are climatologically similar, as is the case with the meteorological monitoring site and the Project location. In determining the representativeness of the meteorological data set for use in the dispersion models at the Project site, the consideration of the correlation of terrain features to prevailing meteorological conditions, as discussed earlier, would be nearly identical to both locations since the orientation and aspect of terrain at the Project location correlates well with the prevailing wind fields as measured by and contained in the meteorological dataset. In other words, the same mesoscale and localized geographic and topographic features that influence wind flow patterns at the meteorological monitoring site also influence the wind flow patterns at the Project site.

Surface Characteristics:

Surface characteristics were determined with AERSURFACE using Land Use/Land Cover (LULC) data in accordance with USEPA guidance documents ("*AERMOD Implementation Guide,"* 1/09/08; and "*AERSURFACE User's Guide*," EPA-454/B-08-001, 1/08) as described below. AERSURFACE uses U.S. Geological Survey (USGS) National Land Cover Data 1992 archives (NLCD92) to determine the midday albedo, daytime Bowen ratio, and surface roughness length representative of the surface meteorological station. ***Bowen ratio*** is based on a simple unweighted geometric mean while ***albedo*** is based on a simple unweighted arithmetic mean for the 10x10 km square area centered on the selected location (i.e., no direction or distance dependence for either parameter). ***Surface roughness length*** is based on an inverse distance-weighted geometric mean for upwind distances up to one (1) km from the selected location. The circular surface roughness length area (1-km radius) can be divided into any number of sectors as appropriate (USEPA guidance recommends that no sector be less than 30º in width). For this analysis, only one 360-degree sector was used. A complete discussion of the representativeness of the data used in the modeling analysis is presented in the modeling protocol included in Appendix 5.2B.

Running AERSURFACE at both the ASOS and proposed site locations produced almost identical results for both Bowen ratio and Albedo, based on the 10 kilometer area around each location. Similarly, there were minimal variations in land cover and roughness lengths between the two locations based on a one kilometer radius. Both areas are predominantly rural. Based on the Auer land use classifications, both locations are classified as rural and there is good correlation of the rural characteristic land types between the two locations. Within the one kilometer radius around the Blythe ASOS site, there is a 5.4 percent urban classification, but review of the Google Earth data suggests that much of this is due to the airport being classified as LULC category 23 (transportation). Comparing the LULC data at the Project site to the ASOS monitoring site showed that the same general land use categories exist around the Project site and the ASOS site, with the both locations having over 75 percent associated with agriculture. Thus, the predominant land use in the area is made up of shrubland and agriculture activities.

Comparing the AERSURFACE outputs using one 360-degree sector around each location, shows that the average surface characteristics by season are also very similar. For roughness length, the variations between the two sites are minimal. Roughness lengths are often categorized into classes between 0 (water) and 4 (urban). Open land areas, low vegetation areas, and agriculture are often assigned roughness lengths of 0.01 (class 1) to 0.16 (class 2). Thus, it is noted that there are no changes in classes between both sites and the predominant land use activity in the Project and ASOS locations are associated with agriculture/open area land uses.

Additional meteorological monitoring sites were also investigated for use as surface data for the modeling analysis. Southern California Edison collected data near the southwestern edge of Blythe. However, this data does not contain all the parameters needed for AERMOD. Further, the site is located in an area that is more urban in its surface characteristics. No other surface meteorological data sets were identified in the Project area. Given the immediate location of the ASOS data to the Project site, Blythe Airport data was considered the most representative.

Thus, it is our assessment that the meteorological data collected at the Blythe Airport ASOS site are identical to the dispersion conditions at the Project site and to the regional area. This data was then processed using AERMET (Version 06341) based on one 360-degree sector for roughness lengths.

As part of the AERMET input requirements, Albedo, Bowen Ratio, and Surface Roughness must be classified by month/season. These values were calculated with AERSURFACE for the meteorological data location (33.61822ºN, 114.71581ºW, NAD83 geographic coordinates) based on arid conditions, no snow cover during the winter season, and airport location. Monthly total precipitation data for the Blythe Airport Coop precipitation data (available on the Western Regional Climate Center website) for the years modeled were compared to the 30-year period from 1971-2000 in order to classify each month as dry, average, or wet in accordance with the USEPA guidance documents cited above.

5.2.5.6 Background Air Quality

In 1970, the United States Congress instructed the USEPA to establish standards for air pollutants, which were of nationwide concern. This directive resulted from the concern of the impacts of air pollutants on the health and welfare of the public. The resulting Clean Air Act (CAA) set forth air quality standards to protect the health and welfare of the public. Two levels of standards were promulgated—primary standards and secondary standards. Primary national ambient air quality standards (NAAQS) are “those which, in the judgment of the administrator [of the USEPA], based on air quality criteria and allowing an adequate margin of safety, are requisite to protect the public health (state of general health of community or population).” The secondary NAAQS are “those which in the judgment of the administrator [of the USEPA], based on air quality criteria, are requisite to protect the public welfare and ecosystems associated with the presence of air pollutants in the ambient air.” To date, NAAQS have been established for seven criteria pollutants as follows: SO_2, CO, ozone, NO_2, PM10, PM2.5, and lead.

The criteria pollutants are those that have been demonstrated historically to be widespread and have a potential to cause adverse health effects. USEPA developed comprehensive documents detailing the basis of, or criteria for, the standards that limit the ambient concentrations of these pollutants. The State of California has also established AAQS that further limit the allowable concentrations of certain criteria pollutants. Review of the established air quality standards is undertaken by both USEPA and the State of California on a periodic basis. As a result of the periodic reviews, the standards have been updated and amended over the years following adoption.

Each federal or state AAQS is comprised of two basic elements: (1) a numerical limit expressed as an allowable concentration, and (2) an averaging time which specifies the period over which the concentration value is to be measured. Table 5.2-13 presents the current federal and state AAQS.

Table 5.2-13
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 μg/m^3)	-
	8-hour	0.070 ppm (137 μg/m^3)	0.075 ppm (157 μg/m^3) (3-year average of annual 4th-highest daily maximum)
Carbon Monoxide	8-hour	9.0 ppm (10,000 μg/m^3)	9 ppm (10,000 μg/m^3)
	1-hour	20 ppm (23,000 μg/m^3)	35 ppm (40,000 μg/m^3)
Nitrogen dioxide	Annual Average	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)
	1-hour	0.18 ppm (339 μg/m^3)	-
Sulfur dioxide	Annual Average	-	0.030 ppm (80 μg/m^3)
	24-hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)
	3-hour	-	0.5 ppm (1,300 μg/m^3)
	1-hour	0.25 ppm (655 μg/m^3)	-
Respirable particulate matter (10 micron)	24-hour	50 μg/m^3	150 μg/m^3
	Annual Arithmetic Mean	20 μg/m^3	-
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 μg/m^3	15.0 μg/m^3 (3-year average)
	24-hour	-	35 μg/m^3 (3-year average of 98th percentiles)
Sulfates	24-hour	25 μg/m^3	-
Lead	30-day	1.5 μg/m^3	-
	3 Month Rolling Average	-	0.15 μg/m^3

Source: CARB website, table updated 11/17/08
Notes:
μg/m^3 = micrograms per cubic meter
ppm = parts per million

Table 5.2-13
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration

Brief descriptions of health effects for the main criteria pollutants are as follows.

Ozone—Ozone is a reactive pollutant that is not emitted directly into the atmosphere, but rather is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving precursor organic compounds (POC) and NO_x. POC and NO_x are therefore known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of POC and NO_x under the influence of wind and sunlight. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide—CO is a non-reactive pollutant that is a product of incomplete combustion. Ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion conditions, CO concentrations may be distributed more uniformly over an area out to some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses.

Particulate Matter (PM10 and PM2.5)—PM10 consists of particulate matter that is 10 microns or less in diameter (a micron is 1 millionth of a meter), and fine particulate matter, PM2.5, consists of particulate matter 2.5 microns or less in diameter. Both PM10 and PM2.5 represent fractions of particulate matter, which can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Some of these operations, such as demolition and construction activities, contribute to increases in local PM10 concentrations, while others, such as vehicular traffic, affect regional PM10 concentrations.

Several studies that the USEPA relied on for its staff report have shown an association between exposure to particulate matter, both PM10 and PM2.5, and respiratory ailments or cardiovascular disease. Other studies have related particulate matter to increases in asthma attacks. In general, these studies have shown that short-term and long-term exposure to particulate matter can cause acute and chronic health effects. PM2.5, which can penetrate deep into the lungs, causes more serious respiratory ailments.

Nitrogen Dioxide and Sulfur Dioxide—NO_2 and SO_2 are two gaseous compounds within a larger group of compounds, NO_x and SO_x, respectively, which are products of the combustion of fuel. NO_x and SO_x emission sources can elevate local NO_2 and SO_2 concentrations, and both are regional precursor compounds to particulate matter. As described above, NO_x is also an ozone precursor compound and can affect regional visibility. (NO_2 is the “whiskey browncolored” gas readily visible during periods of heavy air pollution.) Elevated concentrations of these compounds are associated with increased risk of acute and chronic respiratory disease.

SO_2 and NO_2 emissions can be oxidized in the atmosphere to eventually form sulfates and nitrates, which contribute to acid rain. Large power facilities with high emissions of these substances from the use of coal or oil are subject to emissions reductions under the Phase I Acid Rain Program of Title IV of the 1990 CAA Amendments. Power facilities, with individual equipment capacity of 25 MW or greater that use natural gas or other fuels with low sulfur content, are subject to the Phase II Program of Title IV. The Phase II program requires facilities to install Continuous Emission Monitoring Systems (CEMS) in accordance with 40 CFR Part 75 and report annual emissions of SO_x and NO_x. Currently, the acid rain program provisions do not apply to the existing facility but will apply to the Project. The Project will participate in the Acid Rain allowance program through the purchase of SO_2 allowances. Sufficient quantities of SO_2 allowances are available for use on this Project.

Lead—Gasoline-powered automobile engines used to be the major source of airborne lead in urban areas. Excessive exposure to lead concentrations can result in gastrointestinal disturbances, anemia, and kidney disease, and, in severe cases, neuromuscular and neurological dysfunction. The use of lead additives in motor vehicle fuel has been eliminated in California and lead concentrations have declined substantially as a result.

The nearest representative criteria pollutant air quality monitoring sites to the Project Site are the sites located in the Mojave Desert Air Basin that collected air quality data for the last three calendar years. These would be the stations located at Blythe, Lucerne Valley Middle School, and Victorville. Ambient monitoring data for these sites for the most recent three-year period are summarized in Table 5.2-15, Air Quality Monitoring Data. Data from these sites are a reasonable representation of background air quality for the Project Site and impact area.

Table 5.2-14 presents the MDAQMD attainment status.

Table 5.2-14

MDAQMD Attainment Status

Pollutant	Averaging Time	Federal Status	State Status
Ozone	1-hr	-	Nonattainment
Ozone	8-hr	Unclassified/Attainment	Nonattainment
CO	All	Unclassified/Attainment	Unclassified
NO_2	All	Unclassified/Attainment	Attainment
SO_2	All	Unclassified	Attainment
PM10	All	Unclassified	Nonattainment
PM2.5	All	Unclassified	Unclassified/Attainment

Source: CARB website status maps, 5/2009. MDAQMD CEQA Guidelines, 2/09.

Table 5.2-15 presents a summary of the air quality monitoring data representative of the Project region.

Table 5.2-15

Air Quality Monitoring Data

Pollutant	Site	Avg. Time	2006	2007	2008
Ozone, ppm	Blythe	1-hr	.078	.092	.074
		8-hr	.059	.075	.067
PM10, μg/m^3	Lucerne Valley Middle School	24-hr	56	88*	67
		Annual	23.0	31.0	20.7
PM2.5, μg/m^3	Victorville	24-hr	22	28	17
		Annual	10.4	9.7	-
CO, ppm	Victorville	1-hr	2.2	2.1	1.4
		8-hr	1.56	1.61	1.04
NO_2, ppm	Victorville	1-hr	.079	.071	.074
		Annual	.020	.018	.016
SO_2, ppm	Victorville	1-hr	.018	.009	.006
		3-hr	.012	.006	.005
		24-hr	.005	.005	.002
		Annual	.001	.001	.001

CARB ADAM website, and USEPA AirData Reports website, 2009.
*Excludes April 12, 2007 concentration that MDAQMD has formally requested USEPA to exclude as an exceptional event.

Table 5.2-16 shows the background air quality values based upon the data presented in Table 5.2-15. The background values represent the highest values reported for any site during any single year of the most recent three-year period. Appendix 5.2B, presents the background air quality data summaries.

Table 5.2-16

Background Air Quality Data

Pollutant and Averaging Time	Background Value, μg/m^3
Ozone – 1-hr	184
Ozone – 8-hr	147
PM10 – 24-hr	88
PM10 – Annual	31.0
PM2.5 – 24-hr	28

PM2.5 – Annual	10.4
CO – 1-hr	2530
CO – 8-hr	1789
NO_2 – 1-hr	149
NO_2 – Annual	38.0
SO_2 – 1-hr	47.2
SO_2 – 3-hr	31.2
SO_2 – 24-hr	13.1
SO_2 – Annual	2.7

High values for all years, all applicable stations.

Impacts on Class II Areas

Screening Analysis

Operational characteristics of the combustion turbine, such as emission rate, exit velocity, and exit temperature vary by operating load and ambient temperature. The Project will be operated over a variety of these temperature ranges. Thus, the air quality analysis considered the range of operational characteristics over a variety of ambient temperatures. The screening modeling analysis, using AERMOD and all five years of hourly meteorology (year 2002-2006), was performed for various typical load and duct firing conditions for four ambient temperatures: 20°F (a cold day), 60°F (ISO conditions), 95°F (average hot day) and 108°F (maximum high temperature day). The combustion turbine operating condition that resulted in the highest modeled concentration in the screening analysis for each pollutant and for averaging periods of 24 hours or less were used in the refined impact analyses with the firepump, auxiliary boiler, and cooling tower stacks. The 60°F condition was assumed to represent annual average conditions. As such, no screening analyses were performed for annual average concentrations, which were modeled for the 60°F case at 100 percent load (without duct firing), which is the typical operating scenario.

The results of the load screening analysis are listed in Appendix 5.2B. The screening analysis shows that the worst-case load and ambient temperature condition is 100 percent load with duct firing at 20°F (Case 1) for 1-hour NO_x, 100 percent load with duct firing at 95°F (Case 5) for 1-hour and 8-hour CO, 60 percent load at 95°F (Case 22) for 1-hour and 3-hour SO_2, and 80 percent load at 95°F (Case 14) for 24-hour SO_2 and PM10/2.5.

5.2.5.7 Refined Analysis

Facility sources, including the eleven-cell cooling tower, were modeled in the analysis for comparisons with Significant Impact Levels (SILs) and California Ambient Air Quality Standards (CAAQS)/National Ambient Air Quality Standards (NAAQS), as necessary.

For the combustion turbines, start-up and shutdown emissions were also accounted for in the refined analysis for all short-term (24-hours or less) and long-term (annual) averages in the air quality modeling. The highest one-hour emissions during the start-up of the combustion turbine (cold start) was used for determining one-hour NO_x and CO impacts. For the eight-hour CO modeling, cold and warm startup and shutdown emission rates were used to simulate the worst-case 8-hour period. Annual emission estimates already include emissions from start-up, shutdown, and maintenance activities. Because the startup time for the combustion turbine will be one hour or less, the worst-case stack characteristics identified by the screening analysis (as discussed above) were modeled. Detailed emission calculations for all averaging periods are included in Appendix 5.2A.

The worst-case modeling input information for each pollutant and averaging period are shown in Table 5.2-17 for normal operating conditions and combustion turbine startup/shutdown conditions. As discussed above, the combustion turbine stack parameters used in modeling the impacts for each pollutant and averaging period reflected the worst-case operating condition for that pollutant and averaging period identified in the load screening analysis. Stack parameters associated with operation at 100 percent load without the duct burner at an ambient temperature of 60°F were used in modeling annual average impacts.

Table 5.2-17
Stack Parameters and Emission Rates for Each of the Modeled Sources

	Stack Height (m)	Stack Temp. (Kelvin)	Exit Vel. (m/s)	Stack Diam. (m)	Emission Rates (g/s)			
					NO_x	SO_2	CO	PM10/2.5
Averaging Period: 1-hour for Normal Operating Conditions and NOx Emissions								
Each Turbine/HRSG	39.624	395.4	11.98	6.5532	2.268	-	-	-
Fire Pump	6.096	796.00	59.55	0.1300	2.196E-1	-	-	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	6.930E-2	-	-	-
Averaging Period: 1-hour for Normal Operating Conditions and CO Emissions								
Each Turbine/HRSG	39.624	378.7	10.74	6.5532	-	-	1.890	-
Fire Pump	6.096	796.00	59.55	0.1300	-	-	7.069E-2	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	-	2.331E-1	-
Averaging Period: 1-hour for Normal Operating Conditions and SO_2 Emissions								
Each Turbine/HRSG	39.624	354.8	8.91	6.5532	-	0.403	-	-
Fire Pump	6.096	796.00	59.55	0.1300	-	5.040E-4	-	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	1.764E-2	-	-
Averaging Period: 3-hours for Normal Operating Conditions and SO_2 Emissions								
Each Turbine/HRSG	39.624	354.8	8.91	6.5532	-	0.403	-	-
Fire Pump	6.096	796.00	59.55	0.1300	-	1.680E-4	-	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	1.764E-2	-	-
Averaging Period: 8-hours for Normal Operating Conditions and CO Emissions								
Each Turbine/HRSG	39.624	378.7	10.74	6.5532	-	-	1.890	-
Fire Pump	6.096	796.00	59.55	0.1300	-	-	8.836E-3	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	-	2.331E-1	-
Averaging Period: 24-hours for Normal Operating Conditions and SO_2 and PM10/2.5 Emissions								
Each Turbine/HRSG	39.624	356.5	9.24	6.5532	-	0.403	-	0.756
Fire Pump	6.096	796.00	59.55	0.1300	-	2.100E-5	-	3.623E-4
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	1.764E-2	-	5.292E-2
Each Cooling Tower Cell	15.240	287.13	9.56	9.144	-	-	-	1.569E-2
Averaging Period: Annual for Normal Operating Conditions								
Each Turbine/HRSG	39.624	394.3	11.23	6.5532	2.471	0.173	-	0.811

Table 5.2-17
Stack Parameters and Emission Rates for Each of the Modeled Sources

	Stack Height (m)	Stack Temp. (Kelvin)	Exit Vel. (m/s)	Stack Diam. (m)	Emission Rates (g/s)			
					NO_x	SO_2	CO	PM10/2.5
Fire Pump	6.096	796.00	59.55	0.1300	1.304E-3	2.992E-6	-	5.161E-5
Auxiliary Boiler	18.288	500.35	12.64	1.0668	4.747E-2	1.208E-2	-	3.625E-2
Each Cooling Tower Cell	15.240	297.82	9.65	9.144	-	-	-	1.569E-2
Averaging Period: 1-hour for Start-up Conditions and NOx Emissions								
Each Turbine/HRSG	39.624	395.4	11.98	6.5532	10.483	-	-	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	6.930E-2	-	-	-
Averaging Period: 1-hour for Start-up Conditions and CO Emissions								
Each Turbine/HRSG	39.624	378.7	10.74	6.5532	-	-	17.363	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	-	2.331E-1	-
Averaging Period: 8-hours for Start-up/Shutdown Conditions and CO Emissions								
Each Turbine/HRSG	39.624	378.7	10.74	6.5532	-	-	4.451	-
Fire Pump	6.096	796.00	59.55	0.1300	-	-	8.836E-3	-
Auxiliary Boiler	18.288	500.35	12.64	1.0668	-	-	5.828E-2	-

5.2.5.8 Normal Operations Impact Analysis

In order to determine the magnitude and location of the maximum impacts for each pollutant and averaging period, the AERMOD model was used. Table 5.2-18 summarizes maximum modeled concentrations for each criteria pollutant and associated averaging periods. The annual average concentrations of NO_2 were computed following the revised USEPA guidance for computing these concentrations (August 9, 1995 Federal Register, 60 FR 40465). The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NO_x ratio. Short-term 1-hour NO_2 impacts conservatively assumed 100% conversion of NOx emissions to NO_2 concentrations. In order to assess the significance of the modeled concentrations, the maximum concentrations were modeled and compared to the Class II PSD and MDAQMD SILs. As shown below, all modeled facility pollutant concentrations during normal facility operating conditions are less than the Class II SILs for those pollutants.

The maximum impacts for normal facility operating conditions (with firepump and auxiliary boiler emission) for NO_2 (1-hour and annual averages), CO (1-hour and 8-hour averages), SO_2 (annual averages), and PM10/PM2.5 (24-hour and annual averages) occurred in the immediate vicinity of the facility either on the fenceline or within the downwash grid in the 30-meter-spaced receptor areas. Therefore, no additional 30-meter-spaced receptor grids in the coarse or intermediate receptor grid areas were required for these pollutants and averaging times. Maximum impacts for start-up/shutdown conditions (1-hour NO_2 and CO impacts and 8-hour CO impacts) and 1-hour and 3-hour SO_2 impacts occurred in elevated terrain about 10 km west-northwest of the Project while maximum 24-hour SO_2 impacts occurred on the edge of the 30-meter grid about 500 meters south-southeast of the Project. Additional 30-meter spaced refined grids were modeled in the applicable coarse or intermediate receptor areas for these operating conditions, pollutants, and averaging times.

Because the maximum modeled impacts during normal operating conditions for all pollutants (with the exception of PM2.5) are less than the Class II and MDAQMD SILs, the Project would not significantly affect the MDAQMD attainment status or ambient concentrations in the Project area. Additionally, with the exception of PM2.5, as all maximum modeled impacts during normal operating conditions are less than the respective SILs, the project will not trigger a PSD increment or NAAQS analysis.

Table 5.2-18
Air Quality Impact Results
for Refined Modeling Analysis of Project

Pollutant	Avg. Period	Maximum Concentration ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	Class II Significance Level ($\mu g/m^3$)	Ambient Air Quality CAAQS/NAAQS	
						($\mu g/m^3$)	($\mu g/m^3$)
Normal Operating Conditions							
NO_2	1-hour	113	149	262	-	339	-
	Annual	0.338	38.0	38.34	1	57	100
CO	1-hour	36.4	2530	2566	2,000	23,000	40,000
	8-hour	10.8	1789	1800	500	10,000	10,000
SO_2	1-hour	6.28	47.2	53.5	-	655	-
	3-hour	3.26	31.2	34.5	25	-	1,300
	24-hr	0.920	13.1	14.0	5	105	365
	Annual	0.036	2.7	2.74	1	-	80
PM10	24-hr	2.85	88	90.9	5	50	150
	Annual	0.666	31.0	31.7	1	20	-
PM2.5	24-hr	2.85	28	30.9	4*	-	35
	Annual	0.666	10.4	11.1	0.8*	12	15.0
Start-up/Shutdown Periods							
NO_2	1-hour	110	149	259	-	339	-
CO	1-hour	213	2530	2743	2,000	23,000	40,000
	8-hour	19.2	1789	1808	500	10,000	10,000
Commissioning Activities							
NO_2	1-hour	167.6	149	316.6	-	339	-
CO	1-hour	2922	2530	5452	2,000	23,000	40,000
	8-hour	1026	1789	2815	500	10,000	10,000

* Proposed PM2.5 Significance Levels

Additionally, the projects impacts during normal operating conditions are less than the monitoring significance thresholds as follows:

Established Preconstruction Monitoring Thresholds	
CO: 8-hr average	575 $\mu g/m^3$
PM_{10}: 24-hr average	10 $\mu g/m^3$
NO_2: annual average	14 $\mu g/m^3$
SO_2: 24-hr average	13 $\mu g/m^3$

Thus, no ambient air quality monitoring is proposed for this project.

There are several scenarios that are possible during commissioning, which are expected to result in NO_x, CO, and VOC emissions that are greater than during normal operations. (During commissioning, SO_2 and PM10/2.5 emissions are expected to be no greater than full load operations.) Typically, these commissioning activities occur prior to the installation of the abatement equipment, e.g., SCR and oxidation catalyst, while the combustion turbines are being tuned to achieve optimum performance. During combustion turbine tuning, NO_x and CO emission control systems would not be functioning.

For the purposes of air quality modeling, NO_2, and CO impacts could be higher during commissioning than under other operating conditions already evaluated. The commissioning activities for the combustion turbine are expected to consist of several phases. Though precise emission values during the phases of commissioning cannot be provided, given the consideration for contingencies during shakedown, the worst case short-term emissions profile during expected commissioning-period operating loads are summarized in Table 5.2-19 that were considered for modeling purposes. Worst-case commissioning emissions would occur during the first 16 days before SCR and oxidation catalysts are installed. During this period, only one turbine would normally be operated at any one time. However, for modeling purposes, it was conservatively assumed that one turbine was being operated with the worst-case hourly commissioning emissions for this 16-day commissioning period while the other turbine was undergoing a cold-start with worst-case hourly cold-start emissions for this 16-day period.

Table 5.2-19
Estimated Maximum Hourly Emissions Rates For Modeling During Commissioning

	NO_X	CO
Emission Rate lb/hr	Commissioning: 193.5 Cold Start: 59.67	Commissioning: 2713.0 Cold Start: 1068.67

The new combustion turbine's commissioning period (prior to SCR and CO catalyst loading), with an estimated duration of 85 days total, is expected to consist of the following processes and time periods as delineated in Table 5.2-20.

Table 5.2-20
Commissioning Schedule

Stage	Activities	Emissions Controls	Duration (time, hours)
1	1) Combustion turbine first fire 2) Combustion turbine 0-35% load testing 3) HRSG boil out	DLN: None SCR/CO: None/None	60
2	1) Steam blow 2) Combustion turbine 0-50% load operation	DLN: None SCR/CO: None/None	72
3	1) SCR catalyst installation 2) CO catalyst installation	N/A	N/A
4	1) Emissions control tuning 2) Base Load/Bypass/Peak tuning/testing 3) Commissioning Duct Burners 4) CEMS 7-Drift/Emissions&RATA Testing 5) Performance Testing and Certification	DLN: Partial-FullSCR/CO: Partial-Full	570-634

The emissions during the total 1468 turbine-hours of commissioning activities are expected to be as follows:

- NO_x – 51 tons
- CO - 407 tons
- VOC - 51 tons
- TSP, PM10/2.5 - 7 tons

Appendix 5.2A lists the specific emissions during each phase of the commissioning activity. Commissioning impacts were evaluated based on the commissioning emissions shown above applied to the refined impact results for start-up conditions shown above. The refined modeling results presented in Table 5.2-18 include the results of the commissioning impact assessment.

Fumigation Analysis

Fumigation analyses with the USEPA Model SCREEN3 (version 96043) were conducted for inversion breakup conditions based on USEPA guidance given in *"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised"* (EPA-454/R-92-019). Since three different sets of worst-case stack parameters were identified in the screening analysis for the turbine stacks for 1-hour averaging times (one set each for NOx, CO, and SO2), the annual average operating condition was modeled (100 percent load without duct firing at an ambient temperature of 60°F) with worst-case short-term emissions. Shoreline fumigation impacts were not assessed since the nearest distance to the shoreline of any large bodies of water is greater than 3 kilometers.

An inversion breakup fumigation impact was predicted to occur at 16,013 meters from the turbine stacks and 2,601 meters from the auxiliary boiler stack. These results are predicted to occur by SCREEN3 for rural conditions of F stability and 2.5 m/s wind speeds at the stack release heights. No inversion breakup fumigation impacts are predicted by SCREEN3 for the short firepump stack. Since the site vicinity is rural in nature, there was no need to adjust fumigation impacts for urban dispersion conditions. One-hour averaging times were initially evaluated (fumigation impacts are generally expected to occur for 90-minutes or less).

For total facility inversion breakup fumigation impacts, maximum SCREEN3 impacts under rural conditions for all SCREEN3 meteorological combinations were determined for the other sources at the inversion breakup distances. These impacts were combined with the fumigation impact as shown in the following table. These maximum 1-hour total fumigation impacts are less than the SCREEN3 maxima predicted to occur under normal dispersion conditions anywhere off-site for all the sources combined (shown in the modeling documents, which occurred at the property fenceline). Since one-hour fumigation impacts are less than the maximum overall SCREEN3 one-hour impacts, no further analysis of additional short-term averaging times (3-hours, 8-hours, or 24-hours) is required as described in Section 4.5.3 of *"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised"* (EPA-454/R-92-019). The maximum 1-hour total fumigation impacts are also less than the maximum 1-hour AERMOD facility impacts as shown in the following table, so the refined analysis impacts are conservative.

Table 5.2-21
Fumigation Impact Summary

Pollutant /Avg.Time	Turbine Impacts (µg/m^3)	Aux.Boiler Impact (µg/m^3)	Firepump Impact (µg/m^3)	Total Facility Impact (µg/m^3)	Maximum AERMOD Impact (µg/m^3)
Turbine Inversion Breakup Location (16,013 meters)					
NO_2 1-hour	5.684	0.510	2.796	8.990	113
SO_2 1-hour	1.138	0.130	0.006	1.274	6.28
CO 1-hour	5.052	1.714	0.900	7.666	36.4
Aux.Boiler Inversion Breakup Location (2,601 meters)					
NO_2 1-hour	2.918	1.040	19.283	23.241	113
SO_2 1-hour	0.584	0.265	0.044	0.893	6.28
CO 1-hour	2.593	3.497	6.207	12.297	36.4

Based upon emissions data provided to the Federal Land Managers (FLMs), specifically the United States Park Service (Dee Moris), the FLMs did not require a Class I impact assessment for air quality related values to either deposition or visibility at the closest Class I area which is Joshua Tree at approximately 95 kilometers northwest of the Project site. A copy of the National Park Service letter exempting this project from a Class I ARQV analysis is included in Appendix 5.2C. However, the Class I areas were modeled for comparisons to the Federal Class I significance levels for increment analysis.

The projected impacts from all proposed criteria pollutant emissions were modeled at Joshua Tree with AERMOD. As listed in Table 5.2-22, all impacts are well below the Significant Impact Levels (SIL) for all criteria pollutants and averaging periods.

TABLE 5.2-22
Criteria Pollutant Class I SILs and Increments

Pollutant	Averaging Interval	Modeled Impact Joshua Tree NP (µg/m^3)	Class I Significant Impact Level (µg/m^3)	Class I PSD Increment (µg/m^3)
NO_2	Annual	0.00649	0.1	2.5
SO_2	3-Hour	0.26413	1.0	25
	24-Hour	0.05583	0.2	5
	Annual	0.00046	0.1	2
PM10/2.5	24-Hour	0.11635	0.3	10
	Annual	0.00226	0.2	5

5.2.5.9 PM2.5 Increment and AAQS Impact Analysis

Localized cumulative source impacts from the Blythe Energy Project II and other near by sources were assessed for PM2.5. The cumulative multisource modeling analysis focused on the proposed Project combined with PM2.5 emissions from other sources. The analysis demonstrates that the emissions from BEP II will not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) for PM2.5. The Project vicinity is considered to be either in attainment or unclassified (and presumed to be in attainment) with NAAQS and California Ambient Air Quality Standards (CAAQS) for PM2.5. If required, it would also demonstrate that the emissions from BEP II would not result in any exceedance of the lowest of EPA's proposed Class II increments for PM2.5 (applicable in attainment areas).

Under EPA's PSD regulations, an applicant must conduct a "source impact analysis", which demonstrates that "allowable emission increases from the source in conjunction with all other applicable emissions increases or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of: (1) Any NAAQS in any region; or (2) Any applicable maximum allowable increase over the baseline concentration in any area."

The Source Impact Analysis is required to assure that the source's emissions will not cause a violation of the NAAQS, which, in this case, consist of the 24-hour and annual PM2.5 standards of 35 µg/m3 and 15 µg/m3, respectively. The PSD Source Impact Analysis is the "increment consumption analysis", which assures that, in those locations currently meeting the federal NAAQS (i.e., those deemed "attainment" or "unclassifiable"), the concentration of a given pollutant cannot increase by an amount greater than the "maximum allowable increase" specified by the Clean Air Act and/or the PSD regulations for the particular pollutant.

If a source's modeled impact at any offsite location exceeds the relevant SIL, the source owner must then conduct a "multi-source" (or "cumulative") air quality analysis to determine whether or not the source's emissions will cause or contribute to a violation of the relevant NAAQS or applicable PSD increment.

While EPA has not promulgated any final SILs or PSD increments for PM2.5 at this time, in 2007, EPA proposed three options for establishing PM2.5 SILs and increments. As a conservative measure, BEP II applied the lowest (i.e., most stringent) of each of the three proposals for Class II SILs and increments, as shown in Table 5.2-23 below.

Table 5.2-23
Lowest of Proposed PSD Ambient Significance Levels and Increments

Pollutant/ Avg. Period		Class II SIL (µg/m^3)	Class II Increment (µg/m^3)
PM2.5	- 24-hour - Annual	1.2 0.3	9 4

To demonstrate that the emissions from the proposed BEP II will not cause or contribute to a violation of the PM2.5 NAAQS, a multi-source cumulative modeling analysis was conducted in accordance with EPA requirements. This analysis considered both the existing background concentrations, as established by ambient monitoring data, and the contribution from additional sources, which might not be reflected by the monitoring data, but could interact with the facility's potential impacts.

Preconstruction Monitoring Data. EPA's PSD regulations require an applicant to provide preconstruction monitoring data for purposes of use in the Source Impacts Analysis. However, a source is exempt from this requirement if its modeled impact in any area is less than pollutant-specific "significant monitoring concentrations" ("SMC"), which EPA has generally established as five times the lowest detectable concentration of a pollutant that could be measured by available instrumentation. In its September 21, 2007 Proposed Rule, EPA proposed three options for establishing PM2.5 SMCs, as shown in the following Table 5.2-24.

TABLE 5.2-24
EPA's Proposed Significant Monitoring Concentrations for PM2.5

Option Number	Basis	Proposed Level
1	5-times lowest detectable 24-hour average concentration for PM2.5 (2.0 μg/m^3) (40 CFR Part 50, App. L, § 3)	10 μg/m^3
2	Existing PM10 SMC (10 μg/m^3), times ratio of PM2.5 to PM10 emissions (0.8)	8.0 μg/m^3
3	Existing PM10 SMC (10 μg/m^3) times ratio of PM2.5 24-hr NAAQS to PM10 24-hr NAAQS (0.233)	2.3 μg/m^3

Even if a source's potential impacts exceeds the corresponding SMC, and the applicant must therefore provide preconstruction monitoring data as part of its Source Impact Analysis, that does not necessarily mean the applicant must install and operate a new monitor at the project site. Rather, according to EPA guidance, an applicant may satisfy the preconstruction monitoring obligation in one of two ways: (i) Where existing ambient monitoring data is available from representative monitoring sites, the permitting agency may deem it acceptable for use in the Source Impacts Analysis; or (ii) where existing, representative data are not available, then the applicant must obtain site-specific data.

As a general matter, the permitting agency has substantial discretion "to allow representative data submissions (as opposed to conducting new monitoring) on a case-by-case basis." In determining whether existing data are representative, EPA guidance has emphasized consideration of three factors: monitor location, data quality and currentness of the data. The permitting agency also may approve use of data from a representative "regional" monitoring site for purposes of the NAAQS compliance demonstration.

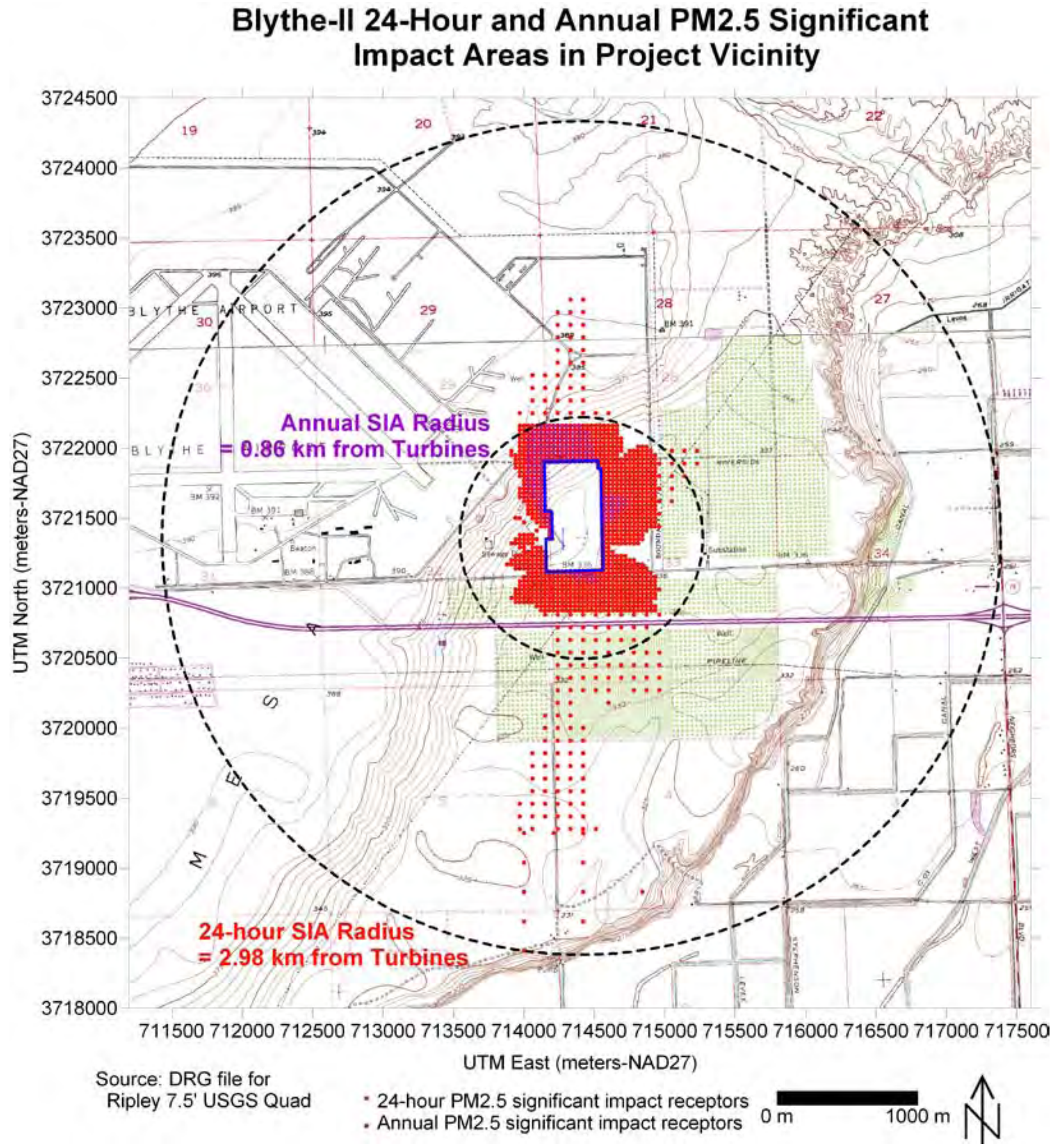
The maximum offsite impact modeled to occur from BEP II (2.85 μg/m^3) is below two of EPA's three proposed Significant Monitoring Concentrations ("SMCs") and would only exceed the lowest of the three proposed SMCs (2.3 μg/m^3) by a narrow margin. Accordingly, BEP II has proposed utilizing existing monitoring data from Victorville, CA as a conservative estimate of background concentrations to satisfy the preconstruction monitoring requirement. PM2.5 concentrations within the vicinity of the project site would be expected to be less than the selected background concentrations.

PSD Increment Consumption Analysis. As described above, EPA has not yet promulgated final PSD increments for PM2.5. Additionally, if EPA should promulgate a new “trigger date” for PM2.5, the Project’s application could be deemed the first completed PSD application received after the trigger date and would, consequently, trigger both the minor source baseline date and major source baseline date. In light of this, BEP II would not need to consider any other stationary sources for purposes of its increment consumption analysis, unless such sources had increased their emissions since the date when the Project’s application was complete. The modeling analysis demonstrates that the Project’s emissions will not cause or contribute to any exceedance of EPA’s most restrictive proposed PM2.5 Class II increments of 9 $\mu g/m^3$ for the 24-hour standard and 4 $\mu g/m^3$ for the annual standard. The highest annual and 24-hour concentrations indicated at any offsite location modeled for the proposed Project were 0.666 and 2.85 $\mu g/m^3$, respectively. Hence, no further additional increment consumption analyses are included in this document.

PM2.5 Significant Impact Level Modeling Results for NAAQS

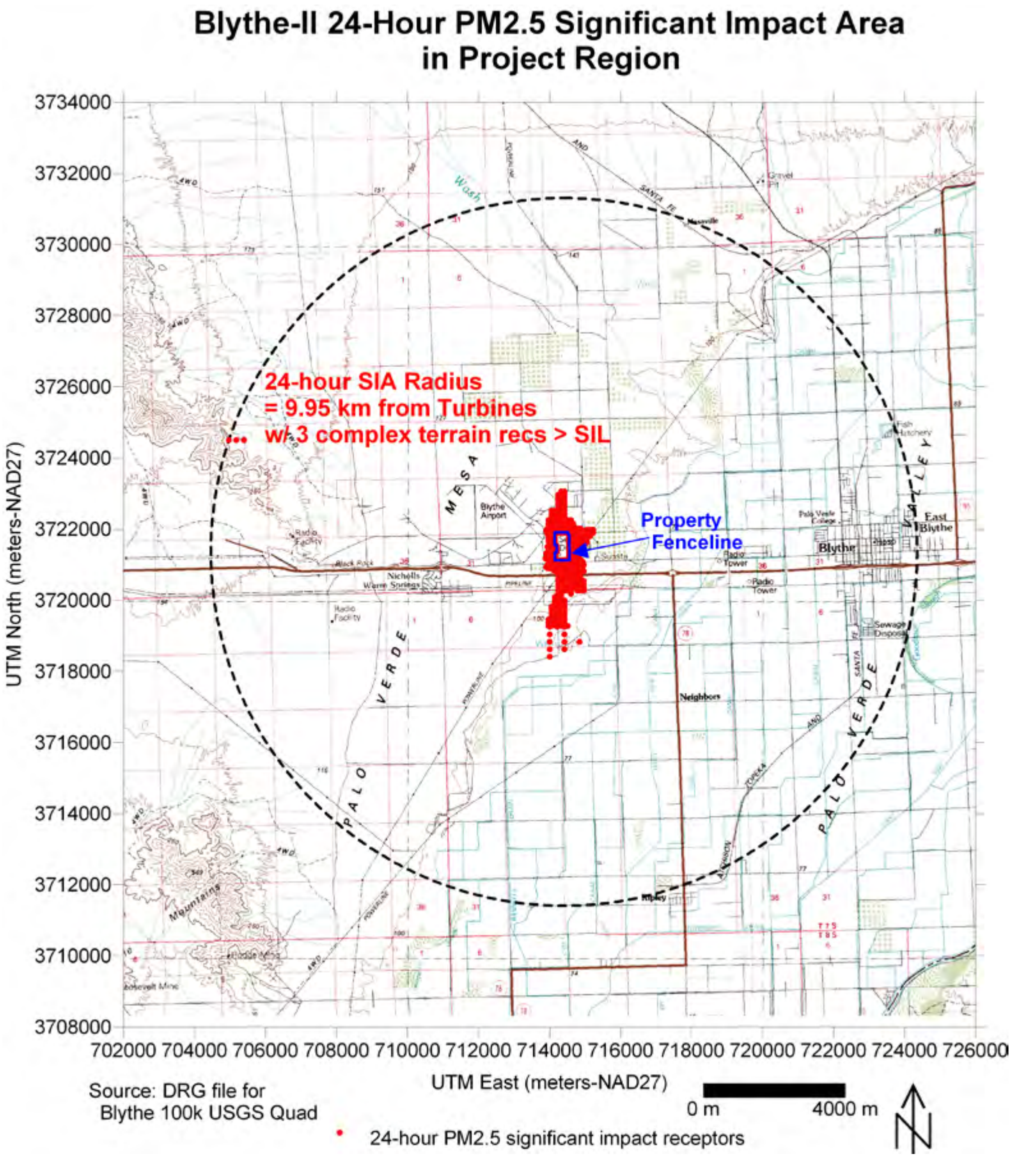
Emissions from the Project were modeled to determine the areal extent of the PM2.5 significance area for both the 24-hour and annual NAAQS. The results of the SIL modeling analysis for 24-hour maximum BEP II concentrations at receptor locations greater than or equal to the 1.2 μg/m3 SIL are presented in Figure 5.2-1 (Project Vicinity) and Figure 5.2-1a (Project Region). The results of the SIL modeling analysis for annual maximum BEP II concentrations greater than or equal to the 0.3 μg/m3 SIL are presented in Figure 5.2-1 (Project Vicinity).

Figure 5.2-1



Blythe-II 24-Hour and Annual PM2.5 Significant
Impact Areas in Project Vicinity
Annual SIA Radius
= 0.86 km from Turbines
24-hour SIA Radius
= 2.98 km from Turbines
UTM North (meters-NAD27)
UTM East (meters-NAD27)
Source: DRG file for
Ripley 7.5' USGS Quad
24-hour PM2.5 significant impact receptors
Annual PM2.5 significant impact receptors
0 m
1000 m

Figure 5.2-1a



EPA guidance prescribes use of the significant impact levels (SILs) to establish the "significant impact area" (SIA), which is used to identify the appropriate geographic area in which a cumulative impacts analysis should be conducted according to EPA guidance, the "impact area" is identified by drawing a circle around the site with a radius equal to the distance to the farthest location where an exceedance of the SIL is modeled to occur. This impact area is also used in a multi-source cumulative impacts analysis to "guide the identification of other sources to be included in the modeling analyses."

As shown in Figure 5.2-1, maximum Project annual PM2.5 impacts fall below 0.3 µg/m^3 in all directions beyond 0.86 kilometers (km) from the Project. For short-term (24-hour) impacts, maximum Project impacts are used for SIL comparisons and maximum Project 24-hour PM2.5 impacts <u>in the Project vicinity</u>, as shown in Figure 5.2-1a, fall below 1.2 µg/m^3 beyond 2.98 and

2.95 km from the turbines and cooling tower, respectively. However, for 24-hour PM2.5 impacts, there are three isolated coarse grid receptors West-Northwest (WNW) of the Project in a complex terrain area where Project impacts are slightly greater than the 1.2 $\mu g/m^3$ SIL as shown in Figure 5.2-1a. These three isolated complex terrain receptors extend the 24-hour SIA distance from 2.98 km to 9.95 km.

As illustrated by Figure 5.2-1a, a majority of the significant impacts locations occurred within the immediate area of the Project. Most of these impacts were due to the cooling tower emissions and are based in part on the conservative assumptions used to calculate PM2.5 emissions from the cooling tower, *i.e.*, that all total dissolved solids in the cooling tower convert to PM2.5. The three (3) receptor locations in the complex terrain area WNW of the Project were due primarily to the turbines. Again, according to EPA guidance, the impact area was established by taking the distance from the project site to the farthest of these locations and then drawing a circle with that distance as its radius.

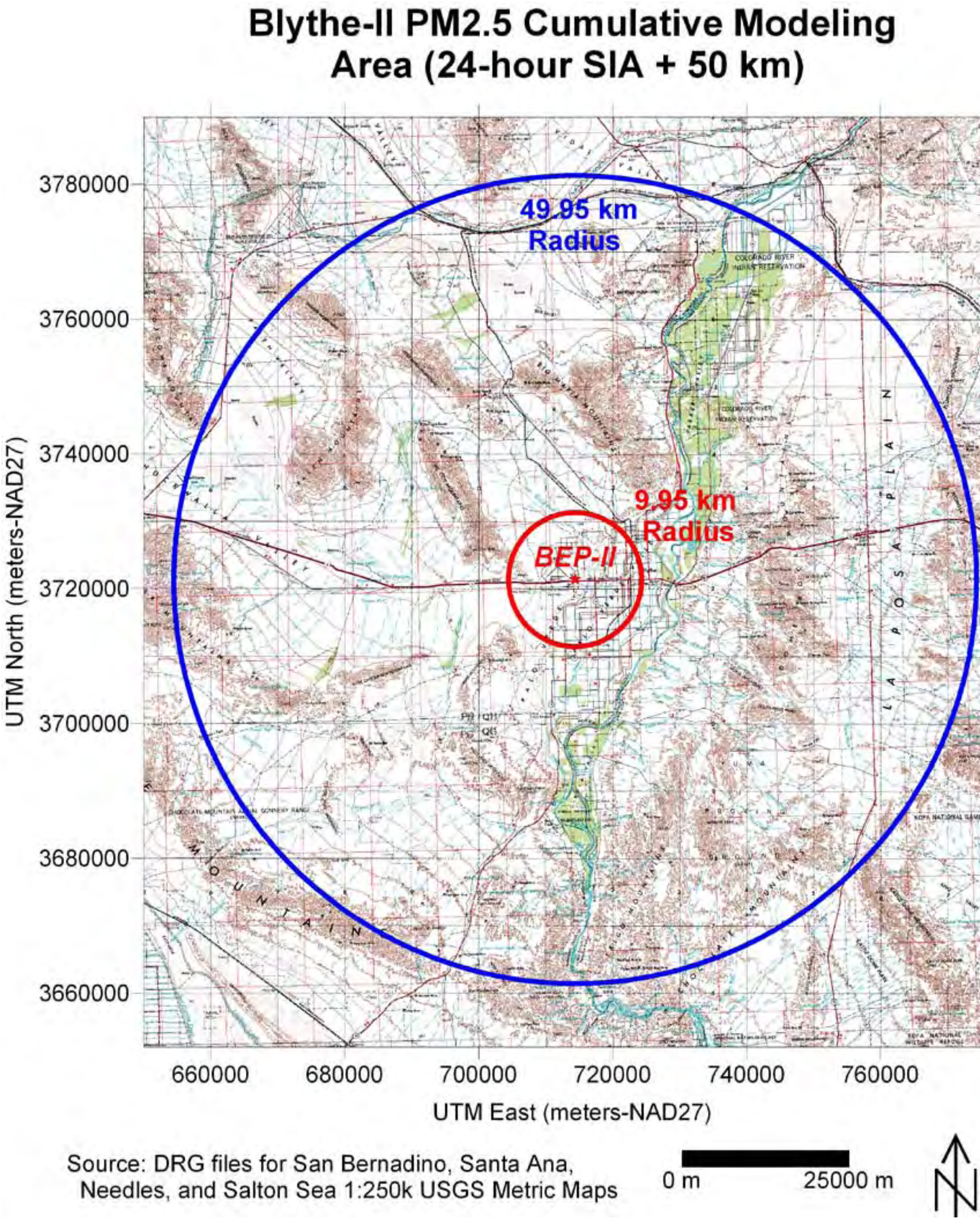
Multisource Modeling for PM2.5

Per EPA guidance, the larger impact area was then surveyed to identify other "nearby sources", which also should be included in the cumulative impacts analysis. Both Appendix W and the *Draft NSR Workshop Manual* require that the cumulative impacts analysis include "nearby sources", which includes "[a]ll sources expected to cause a ***significant concentration gradient*** in the vicinity of the source or sources under consideration." Appendix W further instructs that the "impact of nearby sources should be examined at locations where interactions between the plume of the point source under consideration and those of nearby sources (plus natural background) can occur". Emphasizing that "[t]he number of sources is expected to be small except in unusual situations", Appendix W leaves identification of nearby sources to the "professional judgment" of the permitting agency.

Based on the location of significant impacts illustrated by Figures 5.2-1 and 5.2-1a, it was considered the potential that other background sources within the impact area might produce a significant concentration gradient in the same location where the Project's modeled impacts were at or above the SIL. As discussed above, a majority of these locations occur in the immediate vicinity of the Project. Two facilities, the Blythe I facility and the Southern California Gas (SoCal) compressor station, were deemed capable of causing a significant concentration gradient in the PM2.5 Significant Impact Areas (SIA) for the Project based on discussions with USEPA Region 9. Also, it was not deemed necessary to assess mobile source PM2.5 impacts due to the expected traffic levels on roads in the Project vicinity, including I-10, based on the relatively low expected vehicle and truck traffic counts.

The selection of the two additional facility for the multisource PM2.5 analysis was based on not just the extent of the 24-hour SIA, but also considered all areas within 50 km of the largest SIA as shown in Figure 5.2-2. As can be seen, this area is sparsely populated with little chance of any other emissions sources in the larger area that might produce a significant concentration gradient in the SIAs. For the three (3) receptor locations in elevated terrain to the WNW of the Project where the Project's impacts were modeled above the 24 hour SIL, no additional sources were identified that would cause a significant concentration gradient in the vicinity of these complex terrain impacts.

Figure 5.2-2



The Mojave Desert Air Quality Management District (MDAQMD) provided a list of permitted emissions and/or stack characteristics for these two additional facilities included in the cumulative modeling analysis. This list included the two Blythe I turbine stacks and a number of generators and compressors at the SoCal facility. The location of the Blythe I sources were corrected from the MDAQMD list based on Google Earth images (corrected to NAD27 UTM coordinates). Since the MDAQMD list did not include the Blythe I cooling tower, PM emissions from the CEC Staff Assessment for Blythe I were modeled with Blythe II cooling tower cell characteristics to include Blythe I cooling tower emissions in the modeling assessment. The emissions for the two groups of SoCal sources (i.e., generators and compressors) were summed and modeled for the two stacks (one each for generators and compressors) given in the MDAQMD list for this facility. The AERMOD program AERMAP was used to interpolate the base elevation of the source locations. The stack characteristics and emissions are shown on Table 5.2-25. Together with the Project emissions, these additional sources were added to the background monitored concentrations to determine compliance with the NAAQS.

Table 5.2-25 Stack Parameters and Emission Rates for Additional Facilities

Source ID	UTM X (meters)	UTM Y (meters)	Base Elevation (meters)	Stack Height (meters)	Stack Temp (deg K)	Exhaust Velocity (m/s)	Stack Diam. (meters)	PM2.5 Emission Rates (g/s)
Averaging Period: 24 hours								
				Blythe I				
Turbine 1	714657.4	3721763.7	101.5	39.624	372.00	4.00	5.0292	1.298
Turbine 2	714657.4	3721733.7	101.5	39.624	372.00	4.00	5.0292	1.298
CT Cell 1	714591.0	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 2	714603.8	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 3	714616.6	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 4	714629.4	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 5	714642.2	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 6	714655.0	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 7	714667.8	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 8	714680.6	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 9	714693.4	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 10	714706.2	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
CT Cell 11	714719.0	3721850.0	101.5	15.240	287.13	9.56	9.1440	5.82E-03
				Southern California Gas				
Compress.	718700.0	3720700.0	79.0	7.315	708.20	41.38	0.4572	0.16
Averaging Period: Annual								
				Blythe I				
Turbine 1	714657.4	3721763.7	101.5	39.624	372.00	4.00	5.0292	0.196
Turbine 2	714657.4	3721733.7	101.5	39.624	372.00	4.00	5.0292	0.196
CT Cell 1	714591.0	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 2	714603.8	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 3	714616.6	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 4	714629.4	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03

Table 5.2-25 Stack Parameters and Emission Rates for Additional Facilities								
Source ID	**UTM X (meters)**	**UTM Y (meters)**	**Base Elevation (meters)**	**Stack Height (meters)**	**Stack Temp (deg K)**	**Exhaust Velocity (m/s)**	**Stack Diam. (meters)**	**PM2.5 Emission Rates (g/s)**
CT Cell 5	714642.2	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 6	714655.0	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 7	714667.8	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 8	714680.6	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 9	714693.4	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 10	714706.2	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
CT Cell 11	714719.0	3721850.0	101.5	15.240	297.82	9.65	9.1440	6.28E-03
Southern California Gas								
Compr'ss	718700.0	3720700.0	79.0	7.315	708.20	41.38	0.4572	2.23E-02
Genert'rs	718700.0	3720700.0	79.0	6.706	738.7	5.44	0.3962	8.96E-04
deg K = degrees Kelvin, g/s = grams per second, m/s = meters per second								

NAAQS Dispersion Modeling Results

24-Hour Standard. To assess whether BEP II causes or contributes to a violation of the 24-hour (daily) PM2.5 NAAQS, AERMOD was run for all those receptors inside the circular 24-hour SIA with a radius of 9.95km. This conservatively includes receptors where the Project's "first high" impacts (*i.e.*, the maximum predicted concentration) both exceeds and is less than 1.2 µg/m^3 on a 24-hour basis (i.e., see the actual number of significant receptor locations inside the circular SIA's in Figures 5.2-1 and 5.2-1a. This is conservative because, according to EPA guidance, a "source will not be considered to cause or contribute to the violation if its own impact is not significant at any violating receptor at the time of each predicted violation." *Draft NSR Workshop Manual*, Draft October 1990. In other words, only those receptors with actual modeled Project-only impacts greater than the SIL need be considered.

For comparison with the NAAQS, the 98th percentile 24-hour concentrations were then considered. The highest 98th percentile concentration from this modeling run was 3.80 µg/m^3, which, upon addition of the maximum background concentration of 28 µg/m^3, would result in total concentration of 31.8 µg/m^3, which complies with the NAAQS of 35 µg/m^3. There are no CAAQS for PM2.5 for 24-hour averaging times for which compliance can be assessed. These results are shown in Table 5.2-26 below.

Table 5.2-26 24-hour Cumulative Impacts Modeling Results (µg/m^3)				
PM2.5	**Maximum Multisource Concentration (µg/m^3)**	**Monitored Background (µg/m^3)**	**Total Impact (µg/m^3)**	**Federal Standard (µg/m^3)**
24-hour	3.80	28	31.8	35
Modeled and Background PM25 24-hour averages, for comparison to the				

federal standard, are the maximum 3-year average of the annual 98th percentile 24-hour concentrations (i.e., for modeled impacts equal to the 5-year average of the 8th highest concentration at each receptor). Project-only modeled short-term impacts at each receptor are typically the first high concentration (for comparison to the SIL).

Annual Standards. A multisource modeling analysis was also conducted to determine whether the emissions from BEP II would cause or contribute to a violation of the annual PM2.5 NAAQS and CAAQS. According to the modeling analysis, impacts from Project emissions would exceed the lowest of EPA's proposed SILs of 0.3 µg/m^3 only at a limited number of offsite receptor locations, as shown by Figure 5.2-1. Again, AERMOD was conservatively run for all those receptors inside the circular annual SIA with a radius of 0.86 km. As before, this is conservative because only those receptors with actual modeled Project-only impacts greater than the SIL need be considered.

For comparison to the NAAQS and CAAQS, maximum annual impacts were used to determine whether cumulative impacts, when added to the maximum background concentration, would exceed the relevant NAAQS (15.0 µg/m^3) and CAAQS (12 µg/m^3). The results of the analysis demonstrate that the maximum modeled concentration are below the annual NAAQS and CAAQS, as summarized in Table 5.2-27.

Table 5.2-27 Annual Cumulative Impacts Modeling Results (µg/m3)

PM2.5	Maximum Multisource Concentration (µg/m^3)	Monitored Background (µg/m^3)	Total Impact (µg/m^3)	Federal Standard (µg/m^3)	State Standard (µg/m^3)
Annual	0.699	10.4	11.1	15.0	12

Conclusion

The maximum ambient concentrations predicted as a result of this cumulative source modeling exercise would, when added to the background concentration assumed for the area, demonstrate compliance with the applicable PM2.5 NAAQS and CAAQS.

5.2.5.10 Effects on Soils, Vegetation, and Sensitive Species

Impacts on soils, vegetation, and sensitive species were determined to be “insignificant” for the following reasons:

- No soils were identified in the Project area, which are recognized to have any known sensitivity to the types or amounts of air pollutants emitted by the proposed facility.
- No vegetation species were identified in the project area, which are recognized to have any known sensitivity to the types or amounts of air pollutants emitted by the proposed facility.
- The facility emissions are expected to be in compliance with all applicable air quality rules and regulations.
- The facility impacts are less than significance and result in no violations of existing air quality standards, nor will the emissions cause an exacerbation of an existing violation of any quality standard.

- No animal species were identified in the Project area, which are recognized to have any known sensitivity to the types or amounts of air pollutants emitted by the proposed facility.

The AERMOD modeling results were compared against the thresholds in "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals" (EPA-450/2-81-078, Table 3). The results of this analysis are listed below in Table 5.2-28.

Table 5.2-28

Soils and Vegetation Screening Results

Pollutant	Screening Concentration ($\mu g/m^3$)	Modeled Maximum ($\mu g/m^3$)	Model Averaging Time Used
SO_2 1-Hour	917	6.28	1 hour
SO_2 3-Hour	786	3.26	3 hour
SO_2 Annual	18	0.036	annual
NO_2 4-Hours	3,760	113.0	1 hour
NO_2 1-Month	564	113.0	1 hour
NO_2 Annual	94	0.338	annual
CO Weekly	1,800,000	19.2	8 hour

Plume Blight Analysis

A plume blight analysis was conducted for surrounding Class II area for emissions from the Blythe II project. The VISCREEN model (version 1.01) was used to conduct the plume blight analysis with a background visual range of 110 kilometers, as recommended in the "Workbook for Plume Visual Impact Screening and Analysis (EPA-450/4-88-015).

VISCREEN was developed to conduct a visual effect evaluation of a plume as observed from a given vantage point located 10 kilometers from the Project site. Emissions input into the model are assumed to create an infinitely long, straight plume traveling toward the specified area. The model outputs the change in light extinction in terms of Delta E and contrast against both a terrain and sky background.

Table 5.2-29 contains the results of the Level 1 VISCREEN analysis for the surrounding Class II area. NO_x and PM_{10} emissions from the PSD Permit were used for this analysis. Results of the VISCREEN analysis were compared to criteria provided in FLAG.

TABLE 5.2-29

Level 1 VISCREEN Analysis Results

Class II Area	Nearest Boarder	Furthest Boarder	Delta E				Contrast			
			Sky 10	Sky 140	Terrain 10	Terrain 140	Sky 10	Sky 140	Terrain 10	Terrain 140
Class II Visibility Analysis (inside Class II Area)	10	20	5.326	2.851	16.247	2.253	0.078	-0.055	0.119	**0.024**
Class II Visibility Analysis (outside Class II Area)	10	20	15.951	5.225	40.533	5.736	0.328	-0.155	0.343	**0.081**
Criteria[1]			2.00	2.00	2.00	2.00	0.05	0.05	0.05	0.05

1. Criteria for Delta E and Contrast are the default criteria suggested by FLAG.

5.2.6 Laws, Ordinances, Regulations, and Statutes (LORS)

Table 5.2-30 presents a summary of local, state, and federal air quality LORS deemed applicable to the Project. Specific LORS are discussed in greater detail in Section 5.2.6.1.

Table 5.2-30
Summary of LORS - Air Quality

LORS	Applicability	Conformance (AFC Section)
Federal Regulations		
CAAA of 1990, 40 CFR 50	Project operations will not cause violations of state or federal AAQS.	5.2.5.1–5.2.5.9
40 CFR 52.21 (PSD)	Impact analysis shows compliance with NAAQS, Project will be subject to PSD.	5.2.5.1-5.2.5.9, 5.2.3.4, Appendix 5.2B, Appendix 5.2C
40 CFR 72-75 (Acid Rain)	Project will submit all required applications for inclusion to the Acid Rain program and allowance system, CEMS will be installed as required. The Project is subject to Title IV.	5.2.6.1, 5.2.6.2
40 CFR 60 (NSPS)	Project will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements. 40 CFR 60, Subpart KKKK will apply to the turbine and HRSG duct burners. Subpart KKKK applicability exempts HRSG from Subpart Db applicability. Subpart IIII will apply to the fire pump engine.	5.2.6, 5.2.6.1
40 CFR 70 (Title V)	Title V application will be submitted pursuant to the timeframes noted in MDAQMD Rule 1200.	5.2.6.1, 5.2.6.2
40 CFR 68 (RMP)	Project will evaluate substances and amounts stored, determine applicability, and comply with all program level requirements. The existing RMP and OCA will be evaluated for necessary revisions.	5.15, 5.16
40 CFR 64 (CAM Rule)	Facility will be exempt from CAM Rule provisions.	5.2.6, 5.2.6.1
40 CFR 63 (HAPs, MACT)	Subpart YYYY applies to stationary combustion turbines constructed after 1-14-03 located at a major HAPs source. Emissions limits in the rule are currently stayed.	5.2.6.1
State Regulations (CARB)		
H&S Code 44300 et seq.	Project will determine applicability, and prepare inventory plans and reports as required.	5.2.6, 5.2.6.1
H&S Code 41700	MDAQMD Permit to Construct (PTC) will ensure that no public nuisance results from operation of facility.	5.2.6.1, 5.2.6.2
Gov. Code 65920 et seq.	Pursuant to the Permit Streamlining Act, the Applicant believes the Project is a “development project” as defined,	n/a

Table 5.2-30
Summary of LORS - Air Quality

LORS	Applicability	Conformance (AFC Section)
	and is seeking approvals as applicable under the Act.	
Local Regulations (MDAQMD)		
Rule 401	Limits visible emissions. Project will comply with all limits per BACT and clean fuel use.	5.2.6, 5.2.6.1
Rule 402	Prohibits public nuisances. Project is not expected to cause or create any type of public nuisance.	5.2.6, 5.2.6.1
Rule 403	Fugitive dust limits and mitigation measures. Project will comply with all rule provisions during construction and operation.	5.2.3.6, 5.2.6.1 Appendix 5.2E
Rule 404	Establishes standards for exhaust particulate matter. BACT and clean fuel use will insure compliance.	5.2.3.6, 5.2.6.1 Appendix 5.2F
Rule 405	Limits particulate matter emissions from fuel combustion on mass per unit processed basis (fuel combusted). BACT and clean fuel use will insure compliance.	5.2.3.6, 5.2.6.1 Appendix 5.2F
Rule 406	Limits sulfur compound emissions concentrations. BACT and clean fuel use will insure compliance.	
Rule 407	Limits CO emissions (2000 ppm) from stationary sources. BACT and clean fuel use will insure compliance.	5.2.6, 5.2.6.1, Appendix 5.2A and 5.2F
Rule 409	Limits PM emissions from fuel combustion. BACT and clean fuel use will insure compliance.	5.2.6, 5.2.6.1, Appendix 5.2A and 5.2F
Rule 475	Limits NOx and PM emissions from EPGE fuel combustion. BACT and clean fuel use will insure compliance.	5.2.6, 5.2.6.1, Appendix 5.2A and 5.2F
Rule 476	Limits NO_x and combustion contaminant emissions from SGE fuel combustion. BACT and clean fuel use will insure compliance.	5.2.6, 5.2.6.1, Appendix 5.2A and 5.2E
Rule 431	Limits fuel sulfur content of gaseous fuels. Use of PUC grade natural gas insures compliance.	5.2.4, 5.2.6.1 Appendix 5.2A and 5.2F
Rule 1158	Limits NOx emissions from electric utility operations.	5.2.6, Appendix 5.2A
Regulation XIII	NSR provisions. Project will meet all NSR rule requirements (BACT, offsets, AQ impact analysis, etc.)	Section 5.2
Rule 1320	NSR for Toxics (Project will comply with all provisions of Rule 1320-New Sources) See Appendix 5.2D, and Section 5.16 Public Health for analysis and compliance data.	Section 5.16, 5.2.6.1, Appendix 5.2D
Regulation IX (NSPS)	See Federal LORS section.	
Rule 1200 (Title V)	Project will submit the required Title V application per the	5.2.6.1

Table 5.2-30
Summary of LORS - Air Quality

LORS	Applicability	Conformance (AFC Section)
	timeframes required in Rule 1200.	
Rule **** (Acid Rain)	The MDAQMD does not at this time have a specific local rule addressing the Title IV Acid Rain program.	5.2.6.2

5.2.6.1 Specific LORS Discussion

Federal LORS

The federal EPA implements and enforces the requirements of many of the federal air quality laws. EPA has adopted the following stationary source regulatory programs in its effort to implement the requirements of the CAA:

- New Source Performance Standards (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Prevention of Significant Deterioration (PSD)
- New Source Review (NSR)
- Title IV: Acid Rain/Deposition Program
- Title V: Operating Permits Program
- CAM Rule

National Standards of Performance for New Stationary Sources - 40 CFR Part 60, Subparts KKKK and IIII

The NSPS program provisions limit the emission of criteria pollutants from new or modified facilities in specific source categories. The applicability of these regulations depends on the equipment size or rating; material or fuel process rate; and/or the date of construction, or modification. Reconstructed sources can be affected by NSPS as well. Applicability of Subpart KKKK to the proposed new turbine/HRSG supersedes applicability of Subpart GG and Db. Compliance with BACT will insure compliance with the emissions limits of Subpart KKKK. Subpart IIII is expected to apply to the proposed fire pump engine. Compliance with the EPA and CARB tiered emissions standards, and the CARB/MDAQMD ATCM for stationary CI engines will insure compliance with IIII.

National Emission Standards for Hazardous Air Pollutants - 40 CFR Part 63

The NESHAPs program provisions limits hazardous air pollutant emissions from existing major sources of HAP emissions in specific source categories. The NESHAPs program also requires the application of maximum achievable control technology (MACT) to any new or reconstructed major source of HAP emissions to minimize those emissions. Subpart YYYY will apply to the proposed turbine/HRSG. The emissions provisions of Subpart YYYY are currently subject to "stay" by EPA. Notwithstanding the foregoing, the proposed turbine/HRSG is expected to comply with the emissions provisions.

Prevention of Significant Deterioration Program - 40 CFR Parts 51 and 52

The PSD program requires the review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. PSD applies only to pollutants for which ambient concentrations do not exceed the corresponding NAAQS. The PSD program allows new sources of air pollution to be constructed, and existing sources to be modified, while maintaining the existing ambient air quality levels in the Project region and protecting Class I areas from air quality degradation. The AFC air quality analysis complies with all applicable PSD provisions.

New Source Review - 40 CFR Parts 51 and 52

The NSR program requires the review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment of AAQS. NSR applies to pollutants for which ambient concentrations exceed the corresponding NAAQS. The AFC air quality analysis complies with all applicable NSR provisions.

Title IV - Acid Rain Program - 40 CFR Parts 72-75

The Title IV program requires the monitoring and reduction of emissions of acid rain compounds and their precursors. The primary source of these compounds is the combustion of fossil fuels. Title IV establishes national standards to limit SO_x and NO_x emissions from electrical power generating facilities. The proposed new turbines/HRSGs will be subject to Title IV, and will submit the appropriate applications to the air District as part of the PTC application process. The Project will participate in the Acid Rain allowance program through the purchase of SO_2 allowances. Sufficient quantities of SO2 allowances are available for use on this Project.

Title V - Operating Permits Program - 40 CFR Part 70

The Title V program requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Title V applies to major facilities, acid rain facilities, subject solid waste incinerator facilities, and any facility listed by EPA as requiring a Title V permit. Title V application forms applicable to the proposed new facility will be submitted pursuant to the District Title V permitting rule timeframes.

CAM Rule - 40 CFR Part 64

The CAM rules require facilities to monitor the operation and maintenance of emissions control systems and report malfunctions of any control system to the appropriate regulatory agency. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. However, emission control systems governed by Title V operating permits requiring continuous compliance determination methods are exempt from the CAM rule. Since the Project will be issued a Title V permit requiring the installation and operation of continuous emissions monitoring systems, the Project will qualify for this exemption from the requirements of the CAM rule.

Toxic Release Inventory Program (TRI) - Emergency Planning and Community Right-to-Know Act

The TRI program as applied to electric utilities, affects only those facilities in Standard Industrial Classification (SIC) Codes 4911, 4931, and 4939 that combust coal and/or oil for the purpose of generating electricity for distribution in commerce must report under this regulation. The proposed Project SIC Code is 4911. However, the proposed Project will not combust coal and/or oil for the purpose of generating electricity for distribution in commerce. Therefore, this program does not apply to the proposed Project.

State LORS

CARB's jurisdiction and responsibilities fall into the following five areas; (1) implement the state's motor vehicle pollution control program; (2) administer and coordinate the state's air pollution research program; (3) adopt and update the state's AAQS; (4) review the operations of the local air pollution control districts (APCDs) to insure compliance with state laws; and, (5) to review and coordinate preparation of the State Implementation Plan (SIP).

Air Toxic "Hot Spots" Act – H&SC §44300-44384

The Air Toxics "Hot Spots" Information and Assessment Act requires the development of a statewide inventory of Toxic Air Contaminants (TAC) emissions from stationary sources. The program requires affected facilities to; (1) prepare an emissions inventory plan that identifies relevant TACs and sources of TAC emissions; (2) prepare an emissions inventory report quantifying TAC emissions; and (3) prepare an HRA, if necessary, to quantify the health risks to the exposed public. Facilities with significant health risks must notify the exposed population, and in some instances must implement risk management plans to reduce the associated health risks.

Public Nuisance – H&SC § 41700

Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or which endanger the comfort, repose, health, or safety of the public, or that damage business or property.

Local Air District LORS-Mojave Desert AQMD

AQMD Regulation II - Permits

AQMD Regulation II establishes the basic framework for acquiring permits to construct and operate from the air district. The AFC will be the basis for the Districts Determination of Compliance. A separate ATC application is not required per the MDAQMD regulations, i.e., the AFC per Rule 1306 is equivalent to the ATC application. The district permitting forms are included in Appendix 5.2I.

AQMD Preconstruction Review for Criteria Pollutants

The AQMD has several preconstruction review programs for new or modified sources of criteria pollutant emissions, as follows:

- Regulation XIII (New Source Review) – Regulation XIII provides for review of non-attainment pollutants and their precursors, and requires the following analyses to be conducted; (1) BACT, (2) mitigation analysis (offsets), (3) air quality impact analysis, (4) Class I Area impact analysis, (5) visibility, soils, and vegetation impact analysis, and (6) pre-construction monitoring. The AFC air quality analysis and the PTC application comply with the Regulation XIII requirements.
- Regulation XVII (Prevention of Significant Deterioration) - Regulation XVII provides for review of attainment pollutants, and requires the following analyses to be conducted; (1) BACT, (2) air quality impact analysis, (3) Class I Area impact analysis, (4) visibility, soils, and vegetation impact analysis, and (5) pre-construction monitoring. The AFC air quality analysis and the PTC application comply with the Regulation XVII requirements.

AQMD Rule 1320 - New Source Review of Toxic Air Contaminants

Rule 1320 (NSR for Toxic Air Contaminants) establishes risk thresholds for new or modified sources of TAC emissions. Rule 1320 establishes limits for maximum individual cancer risk, cancer burden, and non-carcinogenic acute and chronic hazard indices for new or modified sources of TAC emissions. The public health analysis contained in Section 5.16 and Appendix 5.2D, shows compliance with all Rule 1320 requirements.

AQMD Rule 1200 - Federal Operating Permit Program

Rule 1200 (Title V Permits) implements the federal operating permit program at the local District level. Rule 1200 requires major emitting facilities and acid rain facilities undergoing modifications to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the CAA of 1990. The Title V application will be filed pursuant to the timeframes noted in the rule.

AQMD Regulation XXXI - Acid Rain Program

The MDAQMD does not have a specific acid rain regulation. See Federal LORS section above.

AQMD Regulation IX- NSPS

Regulation IX (NSPS) incorporates by reference the provisions of 40 CFR 60, Chapter 1. See Table 5.2-30 and the Federal LORS discussion above.

AQMD Prohibitory or Source Specific Rules

Table 5.2-30 delineates a number of District prohibitory rules (series 400), and source specific rules (series 1100). Each of these rules will be complied with via the imposition of BACT, use of clean fuels, conditions placed on the ATC/PTO via the DoC by the MDAQMD, and Conditions of Certification imposed by CEC.

5.2.6.2 Agency Jurisdiction and Contacts

Table 5.2-31 presents data on the following: (1) air quality agencies that may or will exercise jurisdiction over air quality issues resulting from the power facility, (2) the most appropriate agency contact for the Project, (3) contact address and phone information, and (4) the agency involvement in required permits or approvals.

Table 5.2-31
Agencies, Contacts, Jurisdictional Involvement, Required Permits For Air Quality

Agency	Contact	Jurisdictional Area	Permit Status
California Energy Commission (CEC)	Assigned Project Manager 1516 Ninth St. Sacramento, CA 95814	Primary reviewing and certification agency.	Will certify the facility under the energy siting regulations and CEQA. Certification will contain a variety of conditions pertaining to emissions and operation.

Table 5.2-31
Agencies, Contacts, Jurisdictional Involvement, Required Permits For Air Quality

Agency	Contact	Jurisdictional Area	Permit Status
Mojave Desert AQMD	Eldon Easton APCO 14306 Park Ave. Victorville, Ca 92392 (760) 235-1661	Prepares Determination of Compliance (DOC) for CEC, Issues MDAQMD Authority to Construct (ATC) and Permit to Operate (PTO), Primary air regulatory and enforcement agency.	DOC will be prepared subsequent to AFC submittal. AFC serves as the ATC application per Rule 1306.
California Air Resources Board (CARB)	Mike Tollstrup Chief, Project Assessment Branch 1001 I St., 6th Floor Sacramento, CA 95814 (916) 322-6026	Oversight of AQMD stationary source permitting and enforcement program	CARB staff will provide comments on applicable AFC sections affecting air quality and public health. CARB staff will also have opportunity to comment on draft ATC.
Environmental Protection Agency, Region IX	Gerardo Rios Chief, Permits Section USEPA-Region 9 75 Hawthorne St. San Francisco, CA 94105 (415) 947-3974	Oversight of all AQMD programs, including permitting and enforcement programs	USEPA Region 9 staff will receive a copy of the DOC. USEPA Region 9 staff will have opportunity to comment on draft ATC

5.2.6.3 Permit Requirements and Schedules

An ATC application is required in accordance with the MDAQMD rules. Pursuant to MDAQMD Rule 1306, the AFC is considered to be equivalent to the AQMD permitting application. The required district permitting forms are included in Appendix 5.2I. These application forms in conjunction with the AFC comprise the required AQMD permitting application package.

5.3 Biology

5.3.1 Transmission Line Modification

The proposed Project changes are contained within the licensed 76 acre Project site and no new additional ground disturbance is expected. The impact associated with the disturbance of the Project site were analyzed during the original licensing proceeding, with 11 Conditions of Certification required to mitigate any impacts to below significant levels.

The close proximity of the new Keim Station, located just south of the Project site and north of Interstate 10, will enable the Project to interconnect into Keim without the use an offsite pole. The Transmission System Engineering portion of this petition, located in section 6.2, details the proposed interconnection further. Moreover, since the proposed modifications will remain within the site boundary and no additional ground disturbance is proposed, the analysis contained within the original Commission Decision regarding potential effects on biological resources will not require modification. The Commission Decision conclusion that the BEP II will not result in significant impacts to biological resources and will comply with all applicable LORS will remain unchanged. For these reasons, the Project modifications proposed within this Petition will not require amendment to the current Biological Opinion.

The 11 Conditions of Certification will not require modification and will continue to mitigate any impacts from the proposed Project changes and continue to comply with the applicable LORS.

5.4 Cultural Resources

The proposed Project changes are contained within the licensed 76 acre Project site and no additional ground disturbance is expected. The impacts associated with the disturbance of the Project site were analyzed during the licensing proceeding, with 10 Conditions of Certification required to mitigate impacts below significant levels. Caithness believes these conditions do not require modification and will mitigate impacts from the proposed Project changes and comply with the applicable LORS. Specifically none of the Project modifications require encroachment upon the cultural resources protected area to the north of the power bock.

5.5 Geology & Paleontology

The Commission Decision found that the Project would not have an adverse significant impact on the paleontological resources. The proposed changes to the Project design do not alter the basis for this conclusion. Moreover, implementation of the Geology & Paleontology resources 7 Conditions of Certification will ensure the Project as proposed will not result in significant adverse impacts. The Project as proposed is expected to continue to comply with all applicable LORS.

5.6 Hazardous Materials

The Commission Decision found that the Project would not have an adverse significant impact in the area of Hazardous Materials. Caithness does not believe any proposed Project modifications will modify any of the conclusions made by the Commission. The amendment does not propose any increase or decrease in the quantities of materials analyzed under the Hazardous Materials section of the Commission Decision or found on the Material Safety Data Sheet (MSDS). The Project as proposed is expected to continue to comply with all applicable LORS.

5.7 Land Use

The proposed Project modifications are contained within the licensed 76 acre Project site and no additional ground disturbance is expected. The impacts associated with the disturbance of the Project site were analyzed during the original licensing proceeding, with 6 Conditions of Certification required to mitigate impacts to below significant levels. The Project will be constructed within the enclosed boundaries of the 76 acre area previously disturbed during the construction and operation of the BEP I. Since the original licensing of the BEP II the Blythe Airport Comprehensive Land Use Plan has remained unmodified and the County of Riverside has not promulgated any additional compatibility policies. Additionally, the Project's applicable land use classifications as well as land use designations surrounding the Project have not changed. Caithness believes that the Conditions of Certification relating to Land Use do not require modification and will mitigate impacts from the proposed Project changes and continue to comply with the applicable LORS.

5.8 Noise

This section analyzes the potential change in noise impacts as a result of the proposed modifications to the Project. The proposed modification which will have the greatest influence on noise will include the following:

- Incorporation of an Auxiliary Boiler
- Increase permitted hours of duct firing
- Removal of the Turbine enclosure
- Additional Cooling Tower Cell

Although this amendment proposes changes to the turbine technology and increase duct firing hours, the equipment guarantees will remain unchanged. This amendment will not change the assumptions or conclusions made in the Commission Decision and will continue to comply with all of the Conditions of Certification.

5.9 Public Health

This section presents the methodology and results of a human Health Risk Assessment (HRA) performed to assess potential effects and public exposure associated with airborne emissions from the routine operation of the BEP II. Section 5.9.1 describes the affected environment. Section 5.9.2 discusses the environmental consequences from the operation of the power facility and associated facilities. Section 5.9.3 discusses cumulative effects. Section 5.9.4 discusses mitigation measures. Section 5.9.5 presents applicable laws, ordinances, regulations, and standards (LORS), permit requirements, schedules, and agency contacts. Section 5.9.5 contains references cited or consulted in preparing this section.

Air will be the dominant pathway for public exposure to chemical substances released by the Project. Emissions to the air will consist primarily of combustion by-products produced by the new combustion turbine and the two additional cells on the existing cooling tower. Potential health risks from combustion emissions will occur almost entirely by direct inhalation. To be conservative, additional pathways were included in the health risk modeling, however, direct inhalation is considered the most likely exposure pathway. The HRA was conducted in accordance with guidance established by the California Office of Environmental Health Hazard Assessment (OEHHA) and the California Air Resources Board (CARB).

Combustion byproducts with established California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS), including nitrogen oxides (NO_x), carbon monoxide (CO), and fine particulate matter (PM_{10}/$PM_{2.5}$) are addressed in Section 5.2, Air Quality. However, some discussion of the potential health risks associated with these substances is presented in this section. Human health risks associated with the potential accidental release of stored acutely hazardous materials are discussed in Section 5.12, Hazardous Materials Handling.

5.9.1 Affected Environment

The BEP II site is located within the City of Blythe, approximately five miles west of the center of the City. The Project site is located east of the Blythe Airport, which is currently owned by Riverside County and operated by the City of Blythe. The Project site is on an intermediate plateau, about 70 feet in elevation above and west of the Colorado River Valley and the City of Blythe, and about 60 feet below the elevation and east of the Blythe Airport. The topography of the Project site is flat.

The site Universal Transverse Mercator (UTM) coordinates are as follows: 714385mE, 3721361mN, Zone 11 (NAD27). Site elevation is approximately 331 ft. amsl.

The site is situated in census tract 458. Figures 5.9-1 and 5.9-2 show the site, sensitive receptor locations, and surrounding census tracts. The Census Findings table (Appendix 5.2D, Public Health) presents a summary of data for each identified census tract adjacent to the site.

Sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to chemical exposure. Schools, both public and private, day care facilities, convalescent homes, and hospitals are of particular concern. Appendix 5.2D, Public Health, presents a detailed listing of sensitive receptors. The nearest sensitive receptors based upon receptor type are listed in Table 5.9-1. Appendix 5.2D, Public Health, delineates data on the population by census tract.

Table 5.9-1
Nearest Sensitive Receptors By Receptor Type

Receptor ID	Receptor Type	UTM Coordinates (E/N), m
1	School	721809, 3721721
2	School	722191, 3722416
3	School	722182, 3722671
4	School	722877, 3721395
5	Hospital	723199, 3721536

Table 5.9-1 Nearest Sensitive Receptors By Receptor Type		
Receptor ID	**Receptor Type**	**UTM Coordinates (E/N), m**
6	School	723458, 3720689
7	School	723648, 3721483
8	School	722995, 3722355
9	Airport	712272, 3721438
10	BEP I	714715, 3721694
11	Residential Cluster	711728, 3720366
12	Residential Cluster	713580, 3720847
13	Residential Cluster	718066, 3721998
14	Residential Cluster	717289, 3721086
15	Residential Cluster	719432, 3721374
16	Residential Cluster	720288, 3720961
17	West City Limit Pop Area	721477, 3721223
18	City Center	723165, 3721311
19	Worker	718688, 3720527

Source: All coordinates from Google Earth (center location of each receptor location), converted to NAD27.
[1] The nearest school is approximately 24,000 feet from the site, therefore no MDAQMD Risk notifications are required.

Air quality and health risk data presented by CARB in the 2008 Almanac of Emissions and Air Quality for the state shows that over the period from 1990 through 2008, the average concentrations for the top 10 toxic air contaminants (TACs) have been substantially reduced, and the associated health risks for the state are showing a steady downward trend as well. This same trend is expected to have occurred in the Mojave Desert Air Basin (MDAB). CARB-estimated emissions inventory values for the top 10 TACs for 2008 are presented in Table 5.9-2. The applicant is not aware of any public health studies related to respiratory illnesses, cancers or related diseases concerning the local area within a 6 mile radius of the proposed site.

Table 5.9-2
Top 10 Toxic Air Contaminants for the MDAB

TAC	Statewide Year 2008 Emissions (tons/yr)	MDAB Year 2008 Emissions (tons/yr)	Predicted Cancer Risk[1], per 10^6
Acetaldehyde	9103	349	ND
Benzene	10794	397	ND
1,3 Butadiene	3754	111	ND
Carbon tetrachloride	4.04	0.07	ND

Chromium 6	0.61	0.02	ND
Para-Dichlorobenzene	1508	-	ND
Formaldehyde	20951	799	ND
Methylene Chloride	6436	-	ND
Perchloroethylene	4982	-	ND
Diesel PM	35884	1450	ND

Source: California Almanac of Emissions and Air Quality-2008, CARB-PTSD.

5.9.2 Environmental Consequences

5.9.2.1 Significance Criteria

Cancer Risk

Cancer risk is the probability or chance of contracting cancer over a human life span (assumed to be 70 years). Carcinogens are not assumed to have a threshold below which there would be no human health effect. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer; the lower the exposure, the lower the cancer risk (i.e., a linear, no-threshold model). Under various state and local regulations, an incremental cancer risk greater than 10 in a million due to a project is considered to be a significant effect on public health. For example, the 10 in a million risk level is used by the Air Toxics Hot Spots (AB 2588) program and California's Proposition 65 as the public notification level for air toxic emissions from existing sources.

Non-Cancer Risk

Non-cancer health effects can be classified as either chronic or acute. In determining the potential health risks of non-cancerous air toxics, it is assumed there is a dose of the chemical of concern below which there would be no effect on human health. The air concentration corresponding to this dose is called the Reference Exposure Level (REL). Non-cancer health risks are measured in terms of a hazard quotient, which is the calculated exposure of each contaminant divided by its REL. Hazard quotients for pollutants affecting the same target organ are typically summed with the resulting totals expressed as hazard indices for each organ system. A hazard index of less than 1.0 is considered to be an insignificant health risk. For this HRA, all hazard quotients were summed regardless of target organ. This method leads to a conservative, upper-bound assessment. RELs used in the hazard index calculations were those published in the CARB/OEHHA listings dated June 2008 (see Table 5.2D-7 Consolidated Table of OEHHR/ARB Approved Risk Assessment Health Values Appendix 5.2D, Public Health).

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure, caused by chemicals accumulating in the body. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-carcinogenic air toxic is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation. The chronic hazard index was calculated using the hazard quotients calculated with annual concentrations.

Acute toxicity is defined as adverse health effects caused by a brief chemical exposure of no more than 24 hours. For most chemicals, the air concentration required to produce acute effects is higher than the level required to produce chronic effects because the exposure duration is shorter. Because acute toxicity is predominantly manifested in the upper respiratory system at threshold exposures, all hazard quotients are typically summed to calculate the acute hazard index. One-hour average concentrations are divided by acute RELs to obtain a hazard index for health effects caused by relatively high, short-term exposure to air toxics.

5.9.2.2 Construction Phase Effects

The construction phase of the Project is expected to take approximately 20 months (followed by 6 months of startup and commissioning). No significant public health effects are expected during the construction phase. Strict construction practices that incorporate safety and compliance with applicable LORS will be followed (see Section 5.9.5). In addition, mitigation measures to reduce air emissions from construction effects will be implemented as described in Section 5.2, Air Quality.

Temporary emissions from construction-related activities are discussed in Section 5.2, Air Quality. Ambient air modeling for particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), CO, sulfur dioxide (SO_2), and NO_x was performed as described in Section 5.2, Air Quality. Construction-related emissions are temporary and localized, resulting in no long-term effects to the public.

Small quantities of hazardous waste may be generated during the construction phase of the Project. Hazardous waste management plans will be in place so the potential for public exposure is minimal. Refer to Section 5.14, Waste Management, for more information. No acutely hazardous materials will be used or stored on-site during construction (see Section 5.15, Hazardous Materials Handling). To ensure worker safety during construction, safe work practices will be followed (Section 5.17, Worker Safety).

5.9.2.3 Operational Phase Effects

Environmental consequences potentially associated with the operation of the Project are potential human exposure to chemical substances emitted to the air. The human health risks potentially associated with these chemical substances were evaluated in a HRA. The chemical substances potentially emitted to the air from the Project turbine/HRSG and cooling tower cells are listed in Table 5.9-3.

Table 5.9-3
Chemical Substances Potentially Emitted to the Air from the Project

Criteria Pollutants
Particulate Matter
Carbon Monoxide
Sulfur Oxides
Nitrogen Oxides
Volatile Organic Compounds
Lead
Noncriteria Pollutants (Toxic Pollutants)
Ammonia

Table 5.9-3
Chemical Substances Potentially Emitted to the Air from the Project

Criteria Pollutants
PAHs
Acetaldehyde
Acrolein
Benzene
1-3 Butadiene
Ethylbenzene
Formaldehyde
Hexane (n-Hexane)
Naphthalene
Propylene
Propylene Oxide
Toluene
Xylene
Arsenic
Aluminum
Cadmium
Chromium VI
Copper
Iron
Mercury
Manganese
Nickel
Silver
Zinc

Emissions of criteria pollutants will adhere to NAAQS and CAAQS as discussed in Section 5.2, Air Quality. The Project also will include emission control technologies necessary to meet the required emission standards specified for criteria pollutants under Mojave Desert Air Quality Management District (MDAQMD) rules. Offsets will be required because the Project will be a major modification to an existing major source. Finally, air dispersion modeling results (presented in Section 5.2, Air Quality) show that emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS). These standards are intended to protect the general public with a wide margin of safety. Therefore, the Project is not anticipated to have a significant effect on public health from emissions of criteria pollutants.

Potential effects associated with emissions of toxic pollutants to the air from the Project were addressed in an HRA, presented in Appendix 5.2D, Public Health. The HRA was prepared using guidelines developed by OEHHA and CARB, as implemented in the latest version of the Hotspots Analysis and Reporting Program (HARP) model (Version 1.4a). As an input into HARP, the HARP On-Ramp preprocessor (as compiled by CARB on 3 February 2009) was used to convert the AERMOD model output into a suitable format for HARP.

5.9.2.4 Public Health Effect Study Methods

Emissions of toxic pollutants potentially associated with the Project were estimated using emission factors approved by CARB and the U.S. Environmental Protection Agency (USEPA). Concentrations of these pollutants in air potentially associated with Project emissions were estimated using the HARP dispersion modeling module. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in an HRA, accounting for site-specific terrain and meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in the air were characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels for non-cancer health effects (for non-carcinogenic substances).

Health risks were evaluated for a hypothetical maximum exposed individual (MEI) located at the maximum impact receptor (MIR). The hypothetical MEI is an individual assumed to be located at the MIR location, which is a residential receptor where the highest concentrations of air pollutants associated with Project emissions are predicted to occur, based on the air dispersion modeling. Human health risks associated with emissions from the Project are unlikely to be higher at any other location than at the location of the MIR. If there is no significant effect associated with concentrations in air at the MIR location, it is unlikely that there would be significant effects in any location in the vicinity of the Project. The highest concentration location represents the MIR.

Health risks potentially associated with concentrations of carcinogenic air pollutants were calculated as estimated excess lifetime cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of the concentration in air and a unit risk value. The unit risk value is defined as the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. In other words, it represents the increased cancer risk associated with continuous exposure to a concentration in the air over a 70-year lifetime. Evaluation of potential non-cancer health effects from exposure to short-term and long-term concentrations in the air was performed by comparing modeled concentrations in air with the RELs. An REL is a concentration in the air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential non-cancer effects were evaluated by calculating a ratio of the modeled concentration in the air and the REL. This ratio is referred to as a hazard quotient. The unit risk values and RELs used to characterize health risks associated with modeled concentrations in the air were obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (CARB, 2/2009), and are presented in Table 5.9-4.

Table 5.9-4
Toxicity Values Used to Characterize Health Risks (Inhalation)

Compound	Unit Risk Factor $(\mu g/m^3)^{-1}$	Chronic Reference Exposure Level $(\mu g/m^3)$	Acute Reference Exposure Level $(\mu g/m^3)$
Ammonia	-	200	3,200
Acetaldehyde	0.0000027	9.0	-
Acrolein	-	0.06	0.19
Benzene	0.000029	60	1,300
1-3 Butadiene	0.00017	20	-

Table 5.9-4
Toxicity Values Used to Characterize Health Risks (Inhalation)

Compound	Unit Risk Factor ($\mu g/m^3$)$^{-1}$	Chronic Reference Exposure Level ($\mu g/m^3$)	Acute Reference Exposure Level ($\mu g/m^3$)
Ethylbenzene	0.0000025	2,000	-
Formaldehyde	0.000006	3	94
Hexane	-	7,000	-
Naphthalene	0.000034	0	-
PAHs (as BaP)	0.0011	-	-
Propylene	-	3,000	-
Propylene Oxide	.0000037	30	3,100
Toluene	-	300	37,000
Xylene	-	700	22,000
Arsenic	0.0033	0.03	0.19
Aluminum	-	-	-
Cadmium	0.0042	0.02	-
Chromium VI	0.15	0.002	-
Copper	-	-	100
Iron	-	-	-
Lead	0.000012	-	-
Mercury	-	0.09	1.8
Manganese	-	0.2	-
Nickel	0.00026	0.05	6
Silver	-	-	-
Zinc	-	-	-

Source: CARB/OEHHA, 2/2009.

Emissions of the various toxic and/or hazardous air pollutants are delineated in detail in Appendix I, Air Quality Data.

5.9.2.5 Characterization of Risks from Toxic Air Pollutants

The excess lifetime cancer risk associated with concentrations in air estimated for the Project MIR location is estimated to be 7.00×10^{-7}. Excess lifetime cancer risks less than 1×10^{-6} are unlikely to represent significant public health effects that require additional controls of facility emissions. Risks higher than 1×10^{-6} may or may not be of concern, depending upon several factors. These include the conservatism of assumptions used in risk estimation, size of the potentially exposed population, and toxicity of the risk-driving chemicals. Health effects risk thresholds are listed in Table 5.9-5, Health Effects Significant Threshold Levels for MDAQMD. Risks associated with pollutants potentially emitted from the Project are presented in Table 5.9-6. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix 5.2D, Public Health. As described previously, human health risks associated with emissions from the Project are unlikely to be higher at any other location than at the location of the MIR. If there is no significant effect associated with concentrations in air at the MIR location, it is unlikely that there would be significant effects in any other location in the vicinity of the Project.

Table 5.9-5
Health Effects Significant Threshold Levels for MDAQMD

Risk Category	Risk Threshold
Moderate Risk	$>1 \times 10^{-6}$
Significant Risk	$>=100 \times 10^{-6}$ HI >= 10
Significant Health Risk	$>=10 \times 10^{-6}$ HI >= 1

Source: Per MDAQMD Rule 1320.

Table 5.9-6
Project HRA Summary

	Turbine and Cooling Tower	
Risk Category	**Project Values**	**Applicable Significance Threshold**
Cancer Risk		See values in Table 5.9-5.
Chronic Hazard Index		
Acute Hazard Index*		
Cancer Burden		

Source: Blythe II Energy Project Team, 2009.
Notes:
[1] MIR effect area lies within Tract 458, with a total estimated affected population of ~4500.
*at the maximum acute impact receptor.

Cancer risks potentially associated with facility emissions also were assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the Project. Cancer burden is calculated as the worst-case product of excess lifetime cancer risk and the number of individuals at that risk level. A worst-case estimate of cancer burden was calculated based on the following assumptions.

The MIR concentration was applied to all affected portions of identified census tracts within the radius area defined by the distance to the highest (MIR) concentration. A detailed listing and map of affected census tracts and year 2000 and 2008 population estimates are provided in Appendix 5.2D, Public Health. This procedure results in a conservatively high estimate of cancer burden. The calculated cancer burden for the Project is ~0.0032.

As described previously, human health risks associated with emissions from the Project are unlikely to be higher at any other location than at the location of the MIR. Therefore, the risks for all of these individuals would be lower (and in most cases, substantially lower) than 7.00×10^{-7}. The estimated cancer burden was ~0.0032, indicating that emissions from the Project would not be associated with any increase in cancer cases in the previously defined population. In addition, the cancer burden is less than the Rule 1320 threshold values. As stated previously, the methods used in this calculation considerably overstate the potential cancer burden, further suggesting that Project emissions are unlikely to represent a significant public health effect in terms of cancer risk.

The acute non-cancer hazard quotient associated with concentrations in air is shown in Table 5.9-6. The acute non-cancer hazard quotients for all target organs fall below 1.0. As described previously, a hazard quotient less than 1.0 is unlikely to represent significant effect to public health. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix 5.2D, Public Health. As described previously, human health risks associated with emissions from the Project are unlikely to be higher at any other location than at the location of the MIR. If there is no significant effect associated with concentrations in the air at the MIR location, it is unlikely that there would be significant effects in any other location in the vicinity of the Project.

Detailed risk and hazard values are provided in the HARP output presented in Appendix 5.2D, Public Health (electronic files on CD).

The estimates of excess lifetime cancer risks and non-cancer risks associated with chronic or acute exposures fall below thresholds used for regulating emissions of toxic pollutants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. In other words, there is no threshold for carcinogenicity. Since risks at low levels of exposure cannot be quantified directly by either animal or epidemiological studies, mathematical models have estimated such risks by extrapolation from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans. In other words, the assumption is that humans are as sensitive as the most sensitive animal species. Therefore, the true risk is not likely to be higher than risks estimated using unit risk factors and is most likely lower, and could even be zero.

An excess lifetime cancer risk of 1×10^{-6} is typically used as a screening threshold of significance for potential exposure to carcinogenic substances in air. The excess cancer risk level of 1×10^{-6}, which has historically been judged to be an acceptable risk, originates from efforts by the Food and Drug Administration to use quantitative HRA for regulating carcinogens in food additives in light of the zero tolerance provision of the Delany Amendment (Hutt, 1985). The associated dose, known as a “virtually safe dose,” has become a standard used by many policy makers and the lay public for evaluating cancer risks. However, a study of regulatory actions pertaining to carcinogens found that an acceptable risk level can often be determined on a case-by-case basis. This analysis of 132 regulatory decisions, found that regulatory action was not taken to control estimated risks below 1×10^{-6} (one in a million), which are called de minimis risks. De minimis risks are historically considered risks of no regulatory concern. Chemical exposures with risks above 4×10^{-3} (four in ten thousand), called de manifestis risks, were consistently regulated. De manifestis risks are typically risks of regulatory concern. The risks falling between these two extremes were regulated in some cases, but not in others (Travis et al 1987).

The estimated lifetime cancer risks to the maximally exposed individual located at the Project MIR are well below the 1×10^{-6} significance level, and the aggregated cancer burden associated this risk level is less than 1.0 excess cancer case. In addition, the cancer burden is less than the Rule 1401 threshold value. These risk estimates were calculated using assumptions that are highly health conservative. Evaluation of the risks associated with the Project emissions should consider that the conservatism in the assumptions and methods used in risk estimation considerably overstates the risks from Project emissions. Based on the results of this HRA, there are no significant public health effects anticipated from emissions of toxic pollutant to the air from the Project.

5.9.2.6 Hazardous Materials

Hazardous materials will be used and stored at the Project Site. The hazardous materials stored in significant quantities on-site and descriptions of their uses are presented in Section 5.6, Hazardous Materials. Use of chemicals at the Project Site will be in accordance with standard practices for storage and management of hazardous materials. Normal use of hazardous materials, therefore, will not pose significant effects to public health. While mitigation measures will be in place to prevent releases, accidental releases that migrate off-site could result in potential effects to the public.

The California Accidental Release Program regulations (CalARP) and Code of Federal Regulations (CFR) Title 40 Part 68 under the Clean Air Act establish emergency response planning requirements for acutely hazardous materials. These regulations require preparation of a Risk Management Plan (RMP), which is a comprehensive program to identify hazards and predict the areas that may be affected by a release of a program listed hazardous material. Any RMP-listed materials proposed to be used at the Project are discussed in Section 5.6, Hazardous Materials.

The proposed new turbine/HRSG Selective Catalytic Reduction (SCR) system will use an on-site ammonia storage and distribution systems. New storage tanks for substances such as ammonia for the SCR system will be installed for the new turbines/HRSGs. An off-site consequence analysis will be performed to assess potential risks to off-site human populations if a spill were to occur.

5.9.2.7 Operation Odors

The Project is not expected to emit or cause to be emitted any substances that could cause odors.

5.9.2.8 Electromagnetic Field Exposure

Electromagnetic fields (EMFs) occur independently of one another as electric and magnetic fields at the 60- Hertz frequency used in transmission lines, and both are created by electric charges. Electric fields exist when these charges are not moving. Magnetic fields are created when the electric charges are moving. The magnitude of both electric and magnetic fields falls off rapidly as the distance from the source increases (proportional to the inverse of the square of distance).

Because the electric transmission line does not travel through residential areas, and based on the findings of the National Institute of Environmental Health Sciences (NIEHS 1999), EMF exposures are not expected to result in a significant effect on public health. The NIEHS report to the U.S. Congress found that "the probability that EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal scientific support that exposure to this agent is causing any degree of harm" (NIEHS 1999).

California does not presently have a regulatory level for magnetic fields. However, the values estimated for the Project are well below those established by states that do have limits. Other states have established regulations for magnetic field strengths that have limits ranging from 150 milligauss to 250 milligauss at the edge of the right-of-way, depending on voltage. The

California Energy Commission does not presently specify limits on magnetic fields for 230kV transmission lines.

5.9.2.9 Legionella

In addition to being a source of potential toxic air contaminants, the possibility exists for bacterial growth to occur in the cooling tower cells, including Legionella. Legionella is a bacterium that is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. It is the principal cause of legionellosis, otherwise known as Legionnaires' Disease, which is similar to pneumonia. Transmission to people results mainly from inhalation or aspiration of aerosolized contaminated water. Untreated or inadequately treated cooling systems, such as industrial cooling tower cells and building heating, ventilating, and air conditioning systems, have been correlated with outbreaks of legionellosis.

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. This provides Legionella with protection from adverse environmental conditions, including making it more resistant to water treatment with chlorine, biocides, and other disinfectants. Thus, if not properly maintained, cooling water systems and their components can amplify and disseminate aerosols containing Legionella.

The State of California regulates recycled water for use in cooling tower cells in Title 22, Section 60303, California Code of Regulations. This section requires that, in order to protect workers and the public who may come into contact with cooling tower mists, chlorine or another biocide must be used to treat the cooling system water to minimize the growth of Legionella and other micro-organisms. This regulation applies to the Project since it intends to use reclaimed water for cooling purposes.

The USEPA published an extensive review of Legionella in a human health criteria document (EPA 1999). The USEPA noted that Legionella may propagate in biofilms (collections of microorganisms surrounded by slime they secrete, attached to either inert or living surfaces) and that aerosol-generating systems such as cooling tower cells can aid in the transmission of Legionella from water to air. The USEPA has inadequate quantitative data on the infectivity of Legionella in humans to prepare a dose-response evaluation. Therefore, sufficient information is not available to support a quantitative characterization of the threshold infective dose of Legionella. Thus, the presence of even small numbers of Legionella bacteria presents a risk - however small - of disease in humans.

In 2000, the Cooling Tower Institute (CTI) issued its own report and guidelines for the best practices for control of Legionella (CTI 2000). The CTI found that 40-60 percent of industrial cooling tower cells tested were found to contain Legionella. To minimize the risk from Legionella, the CTI noted that consensus recommendations included minimization of water stagnation, minimization of process leads into the cooling system that provide nutrients for bacteria, maintenance of overall system cleanliness, the application of scale and corrosion inhibitors as appropriate, the use of high-efficiency mist eliminators on cooling tower cells, and the overall general control of microbiological populations. Good preventive maintenance is very important in the efficient operation of cooling tower cells and other evaporative equipment (ASHRAE 1998). Preventive maintenance includes having effective drift eliminators, periodically cleaning the system if appropriate, maintaining mechanical components in working order, and maintaining an effective water treatment program with appropriate biocide concentrations. The efficacy of any biocide in ensuring that bacteria, and in particular Legionella growth, is kept to a minimum is contingent upon a number of factors including but not limited to proper dosage amounts, appropriate application procedures, and effective monitoring.

In order to ensure that Legionella growth is kept to a minimum, thereby protecting both nearby workers as well as members of the public, an appropriate biocide program and anti-biofilm agent monitoring program would be prepared and implemented for the entire cooling tower, including the two new cooling tower cells associated with this Project. These programs would ensure that proper levels of biocide and other agents are maintained within the cooling tower water at all times, that periodic measurements of Legionella levels are conducted, and that periodic cleaning is conducted to remove bio-film buildup. The mitigation measure which is presented in Section 5.9.4.6 would reduce the chances of Legionella growing and dispersing to insignificant (RSA 2008).

5.9.2.10 Summary of Effects

Results from the air toxics HRA based on emissions modeling indicate that there will be no significant incremental public health risks from construction or operation of the Project. Results from criteria pollutant modeling for routine operations indicate that potential ambient concentrations of NO_2, CO, SO_2, and PM_{10} will not significantly affect air quality (Section 5.2, Air Quality). Potential concentrations are below the federal and California standards established to protect public health, including the more sensitive members of the population.

5.9.3 Cumulative Effects

The HRA for the Project indicates that the maximum cancer risk will be approximately 7.00×10^{-7}, versus a moderate risk threshold of 1.0 in one million at the point of maximum exposure to air toxics from power facility emissions. This risk level is considered to be insignificant. Non-cancer chronic and acute effects will also be less than significant. Therefore, the risk of effects from the Project combining with effects from other past, present, and reasonably foreseeable future projects to make a significant effect are also very low. A cumulative health risk effect analysis is not proposed at this time due to the low emissions and low risks from the Project.

5.9.4 Mitigation Measures

5.9.4.1 Criteria Pollutants

Emissions of criteria pollutants will be minimized by applying Best Available Control Technology (BACT) to the Project. BACT for the turbines/HRSGs, aux boiler, fire pump engine, and new cooling tower cells is delineated in Appendix 5.2F, Air Quality Data.

The Project location is in an area that is designated by the federal air agencies as non-attainment for ozone and non-attainment for particulate matter. Pursuant to MDAQMD New Source Review Rule, offsets are required for the Project. Therefore, further mitigation of emissions is not required to protect public health.

5.9.4.2 Toxic Pollutants

Emissions of toxic pollutants to the air will be minimized through the use of BACT/T-BACT at the Project.

Legionella Mitigation Measure

The Project will develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to a minimum. The Plan will be consistent with the CTI's "Best Practices for Control of Legionella" guidelines and will include sampling and testing for the presence of Legionella bacteria at appropriate intervals (RSA 2008).

5.9.4.3 Hazardous Materials

Mitigation measures for hazardous materials are presented below and briefly discussed in Section 5.6, Hazardous Materials. Potential public health effects from the use of hazardous materials are only expected to occur as a result of an accidental release. The facility has many safety features designed to prevent and minimize effects from the use and accidental release of hazardous materials. The Project site will include the design features listed below.

- Curbs, berms, and/or secondary containment structures will be provided where accidental release of chemicals may occur.
- A fire-protection system will be included to detect, alarm, and suppress a fire, in accordance with applicable LORS.
- Construction of all storage systems will be in accordance with applicable construction standards and LORS.

If required, the existing RMP for the facility will be revised prior to commencement of Project operations. The RMP will estimate the risk presented by handling affected materials at the Project site. The RMP will include a hazard analysis, off-site consequence analysis, seismic assessment, emergency response plan, and training procedures. The RMP process will accurately identify and propose adequate mitigation measures to reduce the risk to the lowest possible level.

A safety program will be implemented and will include safety training programs for contractors and operations personnel, including instructions on: (1) the proper use of personal protective equipment, (2) safety operating procedures, (3) fire safety, and (4) emergency response actions. The safety program will also include programs on safely operating and maintaining systems that use hazardous materials. Emergency procedures for Project personnel include power facility evacuation, hazardous material spill cleanup, fire prevention, and emergency response.

Areas subject to potential leaks of hazardous materials will be paved and bermed. Incompatible materials will be stored in separate containment areas. Containment areas will be drained to either a collection sump or to holding or neutralization tanks. Also, piping and tanks exposed to potential traffic hazards will be additionally protected by traffic barriers.

5.9.5 Laws, Ordinances, Regulations, and Standards (LORS)

An overview of the regulatory process for public health issues is presented in this section. The relevant LORS that affect public health and are applicable to the Project are identified in Table 5.9-7. The conformity of the Project to each of the LORS applicable to public health is also presented in this table, as well as references to the selection locations within this report where each of these issues is addressed. Table 5.9-7 also summarizes the primary agencies responsible for public health, as well as the general category of the public health concern regulated by each of these agencies.

Table 5.9-7
Summary of LORS – Public Health

LORS	Applicability	Primary Regulatory Agency	Project Conformance	Conformance (AFC Section)
Federal Clean Air Act Title III	Public exposure to air pollutants	USEPA Region 9 CARB MDAQMD	Based on results of HRA as per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels. Emissions of criteria pollutants will be minimized by applying BACT to the Project.	5.9.1.5, and Appendix 5.2D
Health and Safety Code 25249.5 et seq. (Safe Drinking Water and Toxic Enforcement Act of 1986—Proposition 65)	Public exposure to chemicals known to cause cancer or reproductive toxicity	OEHHA	Based on results of HRA as per CARB/OEHHA guidelines, toxic contaminants do not exceed thresholds that require exposure warnings.	5.9.1.5, 5.9.1.6, 5.9.3.3, and Appendix 5.2D
40 CFR Part 68 (Risk Management Plan) and CalARP Program Title 19	Public exposure to acutely hazardous materials	USEPA Region 9 Riverside County Dept. of Health Services Riverside County Fire Department	A vulnerability analysis will be performed to assess potential risks from a spill or rupture from any affected storage tank. An RMP (if required) will be prepared prior to commencement of Project operations.	5.9.1.6, and Appendix 5.2D, Section 5.15
Health and Safety Code Sections 25531 to 25541	Public exposure to acutely hazardous materials	Riverside County Dept. of Health Services CARB MDAQMD	A vulnerability analysis will be performed to assess potential risks from a spill or rupture from any affected storage tank.	5.9.1.6, and Appendix 5.2D, Section 5.15
CHSC 25500-25542	Hazmat Inventory	State Office of Emergency Services and Riverside County Dept. of Environmental	Prepare all required HazMat plans and inventories, distribute to affected agencies	Section 5.15

Table 5.9-7
Summary of LORS – Public Health

LORS	Applicability	Primary Regulatory Agency	Project Conformance	Conformance (AFC Section)
		Health		
CHSC 44300 et seq.	AB2588 Air Toxics Program	MDAQMD	Participate in the AB2588 inventory and reporting program at the District level.	Appendix I-A, Appendix 5.2D, initial reporting TBD by MDAQMD
MDAQMD Rule 1320	Toxics NSR	MDAQMD	Application of BACT and T-BACT, preparation of HRA	5.2.4.2, Section 5.9, Appendix 5.2D
CHSC 25249.5	Proposition 65	OEHHA	Comply with all signage and notification requirements.	Section 5.15
Health and Safety Code Sections 44360 to 44366 (Air Toxics "Hot Spots" Information and Assessment Act—AB 2588)	Public exposure to toxic air contaminants	CARB MDAQMD	Based on results of HRA as per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels.	5.9.1, Appendix 5.2D

5.9.5.1 Permits Required and Schedule

Agency-required permits related to public health include an RMP and MDAQMD Permit to Construct/Permit to Operate. These requirements are discussed in Sections 5.2, Air Quality.

5.9.5.2 Agencies Involved and Agency Contacts

Table 5.9-8 provides contact information for agencies involved with Public Health.

Table 5.9-8
Summary of Agency Contacts for Public Health

Public Health Concern	Primary Regulatory Agency	Regulatory Contact
Public exposure to air pollutants	USEPA Region 9	Gerardo Rios Chief, Permits Section USEPA-Region 9 75 Hawthorne St. San Francisco, CA 94105

Table 5.9-8
Summary of Agency Contacts for Public Health

Public Health Concern	Primary Regulatory Agency	Regulatory Contact
		(415) 947-3974
	CARB	Mike Tollstrup 1001 1 Street, 19th Floor Sacramento, CA 95814 (916) 322-6026
	MDAQMD	Eldon Easton, APCO 14306 Park Ave Victorville, Ca 92392 (760) 245-1661
Public exposure to chemicals known to cause cancer or reproductive toxicity	OEHHA	Cynthia Oshita or Susan Long P.O. Box 4010 Sacramento, CA 95812-4010 (916) 445-6900
Public exposure to acutely hazardous materials	USEPA Region 9	Gerardo Rios Chief, Permits Section USEPA-Region 9 75 Hawthorne St. San Francisco, CA 94105 (415) 947-3974
	Riverside County EH Hazmat Division Indio Office	Jim Ray 47-950 Arabia St. Suite A Indio, Ca 92201 (760) 863-8976

Source: Blythe II Energy Project Team, 2009.

The Commission Decision found that the Project would not have an adverse significant impact on Public Health. The proposed changes to the Project design do not alter the basis for this conclusion. Moreover, implementation of the 2 Public Health Conditions of Certification in conjunction with the revised Air Quality section will ensure the Project as proposed will not result in significant adverse impacts. The Project as proposed is expected to continue to comply with all applicable LORS.

5.10 Socioeconomics

The proposed Project changes are not expected to increase or diminish the construction workforce or significantly alter the Project finances. The socioeconomic impacts and benefits associated with the construction and operation of the Project are expected to comparable to those analyzed during the original licensing proceeding. (No change in baseline?) Caithness believes the 3 Conditions of Certification provide a benefit to the local area and will not require modification. Additionally the Conditions of Certification will mitigate any impact from the proposed Project changes. The Project as proposed is expected to continue to comply with all applicable LORS.

5.11 Traffic & Transportation

5.11.1 General Traffic

The Commission Decision determined that the Project would not have a significant impact during construction resulting from commuting workers or truck traffic. The implementation of the Conditions of Certification requiring the BEP II to prepare a Construction Traffic Control Plan, the increased onsite parking proposed under this amendment, as well as the other applicable Conditions will ensure the Project does not create any additional impacts. The proposed Project changes are not expected to significantly increase the construction workforce or truck traffic.

5.11.2 Blythe Airport

The Blythe Airport is currently located one mile west of the licensed BEP II site within Riverside County. The BEP II will incorporate slightly larger combustion turbine units, larger steam turbine generator, fast start technology, and an auxiliary boiler thereby requiring the Project to incorporate additional cooling tower capacity. An extensive analysis was performed during the original proceeding regarding the cooling tower's potential effects on aircraft inbound to the Blythe Airport. The Commission concluded any potential impact of the cooling tower location and design would be mitigated to less than significant by notifying all pilots on the Airport's Automated Surface Observation System (ASOS) advising pilots to avoid low-altitude direct over flight of the power plant, and modification of the traffic pattern to runway 26 from a left-hand turn to a right-hand turn. As the Commission noted in the Decision, the change of the pattern removes the BEP II entirely from the landing pattern and would add 800 feet between the end of runway 26 and the cooling towers. Additional distance will be placed between the runway and the proposed cooling tower design with the relocation of the Project's general arrangement. Since the Commission Decision on the BEP II the surrounding area has remained relatively unchanged. In addition, Riverside County has not modified the Compatible Land Use Plan to include any new or modified LORS.

5.11.3 Federal Aviation Administration

Conditions contained within the Part 77 determination or Notice of Proposed Construction or Alteration for the BEP II project, require Caithness to notify the Federal Aviation Administration (FAA) of any modification made to the original design or an increase in the plant's total output. Notification of the Project's potential modifications has been provided to the appropriate agency by filing a Part 77 application with the FAA.

Therefore, with the implementation of the 9 Conditions of Certification, any modification made to the cooling tower size, arrangement and exhaust stacks, will not create impacts to the Blythe Airport or the Traffic and Transportation analysis. The amendment will not change the assumptions or conclusions made in the Commission Decision and will continue to comply with all of the Conditions of Certification and all applicable LORS.

5.12 Visual Resources

5.12.1 Regional Setting

This section reviews the potential for impacts to visual resources that would occur as a result of the proposed modifications to the BEP II contained in this amendment versus the AFC that was approved by the CEC in December of 2005. The following information and analysis of the visual modifications are based on the conclusions of the initial AFC, the FSA and the review of the technical data, including Project maps and drawings provided by the Project engineer, terrestrial and aerial photography, and revised visual simulations. A view from four of seven of the original Key Observation Points (KOPs) will be slightly modified. Contained within this petition, Caithness has provided the revised simulations as well as the original simulations of those four KOPs for CEC review. A brief description of each KOP location has been provided below.

5.12.2 Project Area Setting

The Project will be located on the Palo Verde Mesa adjacent to the boundary of the Blythe Airport, approximately five miles west of the center of the city of Blythe in eastern Riverside County. This land is bordered to the east by a citrus grove and Buck Blvd, and to the south by Hobsonway.

The Project setting from this remains primarily rural and agricultural in character, but includes industrial features such as the Blythe substation adjacent to the Project site, Interstate 10, Buck Boulevard substation, the transmission lines that extend from the Buck Boulevard substation, the BEP, and the Blythe Airport, 0.5 miles west of the BEP II project site. These features have added an industrial component to a landscape in which the dominant land use is agricultural. Interstate 10 is a major feature in the Project setting. Industrial operations consisting of sewage disposal ponds are located adjacent to the south boundary of the BEP II site; however, these are not readily visible from any ground view.

5.12.3 Key Observation Points (KOPs)

Overall viewing conditions remain unchanged since the permitting of the BEP II. New photography was collected however to provide a visual depiction of the site since the completion of construction and operation of the BEP I. The locations of the KOPs are shown on the KOP map provided as Figure 7.5-1, along with a brief description of the site and viewshed. In addition to the updated visual simulations on four of the KOPs, the original visual simulations have been included for reference.

5.12.3.1 KOP 1 – Eastbound I-10

KOP 1, Figure 5-1, was taken off of Interstate 10, southwest of the Project site, just as the highway traverses down the western-most tier of the mesa, providing a view to the northeast. The Project site is set back about one mile from the eastern edge of Palo Verde Mesa, which is approximately 70 feet higher in elevation than Palo Verde Valley. The site is visible from Interstate 10, however the exposure time is brief. The site becomes visible to eastbound motorists as the highway traverses down the western-most tier of the mesa. The Project site is approximately 58-60 feet lower in elevation than the Blythe Airport, and is not visible from Interstate 10 along the segment of freeway south of the airport. The visual quality of the this KOP is characterized by the BEP II FSA as a "general lack of scenic features or elements of visual interest, combined with the presence of BEP I, numerous transmission line structures, utility poles, and the Blythe Substation contribute to a low-to-moderate rating for visual quality." Figure 7.5-2b was the original simulation performed for KOP 1, and has been included within this petition along with the updated KOP 1 Figure 5-1.

5.12.3.2 KOP 2 – Eastbound Hobsonway

KOP 2, Figure 5-2, was taken west and upslope along Hobsonway. The viewshed as seen from this area consists of a desert landscape that is characteristic of the Palo Verde Mesa as modified by Interstate 10, Hobsonway, the Blythe substation, the Buck Boulevard Substation, the BEP I, and associated transmission lines. The visual quality of the site as viewed from the residence is low because the surrounding environment is dominated by Interstate 10 (to the south of the KOP), Hobsonway, the BEP I, and the associated transmission lines. The limited visibility of scenic features and elements of visual interest combined with the presence of BEP I, numerous transmission line structures, utility poles, and Blythe Substation contribute to a low-to-moderate rating for visual quality. Figure 3B was the original simulation performed for KOP 2, and has been included with this petition along with the updated KOP, Figure 5-2.

5.12.3.3 KOP 3 – Mesa Verde (Nicholls Warm Springs)

The Mesa Verde (Nicholls Warm Springs) residential subdivision is approximately 2.5 miles to the southwest of the Project site. Mesa Verde (Nicholls Warm Springs) is south of Interstate 10, and is accessed from the freeway by Mesa Drive. The subdivision is lower in elevation than the freeway, which dominates the view as seen from the north side of the subdevelopment. Neighboring residences block the views of the Project site from most of the subdivision. The Project site is visible primarily from residences along the east and north sides of the development. The Big Maria and Dome Rock Mountains, which are barely visible on the above horizon are a faint backdrop. The limited visibility and lack of coloration of the scenic features or elements of visual interest, combined with the presence of energy and transportation infrastructure contribute to a low-to-moderate rating for visual quality. Figure 4B was the original simulation performed for KOP 3, and has been included within this petition along with the updated KOP, Figure KOP 5-3.

5.12.3.4 KOP 6 – Westbound Hobsonway

KOP 6 is located on Hobsonway near Buck Boulevard, which runs along the eastern boundary of the plant site. The visual quality of the site as viewed from Hobsonway is remains low because the landscape has been modified by industrial development consisting of several transmission lines that cross the site to the Blythe Substation and the BEP. Portions of these features are blocked from view by the industrial forms of BEP I. The lack of vivid coloration, and the limited visibility of scenic features and elements of visual interest, combined with the dominant presence of BEP I and numerous transmission line structures, and Blythe Substation result in a low-to-moderate rating for visual quality. Figure 7B was the original simulation performed for KOP 6, and has been included within this petition along with the updated KOP, Figure KOP 5-6.

The Commission Decision determined that the Project would not have a significant impact on the visual resources, with implementation of the mitigation measures specified under the 6 Conditions of Certification. Although the visual appearance of the Project will be slightly altered this slight alteration is not significant enough under the new proposed general arrangement to change the conclusion that the impacts of the Project on visual resources will remain less than significant.

5.13 Waste Management

No changes are proposed for the types, quantities, or frequency of waste generation by the Project site during either construction or operation. Additionally the seven Conditions of Certification within the Commission Decision will mitigate any impact from the proposed Project changes. The Project as proposed is expected to continue to comply with all applicable LORS.

5.14 Water Resources

The BEP II is currently permitted to use 3,300 acre-feet of degraded groundwater annually and implement a Water Conservation Offset Program to conserve an equivalent amount of fresh Colorado River Water. The BEP II will not increase its maximum pumping rate for any four-month period above the already evaluated worst case 4 month pumping rate of 2,898 gpm. A maximum pumping rate of 3,000 gpm and a maximum pumping rate for any four-month period at 2,898 gpm was analyzed by staff and approved by the Commission during original licensing effort of the BEP II.[4] Additionally, the Project will not increase the amount of annual water use. To ensure the Project conforms with the Commission's findings and conclusions the BEP II does not propose an increase of peak or annual usage.

This amendment will not change the assumptions or conclusions made in the Commission Decision and will continue to comply with all of the Conditions of Certification.

[4] See; CEC-700-2005-007 Soil and Water Supplement to staffs' FSA at 4.9-34

SECTION 6

Engineering & Transmission

6.1 Transmission System Engineering

6.1.1 Desert Southwest Transmission Project

Since the BEP II received its original license the Desert Southwest Transmission Project (DSWTP) has undergone complete environmental analysis and received its Record of Decision from Department of the Interior on September 18, 2007. The fully permitted DSWTP is a double circuit 500 kV transmission line which extends from Keim Station to Devers. One of the 500 kV transmission line circuits will interconnect with the CRS (formerly Midpoint) approximately 8 miles from the Keim Station. BEP II will interconnect at Keim and deliver power to the CRS. Figure 1-2 has been provided as a one line diagram which displays the interconnection. Imperial Irrigation District was the lead CEQA Agency completing the Environmental Impact Report and the BLM was the lead NEPA Agency completing the Environmental Impact Study. The line is schedule to begin construction end of 2010 and be completed by December 2011. The BLM has issued the ROW Grant for the Project and acquisition of the remaining private parcels along the route is underway.

6.1.2 BEP II Transmission Interconnection

The BEP II is a nominal rated 569 MW combined cycle power plant incorporating fast start technology for the combustion turbines. The proposed Project will be located adjacent to the Blythe Energy Project (hereinafter referred to as BEP) previously licensed by the California Energy Commission on March 21, 2001. BEP II consists of two Siemens combustion turbine generators, one Steam Turbine Generator and supporting equipment. BEP II does not require any land disturbing off-site linear facilities and will be interconnecting with the proposed DSWTP and existing natural gas pipelines on the BEP site.

The BEP II will be electrically interconnected to the Keim Station, located directly across Hobsonway from BEP II. No land disturbing activities will be involved in the Hobsonway line crossing. A one-line diagram of the interconnection is shown in Figure 1-2. The BEP II point of delivery to the California Independent System Operator (CAISO) will be the proposed CRS. This station is proposed as part of the SCE plan to build the California portion of the 500 kV Palo Verde-Devers II circuit. The approximate 8.0 miles of transmission line from Keim Station to the proposed new CRS is part of the proposed DSWTP. The BLM issued a Right-of-Way Grant for the DSWTP on September 18, 2007.

6.1.3 Additional Utilized Facilities

There will be some transmission and telecommunication facilities which will be required through the proposed interconnection into Keim and delivery of power to the CRS. A summary of those facilities is listed here.

- Blythe – CRS 500kV Gen. Tie Line: DSWTP to install one 500kV structure inside the CRS perimeter fence and all required conductors and OPGW.

- Colorado River Substation: DSWTP to install a new 500kV Line Position to terminate the Blythe – CRS 500kV Line.
- Etiwanda Generating Station: Replace the 2000A Wave Trap on the Vista 230kV line Position with 3000A Rated.
- Etiwanda Generating Station: Install SPS – 2 Relays.
- San Bernardino Generating Station: Install SPS – 2 Relays.
- Telecommunications: Install two new fiber optic channels between the Blythe II Generating Facility and the Telecommunications Room to provide one of the two channels required between CRS and the Blythe II Generating Facility to support the Blythe – CRS 500kV Line Protection Relays. Also install interface terminal equipment at CRS, the Blythe II Generating Facility and the Telecommunications Room. This connection would also provide the required telecommunications link for the new RTU at the Blythe II Generating Facility. The remaining channel required for line protection will be provided by BEPII by installing OPGW on the new 500kV Line. Also install required interface terminal equipment at Etiwanda and San Bernardino Generating Stations to support the SPS – 2 related relays.
- Power System Control: Install new Remote Terminal Units (RTU) at the Blythe II Generating Facility and expand existing RTU at CRS to install the additional points required for the new Blythe – CRS 500kV Line.

6.1.4 BEP II Integration Substation

The BEP II Integration Substation is located to the north of the power island will include three main 16/500 kV transformers one for each of the CT's and STG (see Figure 1-2). A 500 kV collector bus will take the power west on a single overhead 500 kV circuit and then south along the western boundary of the site to the site fence line. The line then crosses Hobsonway where it connects to the DSWTP Keim Station.

6.1.5 CAISO/Edison LGIP

Caithness filed an interconnection request for the BEP II with SCE and the CAISO on March 18, 2003. SCE has completed the System Impact Study and Facilities Study and BEP II holds CAISO queue position 17 for 520 MW. The System Impact Study was completed March 16, 2006 and the Facilities Study was completed by SCE on February 2, 2007. The CAISO approved the Facilities Study on February 9, 2007. In addition, the CAISO has declared BEP II 100% Deliverable for purposes of Resource Adequacy with no system upgrade costs assigned to the Project. The Large Generator Interconnection Agreement (LGIA) is currently under development by SCE.

6.1.6 BEP II Expansion Request

Caithness filed a 50 MW expansion request for the BEP II to SCE and the CAISO on May 7, 2007 to bring the BEP II interconnection capacity to 570 MW. The CAISO and SCE performed a Feasibility Study on the Expansion Request and subsequently waived the System Impact Study and Facilities Study in granting the request. The Expansion Request holds CAISO queue position 219. The final LGIA is pending resolution of the schedule of other generation and transmission projects near Blythe. These projects total nearly 5000 MWs of installed capacity and are currently in Phase 1 of the Transition Cluster LGIP.

Proposed Modifications to the Conditions of Certification

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List for the BEP II transmission facilities to the first point of interconnection at the Keim Station. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested. This condition applies only to the power plant Integration Switchyard and transmission tie line.

TSE-2 Prior to the start of construction of the power plant Integration Switchyard or transmission tie line to the Keim Station, the project owner shall assign an electrical engineer and at least one of each of the following to the project:
(TSE-2 remainder was removed)

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading for transmission related facilities to the first point of interconnection at Keim, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval. If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-5 The project owner shall ensure that the design, construction and operation of the proposed power plant Integration Switchyard and transmission tie line facilities to the Keim Station will conform to all applicable LORS, including the requirements and description listed below. No increment of construction of these facilities shall commence until
the CPM approves the documents required in the Verification for **TSE-5**. The project owner shall submit the required number of copies of the design drawings and calculations as determined by the CBO. The BEP II 500 kV integration switchyard shall have four switchbays with 500 kV circuit breakers. The high voltage transformer terminals of two CTGs and one STG unit shall be connected by overhead conductors to three switch bays. The fourth bay shall be connected to a 500 kV 2-2156 Aluminum Conductor Steel Reinforced (ACSR) interconnecting line to the Keim Station. The Integration Switchyard shall be connected to the Keim 500 kV Bus via a 500 kV single circuit transmission line.
a) The power plant Integration Switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric

Safety Code (NESC), Title 8 of the California Code and Regulations (Title 8), Articles 35, 36 and 37 of the “High Voltage Electric Safety Orders”, Western Interconnection standards, IEEE grounding standards, National Electric Code (NEC) and related industry standards.
b) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.
c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner’s standards.
d) The project conductors shall be sized to accommodate the full output from the project.
e) Termination facilities shall comply with applicable Western interconnection standards.
f) The project owner shall provide to the CPM:

> **i)** A System Impact Study and a final Detailed Facility Study (DFS) conducted by Edisonwhich includes, with respect to the major equipmentlisted in Table 1 of TSE-1, the following:

(1) a description of all interconnection facilities with a one-line diagram including BEP II integration switchyard and the point of interconnection at the Keim Station. **(2)** a description of any mitigation measures selected by project owner (to offset reliability criteria violations) and letters or reports of acceptance from the affected transmission owners and where applicable, the CA ISO.

> **ii)** Executed a Large Generator Interconnection Agreement between the BEP II project owner and Edison.

Verification: At least 90 days prior to the start of construction of transmission facilities to the first point of interconnection at the Substation (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit to the CBO and where applicable the CPM for approval:
(The remainder of this verification has been removed)

TSE-6 The project owner shall inform the CPM and CBO of any impending changes, which may not conform to the requirements **TSE-5** a) through e), and have not received CPM and CBO approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment shall not begin without prior written approval of the changes by the CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities to the first point of interconnection , the project owner shall inform the CBO and the CPM of any impending changes which may not conform to requirements of

TSE-7 The project owner shall provide the following notices to Edison and the California Independent System Operator (Cal-ISO) prior to synchronizing the facility with the Edison transmission system:
1. At least one week prior to synchronizing the facility with the grid for testing, provide Edison, and Cal-ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the Edison and Cal-ISO Outage Coordination Department.
Verification: The project owner shall provide copies of the Edison and Cal-ISO letters to the CPM when they are sent to the Edison and Cal-ISO one week prior to initial synchronization with the grid. The project owner shall contact the Western, DSR and Cal334 ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the Edison and Cal-ISO shall be provided electronically to

the CPM one day before synchronizing the facility with the Edison California transmission system for the first time.

TSE-8 The project owner shall be responsible for the inspection of the power plant Integration Switchyard and transmission tie line to the Keim Station during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, "High
Voltage Electric Safety Orders", applicable interconnection standards, IEEE grounding standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such nonconformance and describe the corrective action(s) to be taken.
Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:
1. "As built" engineering description(s) and one-line drawings of the Integration Switchyard and the 500 kV line to the Keim Station signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders IEEE grounding standards, and applicable interconnection standards, NEC, related industry standards, and these conditions shall be provided concurrently.
2. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".
3. A summary of inspections of the completed transmission facilities, and
identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

6.2 Transmission Line Safety & Nuisance

The transmission impacts associated with this Project's amendment were discussed and evaluated in the Transmission and System Engineering section of this petition. However, there are a few Conditions of Certification contained within this section which require modification.

TLSN-1 The project owner shall ensure that the proposed on-site 500 kV project line is designed and constructed as specified for lines of this voltage class in CPUC's GO-95, GO- 52, the applicable sections of Title 8, California Code of Regulations section 2700 et seq., and Western's EMF reduction guidelines arising from CPUC Decision 93-11-013.
Verification: Thirty days before starting construction of the BEP II transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming compliance with this requirement.

TLSN-2 The project owner shall ensure that every reasonable effort will be made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the project-related lines and associated switchyards. The project owner shall maintain written records, for a period of five years, of all complaints of radio or television interference attributable to operation of the plant and the corrective action taken in response to each complaint. Complaints not leading to a specific action or for which there was no resolution should be noted and explained. The record shall be signed by the

project owner and also the complainant, if possible, to indicate concurrence with the corrective action or agreement, with the justification for a lack of action.
Verification: All reports of line-related complaints shall be summarized for the project related lines and included for the first five years' of plant operation in the Annual Compliance Report.

TLSN-3 The project owner shall engage a qualified consultant to measure the strengths of the electric and magnetic fields from the proposed on-site 500 kV , and the maximum impact points within and along and at the
edges of the right-of-way (for which the Applicant presented field strength estimates). All measurements should be made according to Institute of Electrical and Electronics Engineers (IEEE) measurement protocols.
Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 30 days after completion of the measurements. While pre-energization measurements can be made anytime before energization; post-energization measurements shall be initiated within 60 days of after operations commence.

TLSN-4 The project owner shall ensure that the route of the project's on-site 500 kV line is kept free of combustible material in compliance with the provisions of Section 4292 of the Public Resources Code and Section 1250, Title 14, of the California Code of Regulations.

SECTION 7

Potential Effects on the Public

Pursuant to the CEC Siting Regulations Section 1769 (a)(1)(G), this section addresses the proposed amendment's effects on the public.

The proposed Project design changes are expected to result with comparable environmental effects as the currently licensed Project. Because of such, impacts to the public are expected to be the same as those analyzed during the license proceeding for the Project. The Commission Decision concluded that with the Conditions of Certification, the Project will not result in significant impacts to the public or the environment.

Figures

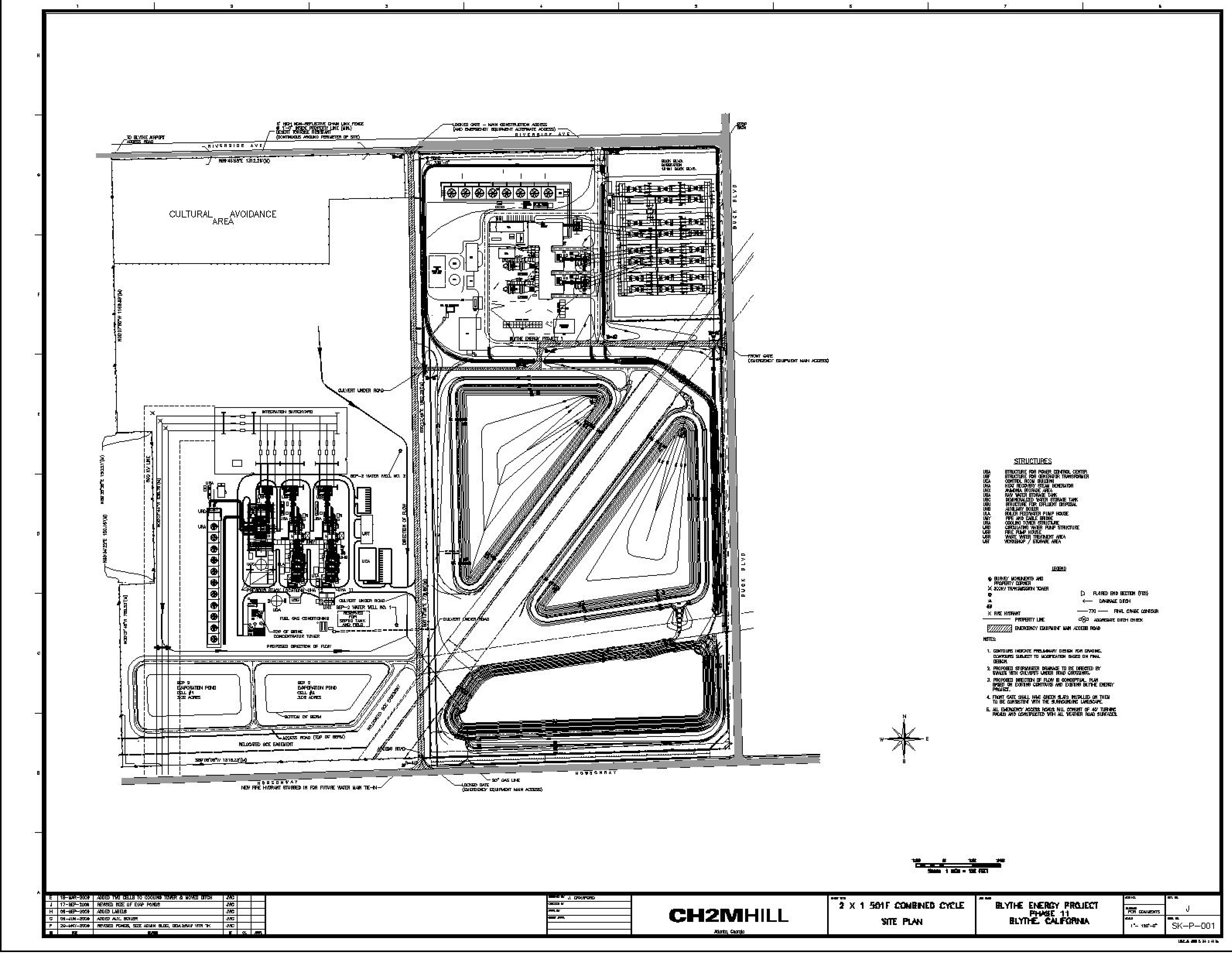
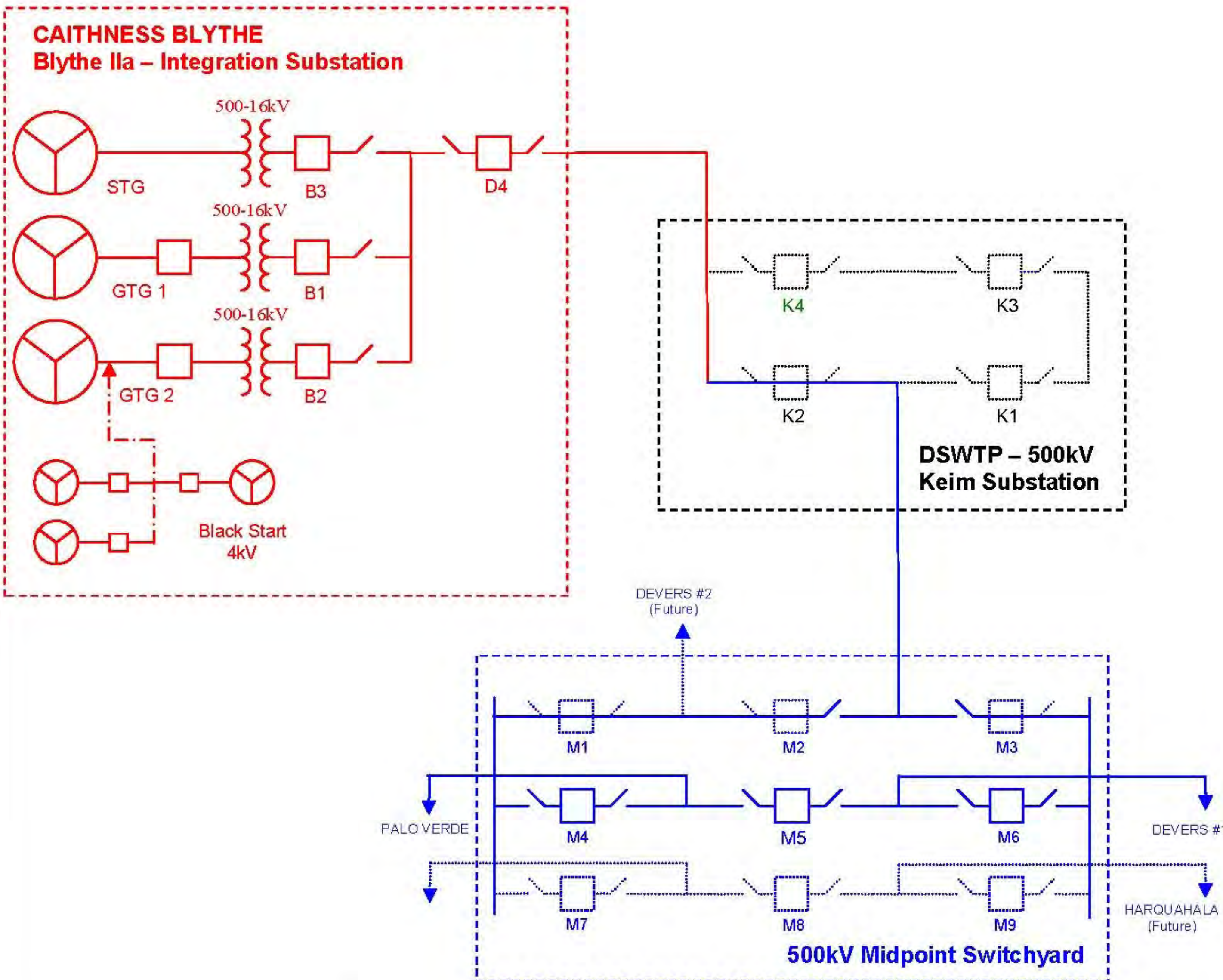

CULTURAL AREA AVOIDANCE
RIVERSIDE AVE
BUCK BLVD
HOBSONWAY
TO BLYTHE AIRPORT ACCESS ROAD
BLYTHE ENERGY PROJECT 1
FRONT GATE (EMERGENCY EQUIPMENT MAIN ACCESS)
CULVERT UNDER ROAD
INTEGRATION SWITCHYARD
BEP-2 WATER WELL NO. 2
BEP-2 WATER WELL NO. 1
DIRECTION OF FLOW
FUEL GAS CONDITIONING
TOP OF BRINE CONCENTRATOR TOWER
PROPOSED DIRECTION OF FLOW
BEP 2 EVAPORATION POND CELL #1
BEP 2 EVAPORATION POND CELL #2
BOTTOM OF BERM
ACCESS ROAD (TOP OF BERM)
RELOCATED SCE EASEMENT
NEW FIRE HYDRANT STUBBED IN FOR FUTURE WATER MAIN TIE-IN
LOCKED GATE (EMERGENCY EQUIPMENT MAIN ACCESS)
STRUCTURES
UBA STRUCTURE FOR POWER CONTROL CENTER
UBF STRUCTURE FOR GENERATOR TRANSFORMER
UCA CONTROL ROOM BUILDING
UHA HEAT RECOVERY STEAM GENERATOR
UHX AMMONIA STORAGE AREA
UGA RAW WATER STORAGE TANK
UGC DEMINERALIZED WATER STORAGE TANK
UGU STRUCTURE FOR EFFLUENT DISPOSAL
UHB AUXILIARY BOILER
ULA BOILER FEEDWATER PUMP HOUSE
UMY PIPE AND CABLE BRIDGE
URA COOLING TOWER STRUCTURE
URD CIRCULATING WATER PUMP STRUCTURE
USB FIRE PUMP HOUSE
USR WASTE WATER TREATMENT AREA
UST WORKSHOP / STORAGE AREA
LEGEND
SURVEY MONUMENTS AND PROPERTY CORNER
500KV TRANSMISSION TOWER
FIRE HYDRANT
PROPERTY LINE
EMERGENCY EQUIPMENT MAIN ACCESS ROAD
FLARED END SECTION (FES)
DRAINAGE DITCH
770 FINAL GRADE CONTOUR
AGGREGATE DITCH CHECK
NOTES:
1. CONTOURS INDICATE PRELIMINARY DESIGN FOR GRADING. CONTOURS SUBJECT TO MODIFICATION BASED ON FINAL DESIGN.
2. PROPOSED STORMWATER DRAINAGE TO BE DIRECTED BY SWALES WITH CULVERTS UNDER ROAD CROSSINGS.
3. PROPOSED DIRECTION OF FLOW IS CONCEPTUAL PLAN BASED ON EXISTING CONTOURS AND EXISTING BLYTHE ENERGY PROJECT.
4. FRONT GATE SHALL HAVE GREEN SLATS INSTALLED ON THEM TO BE CONSISTENT WITH THE SURROUNDING LANDSCAPE.
5. ALL EMERGENCY ACCESS ROADS WILL CONSIST OF 40' TURNING RADIUS AND CONSTRUCTED WITH ALL WEATHER ROAD SURFACES.
N
S
E
W
CH2MHILL
2 X 1 501F COMBINED CYCLE
SITE PLAN
BLYTHE ENERGY PROJECT PHASE 11
BLYTHE, CALIFORNIA
FOR COMMENTS
J
SK-P-001

FIGURE 1-1



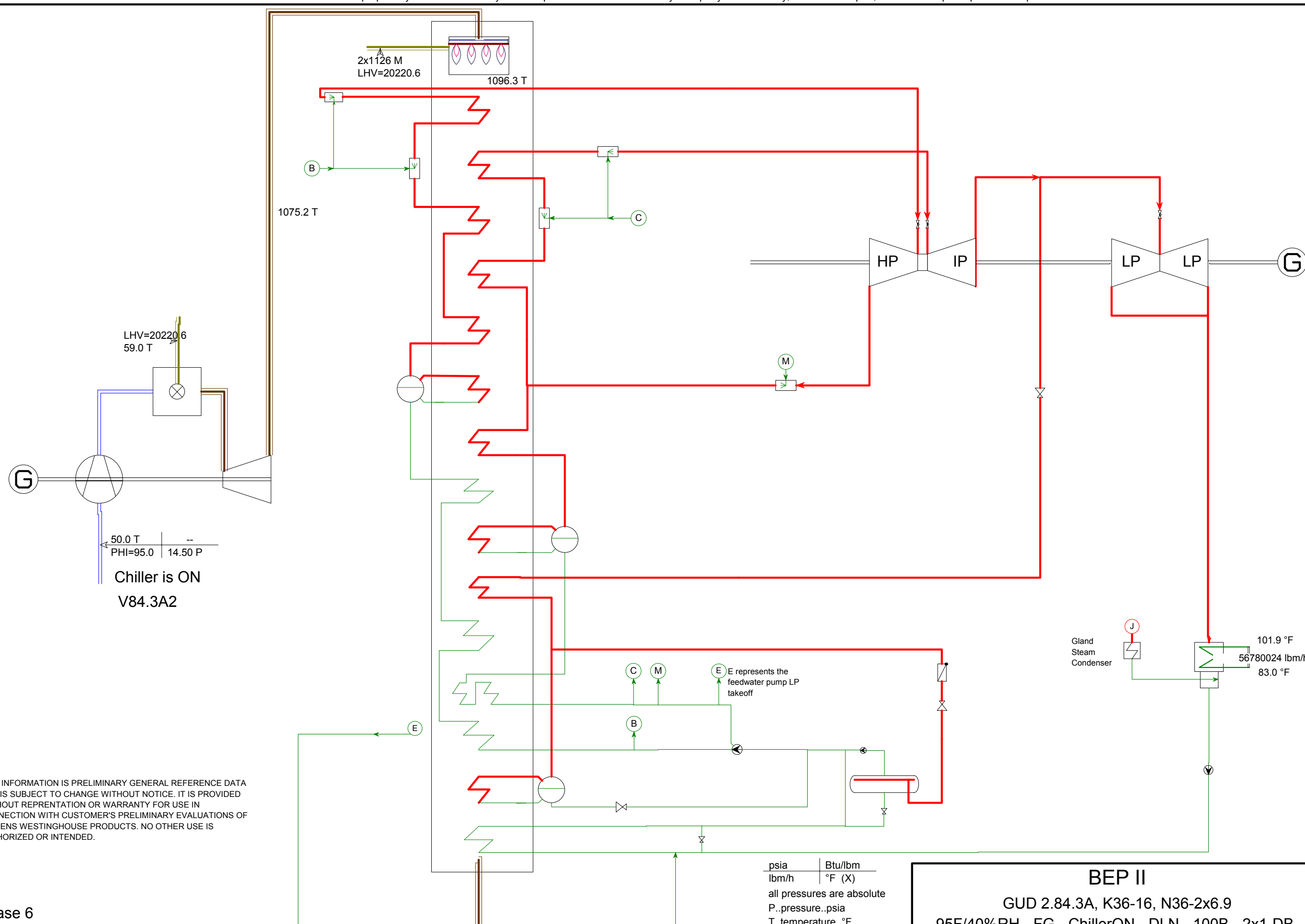
Cadiente Consulting	DATE: 09/16/05 REV: A2	**CAITHNESS BLYTHE** **DETAILED ONE-LINE** Blythe IIa	DWG NO **001**

FIGURE 1-2

FIGURE 1-3 Revised Heat and Mass Balance Summary

Case				1	2	3	4
Description							
		Ambient Temperature	°F	59.0	59.0	95.0	95.0
		Ambient Humidity	%	59.5	59.4	40.0	40.0
		Ambient Wet Bulb	°F	51.4	51.3	75.0	75.0
		Fuel	-	Nat Gas	Nat Gas	Nat Gas	Nat Gas
		Number Gas Turbines	-	2	2	2	2
		Gas Turbine Load	%	100.00	98.33	100.00	100.00
		Process Steam	lb/hr	0	0	0	0
		Duct Firing	MMBtu/hr	9.08	0.00	493.74	334.96
		Evap Cooler	-	No	Yes	No	Yes
		Water Injection	lb/hr	-	-	-	-
Overall Performance							
		GT Power	kW	392,148	394,151	336,654	363,315
		ST Power	kW	208,151	206,156	251,875	237,662
		Gross Power	kW	600,299	600,307	588,529	600,977
		Net Power	kW	587,061	587,078	574,165	587,135
		Net HHV Heat Rate	Btu/kWh	6762	6779	7042	6960
		Net LHV Heat Rate	Btu/kWh	6094	6109	6346	6273
Gas Turbine (each)							
		Flow	lb/hr	82,935	83,338	74,332	78,565
1	Natural Gas	Heat Input	MMBtu/hr	1980.2	1989.8	1774.8	1875.8
		Temperature	°F				
2	Distillate Oil	Flow	lb/hr	-	-	-	-
		Heat Input	MMBtu/hr	-	-	-	-
3	Water Injection	Flow	lb/hr	-	-	-	-
		Temperature	°F	-	-	-	-
4	CTG Exhaust	Flow	lb/hr	3,950,635	3,960,681	3,571,475	3,734,685
		Temperature	°F	1085.3	1080.7	1126.0	1106.7
		Exhaust gas N2	% vol	74.42	74.23	73.52	73.04
		Exhaust gas O2	% vol	12.54	12.48	12.40	12.20
		Exhaust gas CO2	% vol	3.74	3.75	3.69	3.72
		Exhaust gas SO2	% vol	0.00	0.00	0.00	0.00
		Exhaust gas H2O	% vol	8.40	8.64	9.50	10.15
		Exhaust gas Ar	% vol	0.90	0.89	0.89	0.88
HRSGs (each)							
		Flow	lb/hr	455,022	450,499	597,798	558,635
5	HP Steam	Temperature	°F	1053.4	1048.8	1054.5	1054.3
		Pressure	psia	1681.2	1662.4	2179.5	2042.9
		Flow	lb/hr	444,774	440,341	584,470	546,179
6	Cold Reheat	Temperature	°F	736.3	733.3	725.4	726.7
		Pressure	psia	509.1	505.0	641.6	601.5
		Flow	lb/hr	509,185	505,804	641,085	599,570
7	Hot Reheat	Temperature	°F	1035.1	1030.5	1052.7	1052.7
		Pressure	psia	473.9	470.0	598.5	560.4
		Flow	lb/hr	64,412	65,463	38,220	48,015
8	IP Steam	Temperature	°F	586.3	585.4129	607.2718	602.7684
		Pressure	psia	509.1	505.0	641.6	601.5
		Flow	lb/hr	101,374	102,260	75,026	86,336
9	LP Steam	Temperature	°F	478.9	478.6	492.0	487.9
		Pressure	psia	70.8	70.6	77.6	76.0
		Flow	lb/hr	64,412	65,463	38,220	48,015
10	IP FW Extraction	Temperature	°F	586.3	585.4	607.3	602.8
		Pressure	psia	509.1	505.0	641.6	601.5
11	HP Desuperheater	Flow	lb/hr	0	0	48,530	28,761
12	RH Desuperheater	Flow	lb/hr	0	0	18,372	5,356
13	LP Econ Inlet	Temperature	°F	94.3	94.9	94.8	113.8
14	LP Make-up	Temperature	°F	94.3	94.9	94.8	113.8
15	Duct Burner Fuel	LHV Input	MMBtu/hr	8.2	0.0	445.0	301.9
16	Stack	Temperature	°F	205.5	206.0	200.5	205.7
Steam Turbine							
		Flow	lb/hr	1,632,375	1,614,142	2,115,911	1,983,295
17	Throttle	Temperature	°F	1049.4	1044.9	1050.0	1050.0
		Pressure	psia	1632.4	1614.1	2115.9	1983.3
		Flow	lb/hr	889,547	880,683	1,168,939	1,092,357
18	HP Exhaust	Temperature	°F	738.6	735.5	727.7	729.0
		Pressure	psia	514.0	509.7	648.0	607.6
		Flow	lb/hr	889,547	880,683	1,168,939	1,092,357
19	Hot Reheat	Temperature	°F	1032.5	1027.9	1050.0	1050.0
		Pressure	psia	458.9	455.2	579.5	542.6
		Flow	lb/hr	202,748	204,520	150,052	172,672
20	LP Admission	Temperature	°F	475.2	474.8	489.2	484.8
		Pressure	psia	62.7	62.3	73.6	70.6
		Flow	lb/hr	1,240,278	1,235,113	1,457,238	1,395,171
21	ST Exhaust	Pressure	"HgA	1.58	1.57	2.81	2.70
		Temperature	°F	93.4	93.2	112.7	111.4
		Flow	lb/hr	-	-	-	-
22	Process Steam	Pressure	psia	-	-	-	-
		Temperature	°F	-	-	-	-
23	Proc. Desuperheat	Flow	lb/hr	-	-	-	-
Cooling System							
24	Condensate	Flow	lb/hr	1,241,616	1,236,444	1,458,877	1,396,723
		Temperature	°F	95.3	95.1	114.3	113.0
25	Make-up	Flow	lb/hr	0	0	0	0
		Temperature	°F	70.0	70.0	70.0	70.0
26	Fuel Heater Outlet	Flow	lb/hr	-	-	-	-
		Temperature	°F	-	-	-	-
		Flow	lb/hr	0	0	0	0
27	HRH Bypass	Pressure	psia	-	-	-	-
		Temperature	°F	-	-	-	-
		Flow	lb/hr	0	0	0	0
28	LP Steam Bypass	Pressure	psia	-	-	-	-
		Temperature	°F	-	-	-	-

29	Cold Circ Water	Flow	gpm	106,559	106,559	106,559	106,559
		Temperature	°F	65.6	65.6	80.8	80.7
30	Hot Circ Water	Temperature	°F	87.8	87.6	106.8	105.7
31	HRH Bypass Desup.	Flow	lb/hr	-	-	-	-
32	LP Bypass Desup.	Flow	lb/hr	-	-	-	-
33	HP Bypass Desup.	Flow	lb/hr	-	-	-	-
34	Tower Make-up	Flow	gpm	472	470	674	651
35	Tower Blowdown	Flow	gpm	0	0	0	0
Auxiliary Loads and Losses							
	GT auxiliaries		kW	816	816	816	816
	Boiler feedpump		kW	3,195	3,185	4,438	3,845
	Circulating Water Pump		kW	2,309	2,309	2,306	2,306
	Cooling Tower Fans		kW	1,389	1,389	1,340	1,343
	Misc. ST auxiliaries		kW	417	417	417	417
	Other		kW	2,110	2,110	2,105	2,111
	Total Auxiliary Loads		kW	10,237	10,227	11,422	10,837
	Transformer losses		kW	3,001	3,002	2,943	3,005
	Total Loads and Losses		kW	13,238	13,229	14,364	13,842



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Case 6

Combined Cycle Power @ Generator Terminal: 538.910 MW

For Information only

psia	Btu/lbm
lbm/h	°F (X)

all pressures are absolute
P..pressure..psia
T..temperature..°F
H..enthalpy..Btu/lbm
M..mass flow..lbm/h
PHI..atmospheric humidity..%
fuel sensible heat included

BEP II

GUD 2.84.3A, K36-16, N36-2x6.9

95F/40%RH - FG - ChillerON - DLN - 100B - 2x1-DB

Heat Flow Diagram
No.280599 -A 712- HFD10001 D2
Orlando, Jan/07/2004 RDH

SWPC
A 712

JOB IDENTIFICATION : C:\shengj\Blythe II\Blythe Model\D02_Blythe_energy.gek; Lp.69; shengj; 07.Jan.2004 16:57:39; V1.7.15

BLYTHE ENERGY PROJECT
PHASE II

FIGURE 2.0-6F
HEAT FLOW DIAGRAM
95°F/40% RH, CHILLER ON,
DUCT BURNER ON

RIVERSIDE CO., CALIFORNIA

DATE: 10MAR04	
SCALE: NTS	DRAWN BY: REG

KOP 1
FIGURE 5-1


KOP 2
FIGURE 5-2

KOP 3
FIGURE 5-3

KOP 6
FIGURE 5-6

PHOTO SIMULATION

BLYTHE ENERGY PROJECT PHASE II	
FIGURE 7.5-2b KOP 1 PHOTO SIMULATION OF BEP AND BEP II	
RIVERSIDE CO., CALIFORNIA	
DATE: 04.03.02	AutoCAD File: 1135 KOPS.dwg
SCALE: NTS	DRAWN BY: MTM

1135 KOPS.dwg_KOP 1(3)

PHOTO SIMULATION

VISUAL RESOURCES - FIGURE 4B
Blythe Energy Project Phase II - KOP 3 - Photo Simulation

PHOTO SIMULATION

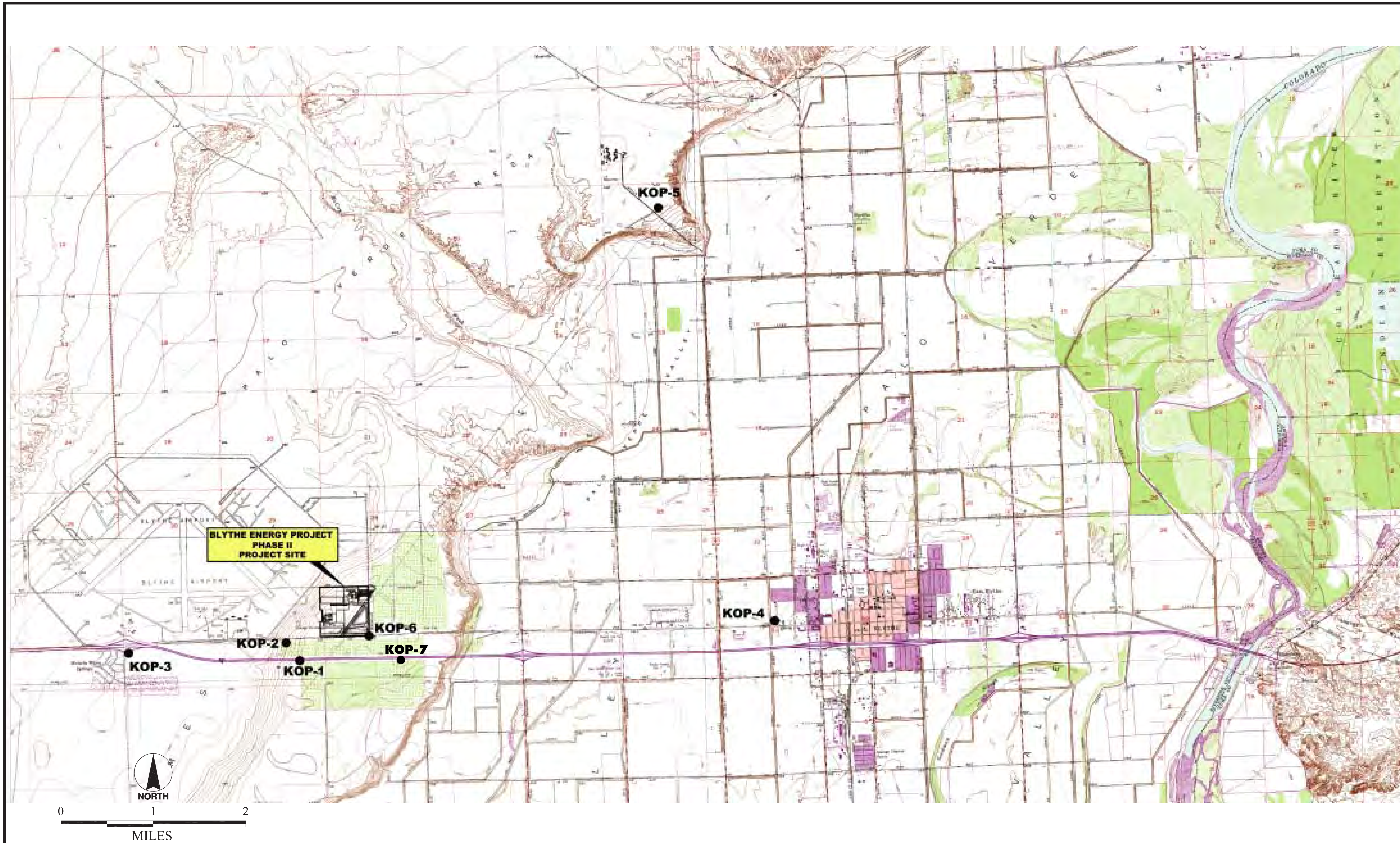
VISUAL RESOURCES - FIGURE 7B

Blythe Energy Project Phase II - KOP 6 - Photo Simulation

PHOTO SIMULATION

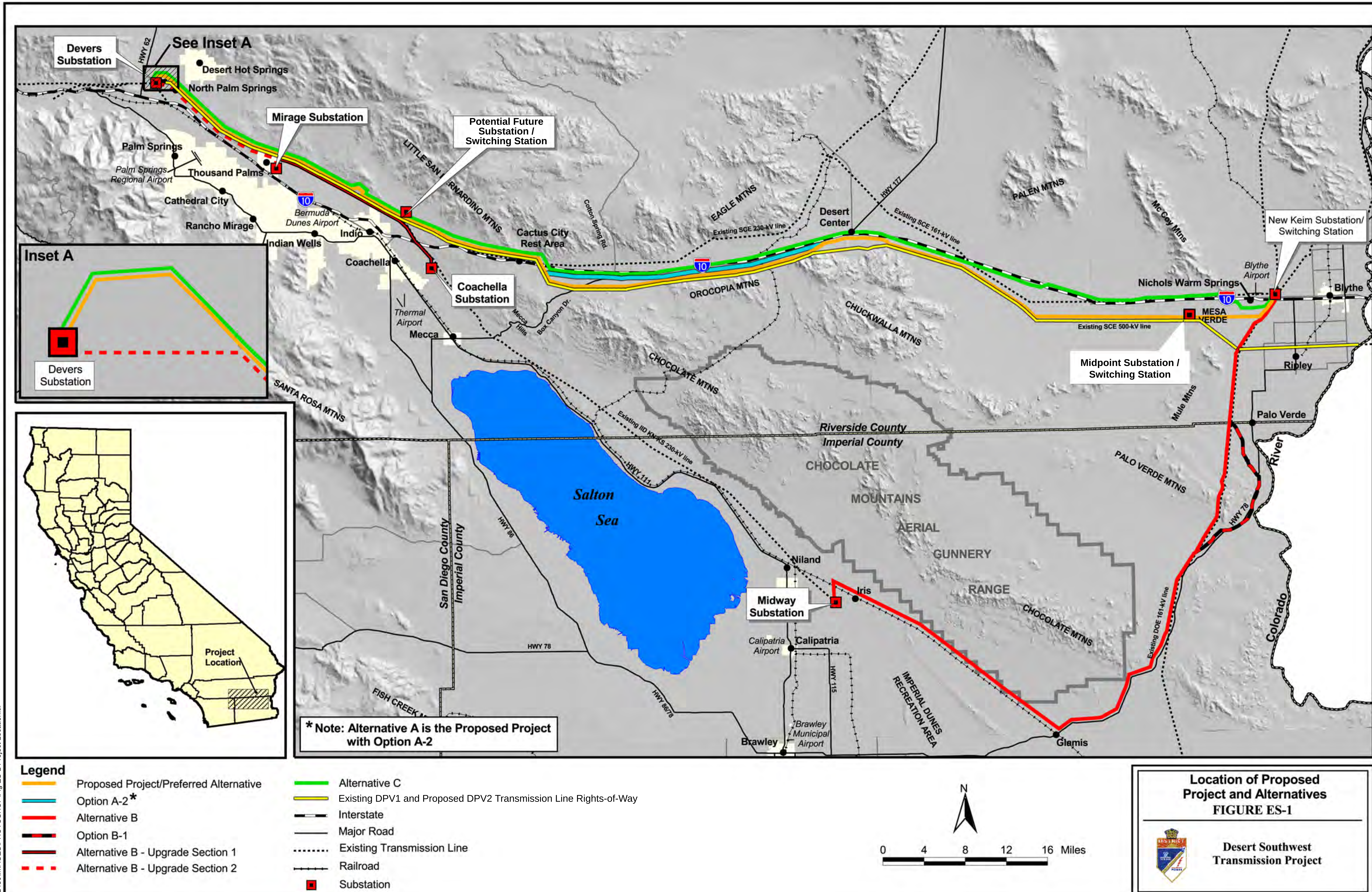
VISUAL RESOURCES - FIGURE 1

Blythe Energy Project Phase II - Location of Key Observation Points



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, APRIL 2005

SOURCE: BEP II 2002a, Figure 7.5-1



Location of Proposed Project and Alternatives
FIGURE ES-1

I:\1480\IMAGES\PHOTOSHOP\Fig ES-1 Project Location.tif

Appendices

APPENDIX 5.2

Air Quality References

APPENDIX 5.2

Air Quality References

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APPENDIX 5.2A

Calculation of Maximum Hourly, Daily, and Annual Emissions

APPENDIX 5.2A

Calculation of Maximum Hourly, Daily, and Annual Emissions

Tables presented in this Appendix are as follows:

5.2A-1	Ammonia Slip Emissions-Turbines/HRSGs
5.2A-2	Ammonia Slip Emissions-Aux Boiler
5.2A-3	Maximum Hourly, Daily, and Annual Emissions Estimates
5.2A-4	Fuel Use Calculations
5.2A-5	Turbine/HRSG Air Toxic Emissions Estimates
5.2A-6	Turbine/HRSG Performance Data Sheets
5.2A-7	Aux Boiler Emissions Estimates
5.2A-8	Aux Boiler Air Toxic Emissions Estimates
5.2A-9	Cooling Tower PM10/PM2.5 Emissions Estimates
5.2A-10	Cooling Tower Air Toxic Emissions Estimates
5.2A-11	Fire Pump Engine Emissions Estimates
5.2A-12	Typical Natural Gas Analysis Data
5.2A-13	Typical Diesel Fuel Analysis Data
5.2A-14	Turbine/HRSG GHG Emissions Estimates

In addition to the above tables, the following miscellaneous support data for the device-specific emissions calculations is also be included in this Appendix.

- Fire Pump Engine Specification Sheets

Table 5.2A-1

Ammonia Slip Emissions Calculation for Turbines/HRSGs

Project:	Blythe II		
Scenario:	Case 1 (Cold Day)		
# of Units:	2		
Op Hours:	24	hrs/day	
	8760	hrs/year	

Data Input:			
NH3 Limit, ppm @ 15% O2:	10		
Exhaust rate, lbs/hr:	4296073		
Exhaust MW:	28.43		
Mole % O2:	11.8	0.118	frac
Mole % H2O:	8.36	0.0836	frac

Per Unit		All Units	
32.07	lbs/hr	64.14	lbs/hr
769.7	lbs/day	1539.4	lbs/day
140.5	tons/yr	280.9	tons/yr

Ref: All input data from unit operational scenario list and technical data.

Table 5.2A-2 Estimated Ammonia Slip Emissions for Aux Boiler

(proposed Aux Boiler will not be equipped with SCR)

Ammonia Slip (ppm):	0		
Ammonia MW:	17.03		
Unit DSCFM:	0	calculated from Mfg data	
ft^3/lb-mol:	379.5	per Agency definition	
Calc 1	379500000		
Calc 2	0		
Estimated Ammonia Slip Emissions:		0.000	lbs/hr
Op Hours/day:	24		
Op Hours/year:	1500		
Estimated Ammonia Slip Emissions:		0.00	lbs/day
Estimated Ammonia Slip Emissions:		0.00	lbs/year
		0.00	tons/year

Eq:

lbs/hr = ((ppm)(dscfm)(MW)(60)/(10^6)(ft^3/lb-mol))

Table 5.2A-3
Detailed Calculations for Maximum Hourly, Daily and Annual Criteria Pollutant Emissions

Maximum Hourly, Daily and Annual Emissions		Base Load		Cold Start		Hot/Warm Start			NOx		SO2		CO			ROC			Shuddown		NOx	CO	ROG	Cold Start	Cold Start	Warm	Warm	SO2
								Base Load	Cold Start	Hot/Warm	Short term	Base Load	Cold Start	Hot/Warm	Base Load	Cold Start	Hot/Warm	PM10/2.5										Annual
	max. hour	hrs/day	hrs/yr	hours/day	hours/year	hours/day	hours/year	lb/hr	lb/start	lb/start	lb/hr	lb/hr	lb start	lb/start	lb/hr	lb/start	lb/start	lb/hr	hours/day	hours/year	lb/shutdowr	lb/shutdowr	lb/shutdown	events/day	events/yr	events/day	events/yr	lb/hr
Turbine 1, no DB	1	1	5820	3	30	0.5	150	16	120.9	81.9	3.20	15	140.4	58.5	2.90	50.7	46.8	6.0	0	0	0	0	0	1	10	1	300	1.28
Turbine 2, no DB	0	1	5820	3	30	0.5	150	16	120.9	81.9	3.20	15	140.4	58.5	2.90	50.7	46.8	6.0	0	0	0	0	0	1	10	1	300	1.28
Turbine 1, w/ DB	1	17.5	2200	0	0	0	0	18	0	0	3.60	16	0.0	0.0	6.30	0.0	0.0	7.5	2	310	29.7	25.3	20.9					1.52
Turbine 2, w/ DB	0	17.5	2200	0	0	0	0	18	0	0	3.60	16	0.0	0.0	6.30	0.0	0.0	7.5	2	310	29.7	25.3	20.9					1.52
Auxiliary Boiler	1	0	1500	0	0	0	0	0.55	0	0	0.140	1.85	0	0	0.11	0.0	0.0	0.2700	0	0	0	0	0					0.000
Fire pump engine	1	0	52	0	0	0	0	1.74	0	0	0.0042	0.56	0	0	0.069	0.0	0.0	0.07	0	0	0	0	0					0.003
Cooling tower	1	0	8760	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	1.37	0	0	0	0	0					0

		NOx			SO2			CO			ROC			PM10/2.5	
	Max	Max	Total	Max	Max	Total	Max	Max	Total	Max	Max	Total	Max	Max	Total
	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy
Turbine 1, no DB	120.9	218.8	59.4	0.0	14.4	3.9	140.4	213.9	53.1	50.7	100.4	15.7	6.0	27.0	18.0
Turbine 2, no DB	0.0	218.8	59.4	0.0	14.4	3.9	0.0	213.9	53.1	0.0	100.4	15.7	0.0	27.0	18.0
Turbine 1, w/ DB	18.0	374.4	24.4	3.6	70.2	1.9	16.0	330.6	21.5	6.3	152.1	10.2	7.5	146.3	9.4
Turbine 2, w/ DB	0.0	374.4	24.4	3.6	70.2	1.9	0.0	330.6	21.5	0.0	152.1	10.2	0.0	146.3	9.4
Auxiliary Boiler	0.5500	0.0000	0.41	0.1400	0.0000	0.1050	1.85	0.00	1.4	0.1	0.0	0.083	0.3	0.0	0.2025
Fire pump engine	1.7430	0.0000	0.0453	0.0030	0.0000	0.0001	0.2200	0.2200	0.0146	0.2120	0.2120	0.0018	0.1200	0.1200	0.0018
Cooling tower	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	5.98
Total	141.19	1186.40	168.16	7.34	169.20	11.77	158.47	1089.22	150.70	57.32	505.11	51.85	15.26	346.62	61.01
	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy

Assumptions:

NOx at 2.0 ppm
CO at 3 ppm
VOC at 1 ppm with no duct burning, 2 ppm with duct burning
SO2 annual based on 0.2 gr/100 scf
SO2 short term based on 0.5 gr/100 scf
490 hours of starts/shutdowns per year
warm start = 300/year
cold start = 10/year
shutdown = 310/year
Startup/shutdown emissions from Siemens Flex 30 are based on plant 100% load with 30% margin added to startup emisssion estimates and 10% to shutdown
Annual hours = 5820 no DB + 2200 w/DB + 30 hours cold start + 150 hours warm start + 310 hours shutdown = 8510
Daily hours = 8.5 no DB + 10 wi/DB + 3 hours cold start + 0.5 hours warm start + 2 hours shutdown
Auxiliary boiler operation at 1500 hours per year, 1 hour per day for full operational turbine day.
Fire pump at 52 hours per year
TDS in cooling tower water set to 5050 ppm
Cooling tower flow rate at 108,000 gpm and 11 cells

Variable

Table 5.2A-4 Estimated Fuel Use Summary for the Project

System	Fuel	Per Hour, mmscf	Per Day, mmscf	Per Year, mmscf
Combustion Turbine-1	Natural gas	2.0682	49.634	17,600.38
Combustion Turbine-2	Natural gas	2.0682	49.634	17,600.38
HRSG-Duct Burner-1	Natural gas	0.2112	5.068	464.64
HRSG-Duct Burner-2	Natural gas	0.2112	5.068	464.64
Aux Boiler	Natural gas	0.0572	1.373	85.80
System	**Fuel**	**Per Hour, gals**	**Per Day, gals**	**Per Year, gals**
Diesel Fire Pump	Diesel Fuel	20	20	1,040

Source: Blythe II Energy Project Team, 2009.

Duct burners can operate up to 24 hours per day, 2200 hours per year
Auxiliary boiler expected to operate 24-hous per day, 1500 hours per year
Fire pump will be tested up to 1 hour per day and 1 day per week, or 52 hours per year
HHV of fuel is 1049 BTU/SCF

Table 5.2A-5
Calculation of Hazardous and Toxic Pollutant Emissions

# of Units: 2
Fuel HHV: 1049 btu/scf

Calculation of Noncriteria Pollutant Emissions from Gas Turbines

		(each turbine)			All Turbines			
Compound	Emission Factor, lb/MMscf	Maximum Hourly Emissions, lb/hr	Maximum Daily Emissions, lb/day	Annual Emissions, lb/yr	Maximum Hourly Emissions, lb/hr	Maximum Daily Emissions, lb/day	Annual Emissions, lb/yr	Annual Emissions, tons/yr
Acetaldehyde	1.37E-01	3.12E-01	7.49E+00	2.56E+03	6.25E-01	1.50E+01	5.11E+03	2.56E+00
Acrolein	1.89E-02	4.31E-02	1.03E+00	3.53E+02	8.62E-02	2.07E+00	7.05E+02	3.53E-01
Ammonia	(3)	3.21E+01	7.70E+02	2.81E+05	6.41E+01	1.54E+03	5.62E+05	2.81E+02
Benzene	1.33E-02	3.03E-02	7.28E-01	2.48E+02	6.06E-02	1.46E+00	4.96E+02	2.48E-01
1,3-Butadiene	1.27E-04	2.89E-04	6.95E-03	2.37E+00	5.79E-04	1.39E-02	4.74E+00	2.37E-03
Ethylbenzene	1.79E-02	4.08E-02	9.79E-01	3.34E+02	8.16E-02	1.96E+00	6.68E+02	3.34E-01
Formaldehyde	9.17E-01	2.09E+00	5.02E+01	1.71E+04	4.18E+00	1.00E+02	3.42E+04	1.71E+01
Hexane	2.59E-01	5.90E-01	1.42E+01	4.83E+03	1.18E+00	2.83E+01	9.66E+03	4.83E+00
Naphthalene	1.66E-03	3.78E-03	9.08E-02	3.10E+01	7.57E-03	1.82E-01	6.19E+01	3.10E-02
Total PAHs	2.41E-04	5.49E-04	1.32E-02	4.50E+00	1.10E-03	2.64E-02	8.99E+00	4.50E-03
Propylene	7.71E-01	1.76E+00	4.22E+01	1.44E+04	3.51E+00	8.44E+01	2.88E+04	1.44E+01
Propylene oxide	4.78E-02	1.09E-01	2.61E+00	8.92E+02	2.18E-01	5.23E+00	1.78E+03	8.92E-01
Toluene	7.10E-02	1.62E-01	3.88E+00	1.32E+03	3.24E-01	7.77E+00	2.65E+03	1.32E+00
Xylene	2.61E-02	5.95E-02	1.43E+00	4.87E+02	1.19E-01	2.86E+00	9.74E+02	4.87E-01
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Notes:

(1) EFs from CARB/CATEF database.
(2) Based on maximum hourly unit fuel use of: 2.2794E+00 mmscf/hr

Based on a maximum daily unit fuel use of: 5.4704E+01 mmscf/day

Based on maximum annual unit fuel use of: 1.8657E+04 mmscf/yr
Fuel use values from Fuel Calculation Sheet

(3) Values from ammonia slip calculations.
(4) Fuel use values include HRSG duct burner(s) Yes or No: Yes

Each Unit 24 Max hrs/day
Each Unit 8760 Max Hrs/yr

Table 5.2A-5
Calculation of Hazardous and Toxic Pollutant Emissions

# of Units:	2	
Fuel HHV:	1049	btu/scf

Calculation of Noncriteria Pollutant Emissions from Gas Turbines

		(each turbine)			All Turbines			
Compound	Emission Factor, lb/MMscf	Maximum Hourly Emissions, lb/hr	Maximum Daily Emissions, lb/day	Annual Emissions, lb/yr	Maximum Hourly Emissions, lb/hr	Maximum Daily Emissions, lb/day	Annual Emissions, lb/yr	Annual Emissions, tons/yr
Acetaldehyde	1.37E-01	3.12E-01	7.49E+00	2.56E+03	6.25E-01	1.50E+01	5.11E+03	2.56E+00
Acrolein	1.89E-02	4.31E-02	1.03E+00	3.53E+02	8.62E-02	2.07E+00	7.05E+02	3.53E-01
Ammonia	(3)	3.21E+01	7.70E+02	2.81E+05	6.41E+01	1.54E+03	5.62E+05	2.81E+02
Benzene	1.33E-02	3.03E-02	7.28E-01	2.48E+02	6.06E-02	1.46E+00	4.96E+02	2.48E-01
1,3-Butadiene	1.27E-04	2.89E-04	6.95E-03	2.37E+00	5.79E-04	1.39E-02	4.74E+00	2.37E-03
Ethylbenzene	1.79E-02	4.08E-02	9.79E-01	3.34E+02	8.16E-02	1.96E+00	6.68E+02	3.34E-01
Formaldehyde	9.17E-01	2.09E+00	5.02E+01	1.71E+04	4.18E+00	1.00E+02	3.42E+04	1.71E+01
Hexane	2.59E-01	5.90E-01	1.42E+01	4.83E+03	1.18E+00	2.83E+01	9.66E+03	4.83E+00
Naphthalene	1.66E-03	3.78E-03	9.08E-02	3.10E+01	7.57E-03	1.82E-01	6.19E+01	3.10E-02
Total PAHs	2.41E-04	5.49E-04	1.32E-02	4.50E+00	1.10E-03	2.64E-02	8.99E+00	4.50E-03
Propylene	7.71E-01	1.76E+00	4.22E+01	1.44E+04	3.51E+00	8.44E+01	2.88E+04	1.44E+01
Propylene oxide	4.78E-02	1.09E-01	2.61E+00	8.92E+02	2.18E-01	5.23E+00	1.78E+03	8.92E-01
Toluene	7.10E-02	1.62E-01	3.88E+00	1.32E+03	3.24E-01	7.77E+00	2.65E+03	1.32E+00
Xylene	2.61E-02	5.95E-02	1.43E+00	4.87E+02	1.19E-01	2.86E+00	9.74E+02	4.87E-01
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Notes:

(1) EFs from CARB/CATEF database.
(2) Based on maximum hourly unit fuel use of: 2.2794E+00 mmscf/hr

Based on a maximum daily unit fuel use of: 5.4704E+01 mmscf/day

Based on maximum annual unit fuel use of: 1.8657E+04 mmscf/yr
Fuel use values from Fuel Calculation Sheet
(3) Values from ammonia slip calculations.
(4) Fuel use values include HRSG duct burner(s) Yes or No: Yes

Each Unit	24	Max hrs/day
Each Unit	8760	Max Hrs/yr

Table 5.2A-6 (3 Pages)

SIEMENS

Blythe II
Estimated SGT6-5000F(4) Gas Turbine Performance
Combined Cycle / Dry Low NO_x Combustor
SGen6-1000A (Static) / 0.85 Power Factor

Based on BlytheII_Csheet_Rev3
July 16, 2009

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6	CASE 7	CASE 8	CASE 9	CASE 10	CASE 11	CASE 12	CASE 13	CASE 14	CASE 15
FUEL TYPE	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas
LOAD LEVEL	BASE	BASE	BASE	BASE	BASE	BASE	BASE	BASE	90%	80%	90%	80%	90%	80%	90%
NET FUEL HEATING VALUE, Btu/lb_m (LHV)	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230
GROSS FUEL HEATING VALUE, Btu/lb_m (HHV)	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457
AMBIENT DRY BULB TEMPERATURE, °F	20	20	60	60	95	95	108	108	20	20	60	60	95	95	108
AMBIENT PRESSURE, psia	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511
EVAPORATIVE COOLER STATUS / EFFECTIVENESS, %	OFF	OFF	85	85	85	85	85	85	OFF	OFF	85	85	85	85	85
GT FUEL FLOW, lb_m/hr	96,808	96,608	89,932	89,932	85,018	85,018	84,506	84,506	88,218	81,228	82,580	76,253	78,438	72,540	77,989
DB FUEL FLOW, lb_m/hr	9,867	0	9,782	0	9,876	0	9,885	0	0	0	0	0	0	0	0
HRSG EXHAUST TEMPERATURE, °F	252	286	238	250	222	229	222	229	271	276	258	269	184	182	231
HRSG EXHAUST FLOW, lb_m/hr	4,296,073	4,286,206	4,031,946	4,022,164	3,824,054	3,814,178	3,807,345	3,797,461	3,921,465	3,625,841	3,712,553	3,445,782	3,545,923	3,296,559	3,531,673
HRSG EXHAUST FLOW, acfm	856,125	852,807	806,169	802,879	767,541	764,219	763,978	760,653	780,140	721,145	740,951	687,526	710,325	660,196	707,269
HRSG EXHAUST GAS COMPOSITION (% BY VOLUME):															
OXYGEN	11.80	12.61	11.66	12.51	11.45	12.36	11.48	12.39	12.67	12.80	12.60	12.74	12.47	12.60	12.49
CARBON DIOXIDE	4.28	3.88	4.23	3.84	4.23	3.81	4.23	3.80	3.85	3.79	3.80	3.73	3.76	3.70	3.76
WATER	8.36	7.83	9.21	8.44	10.20	9.39	10.12	9.31	7.58	7.46	8.36	8.24	9.30	9.17	9.22
NITROGEN	74.71	75.00	74.03	74.34	73.26	73.58	73.31	73.63	75.02	75.07	74.37	74.42	73.61	73.66	73.67
ARGON	0.88	0.88	0.87	0.87	0.86	0.86	0.86	0.86	0.88	0.88	0.87	0.87	0.86	0.86	0.86
MOLECULAR WEIGHT	28.43	28.48	28.34	28.39	28.23	28.28	28.24	28.29	28.48	28.49	28.39	28.40	28.29	28.29	28.29
NET EMISSIONS (Based on USEPA Test Methods):															
NO_X, ppmvd @ 15% O_2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
NO_X, lb_m/hr as NO_2	18	16	17	15	16	14	16	14	15	13	14	13	13	12	13
CO, ppmvd @ 15% O_2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO, lb_m/hr	16	15	15	14	15	13	15	13	14	12	13	12	12	11	12
SO_2, lb_m/hr	3.6	3.2	3.3	3.0	3.2	2.9	3.2	2.8	3.0	2.7	2.8	2.6	2.6	2.4	2.6
VOC, ppmvd @ 15% O_2 as CH_4	2	1	2	1	2	1	2	1	1	1	1	1	1	1	1
VOC, lb_m/hr as CH_4	6.3	2.9	5.9	2.7	5.6	2.5	5.6	2.5	2.6	2.4	2.4	2.2	2.3	2.1	2.3
PARTICULATES, lb_m/hr	13	11	12	10	12	9.3	12	9.3	10	9.0	9.1	8.5	8.6	8.0	8.6

NOTES:

- All data is estimated and not guaranteed.
- Performance is based on new and clean condition.
- Gross power output is at the generator terminals, minus excitation losses. It does not include ECONOPAC™ auxiliary load losses.
- Gas fuel composition is 96.379% CH_4, 1.10% C_2H_6, 0.150% C_3H_8, 0.20% iC_4H_{10}, 0.25% nC_4H_{10}, 0.007% iC_5H_{12}, 0.004% nC_5H_{12}, 0.015% C_6H_{14}, 0.20% N_2, 2.10% CO_2 and ~ 0.5 grains S/100 SCF.
- Gas fuel must be in compliance with the Siemens Gas Fuel Specification.
- Average temperature of the gas fuel is 400 °F.
- Sensible Heat of the fuel is not included in the calculated Heat Input values.
- Emissions flow rates are calculated based on the maximum achievable exhaust flow. For further details on flow rate calculation contact Siemens.
- NO_X emissions are based on the use of an SCR system.
- Low CO Turndown Hardware is engaged for the 60% load points.
- CO and VOC emissions are based on the use of an oxidation catalyst.
- VOC emissions consist of total hydrocarbons excluding methane and ethane and are expressed in terms of methane (CH_4).
- Particulates are per US EPA Method 5/202 (front and back half).
- Emissions exclude ambient air contributions.
- Please be advised that the information contained in this transmittal has been prepared and is being transmitted per customer request specifically for information purposes only. Such information is not intended to be used for evaluation of plant design and/or performance relative to contractual commitments. Data included in any permit application or Environmental Impact Statement are strictly the customer's responsibility. Siemens is available to review permit application data upon request.

SIEMENS

Blythe II
Estimated SGT6-5000F(4) Gas Turbine Performance
Combined Cycle / Dry Low NO_x Combustor
SGen6-1000A (Static) / 0.85 Power Factor

Based on BlytheII_Csheet_Rev3
July 16, 2009

	CASE 16	CASE 17	CASE 18	CASE 19	CASE 20	CASE 21	CASE 22	CASE 23	CASE 24	CASE 31	CASE 32	CASE 33	CASE 34
FUEL TYPE	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas
LOAD LEVEL	80%	70%	60%	70%	60%	70%	60%	70%	60%	89%	90%	BASE	BASE
NET FUEL HEATING VALUE, Btu/lb_m (LHV)	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230	20,230
GROSS FUEL HEATING VALUE, Btu/lb_m (HHV)	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457	22,457
AMBIENT DRY BULB TEMPERATURE, °F	108	20	20	60	60	95	95	108	108	20	60	95	108
AMBIENT PRESSURE, psia	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511	14.511
EVAPORATIVE COOLER STATUS / EFFECTIVENESS, %	85	OFF	OFF	85	85	85	85	85	85	OFF	OFF	85	85
GT FUEL FLOW, lb_m/hr	72,135	74,081	66,844	69,590	62,928	66,175	59,932	65,812	59,614	87,721	86,673	85,018	84,506
DB FUEL FLOW, lb_m/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
HRSG EXHAUST TEMPERATURE, °F	234	281	285	281	285	180	179	237	240	273	251	229	228
HRSG EXHAUST FLOW, lb_m/hr	3,283,786	3,367,295	3,179,618	3,201,807	3,070,845	3,060,149	3,183,710	3,048,626	2,980,434	3,891,348	3,870,176	3,814,155	3,797,441
HRSG EXHAUST FLOW, acfm	657,451	669,530	631,663	638,671	611,871	612,693	636,943	610,213	595,747	774,155	771,423	764,217	760,652
HRSG EXHAUST GAS COMPOSITION (% BY VOLUME):													
OXYGEN	12.63	12.95	13.39	12.88	13.44	12.73	13.13	12.76	13.46	12.66	12.65	12.36	12.38
CARBON DIOXIDE	3.69	3.72	3.52	3.67	3.41	3.64	3.45	3.63	3.31	3.85	3.80	3.81	3.81
WATER	9.10	7.33	6.93	8.12	7.61	9.06	8.71	8.98	8.35	7.58	8.04	9.39	9.32
NITROGEN	73.72	75.12	75.28	74.46	74.66	73.71	73.85	73.76	74.01	75.02	74.63	73.58	73.63
ARGON	0.86	0.88	0.88	0.87	0.88	0.86	0.87	0.87	0.87	0.88	0.88	0.86	0.86
MOLECULAR WEIGHT	28.30	28.50	28.52	28.41	28.44	28.30	28.32	28.31	28.35	28.48	28.43	28.28	28.29
NET EMISSIONS (Based on USEPA Test Methods):													
NO_X, ppmvd @ 15% O_2	2	2	2	2	2	2	2	2	2	2	2	2	2
NO_X, lb_m/hr as NO_2	12	12	11	12	10	11	11	11	10	15	14	14	14
CO, ppmvd @ 15% O_2	3	3	3	3	3	3	3	3	3	3	3	3	3
CO, lb_m/hr	11	11	10	11	9	10	10	10	9	13	13	13	13
SO_2, lb_m/hr	2.4	2.5	2.3	2.4	2.1	2.2	2.0	2.2	2.0	3.0	2.9	2.9	2.8
VOC, ppmvd @ 15% O_2 as CH_4	1	1	1	1	1	1	1	1	1	1	1	1	1
VOC, lb_m/hr as CH_4	2.1	2.2	1.9	2.0	1.8	1.9	1.9	1.9	1.7	2.6	2.6	2.5	2.5
PARTICULATES, lb_m/hr	8.0	8.3	8.0	8.0	8.0	8.0	8.0	8.0	8.0	10	10	9.3	9.3

NOTES:

- All data is estimated and not guaranteed.
- Performance is based on new and clean condition.
- Gross power output is at the generator terminals, minus excitation losses. It does not include ECONOPAC™ auxiliary load losses.
- Gas fuel composition is 96.379% CH_4, 1.10% C_2H_6, 0.150% C_3H_8, 0.20% iC_4H_{10}, 0.25% nC_4H_{10}, 0.007% iC_5H_{12}, 0.004% nC_5H_{12}, 0.015% C_6H_{14}, 0.20% N_2, 2.10% CO_2 and ~ 0.5 grains S/100 SCF.
- Gas fuel must be in compliance with the Siemens Gas Fuel Specification.
- Average temperature of the gas fuel is 400 °F.
- Sensible Heat of the fuel is not included in the calculated Heat Input values.
- Emissions flow rates are calculated based on the maximum achievable exhaust flow. For further details on flow rate calculation contact Siemens.
- NO_X emissions are based on the use of an SCR system.
- Low CO Turndown Hardware is engaged for the 60% load points.
- CO and VOC emissions are based on the use of an oxidation catalyst.
- VOC emissions consist of total hydrocarbons excluding methane and ethane and are expressed in terms of methane (CH_4).
- Particulates are per US EPA Method 5/202 (front and back half).
- Emissions exclude ambient air contributions.
- Please be advised that the information contained in this transmittal has been prepared and is being transmitted per customer request specifically for information purposes only. Such information is not intended to be used for evaluation of plant (and/or performance relative to contractual commitments. Data included in any permit application or Environmental Impact Statement are strictly the customer's responsibility. Siemens is available to review permit application data upon request.

SIEMENS

Total Estimated Startup & Shutdown Emissions and Fuel Use - SCC6-5000F(4) 28 ppm DLN on Natural Gas @ 59 °F - Flex-Plan™ 30 (Benson) 2x1 Configuration

Ignition to 100% Gas Turbine Load

Mode	Time	Total Pounds Per Event						
	(min)	NO_X	CO (A)	CO (B)	VOC	SO_2	PM	Fuel Use
"Cold" Startup	156	90	108		38	3.4	30.5	167,337
"Warm" Startup	20	43	43		35	1.2	3.0	13,605
"Hot" Startup	20	43	43		35	1.2	3.0	13,605
Shutdown (C)	7	19	23		17.9	0.6	1.2	4,818

Ignition to 100% Plant Load (2x1 Configuration)

Mode	Time	Total Pounds Per Event						
	(min)	NO_X	CO (A)	CO (B)	VOC	SO_2	PM	Fuel Use
"Cold" Startup	165	93	108		39	3.6	32	180,506
"Warm" Startup	75	63	45		36	2.3	15	94,088
"Hot" Startup	66	60	44		36	2.2	13	80,918
Shutdown (D)	36	27	23		19	1.2	5.4	28,942

(A) With oxidation catalyst
(B) Without oxidation catalyst
(C) 70% Gas Turbine Load to fuel cut off
(D) 100% Gas Turbine Load to fuel cut off

General Notes

1.) All data is ESTIMATED, NOT guaranteed and is for ONE unit (gas turbine and HRSG).
2.) VOC consist of total hydrocarbons excluding methane and ethane and are expressed in terms of methane (CH_4).
3.) SO_2 emissions are based on 0.2 gr S/100 scf in the natural gas.
4.) Particulate (PM) emissions are based on the aforementioned fuel sulfur content and are per USEPA Methods 5/202.
5.) Gas fuel must be in compliance with the Siemens fuel specification.
6.) Gas fuel composition is 98% CH_4, 0.6% C_2H_6, 1.4% N_2 and 0.2 gr S/100 scf.
7.) Emissions are at the HRSG exhaust stack outlet and exclude ambient air contributions.
8.) Emissions are based on new and clean conditions.
9.) Please be advised that the information contained in this transmittal has been prepared and is being transmitted per customer request specifically for information purposes only. Such information is not intended to be used for evaluation of plant design and/or performance relative to contractual commitments. Data included in any permit application or Environmental Impact Statement is strictly the customer's responsibility. Siemens is available to review permit application data upon request.

Startup / Shutdown Emissions Notes

1.) "Cold" startup (SU) data are based on an extended gas turbine (GT) shutdown (greater than ~ 64 hours), with the steam turbine (ST) rotor temperature less than ~ 122 °F.
2.) "Warm" SU data are based on the GT being shutdown between ~ 16 and 64 hours, with the ST rotor temperature between ~ 122 and 505 °F.
3.) "Hot" SU data are based on the GT being shutdown less than ~ 16 hours, with the ST rotor temperature greater than ~ 505 °F.
4.) Estimated data are based on the assumed times noted above and will be higher for longer times.
5.) Estimated data are based on an ambient temperature of 59 °F and will be higher at lower ambient temperatures.
6.) Estimated NO_X emissions assume 2 ppmvd NO_X at the stack from100% GT load for hot and warm starts, and 2 ppm at 70% load on a cold start after 10 min SCR warm up.
7.) Estimated CO emissions with oxidation catalyst assume ~ 90% removal efficiency.
8.) Estimated VOC emissions with oxidation catalyst assume ~ 30% removal efficiency.
9.) The water cooled condenser is filled and < 20-in. HgA prior to GT SU.
10.) HRSG is filled and ready for operation prior to GT SU.
11.) Steam chemistry adequate for ST operation (no waiting time included).
12.) Siemens PG standard BOP water/steam system design with Siemens PG steam piping warm up concept.
13.) BOP/auxiliary equipment operation does not extend SU or SD times.
14.) An auxiliary boiler is utilized, sized to supply seal steam to the steam turbine.
15.) Operator actions do not extend SU times.
16.) All systems run smoothly without upsets.
17.) HRSG stack damper closed after shutdown to aid in boiler heat retention.
18.) HP and HRH steam attemporation to: 850 °F at 100% GT load and 750 °F at 70% GT load.
19.) It is assumed that there is no restriction from the interconnected utility for loading the GT within the SU times considered.

Table 5.2A-7 Aux Boiler

Calculation of Criteria Pollutant Emissions for Boilers Firing Gaseous Fuels

Boiler Operation Mode:	Normal firing mode		# of Units:	1
Ops Hr/Day:	24	Worst Case	Fuel Type:	Nat Gas
Ops Hr/Yr:	1500			

Calculation of Criteria Pollutant Emissions from Each Identical Unit

Compound	Emission Factor, lb/MMscf (1)	Maximum Hourly Emissions, lb/hr (2)	Maximum Daily Emissions, lb/day	Maximum Annual Emissions, lbs/yr	Annual Emissions, ton/yr (3)	All Units Maximum Hourly Emissions, lb/hr	All Units Maximum Daily Emissions, lb/day	All Units Maximum Annual Emissions, lbs/yr	All Units Annual Emissions, ton/yr
NOx	9.62E+00	5.50E-01	1.32E+01	8.25E+02	4.13E-01	5.50E-01	1.32E+01	8.25E+02	4.13E-01
CO	3.24E+01	1.85E+00	4.44E+01	2.78E+03	1.39E+00	1.85E+00	4.44E+01	2.78E+03	1.39E+00
VOC	1.92E+00	1.10E-01	2.64E+00	1.65E+02	8.25E-02	1.10E-01	2.64E+00	1.65E+02	8.25E-02
SOx	2.46E+00	1.40E-01	3.37E+00	2.11E+02	1.05E-01	1.40E-01	3.37E+00	2.11E+02	1.05E-01
PM10	4.72E+00	2.70E-01	6.48E+00	4.05E+02	2.02E-01	2.70E-01	6.48E+00	4.05E+02	2.02E-01
PM2.5	4.72E+00	2.70E-01	6.48E+00	4.05E+02	2.02E-01	2.70E-01	6.48E+00	4.05E+02	2.02E-01
	lbs/mmbtu								
CO2	1.17E+02	7.02E+03	1.68E+05	1.05E+07	5.26E+03	7.02E+03	1.68E+05	1.05E+07	5.26E+03
Methane	1.30E-02	7.80E-01	1.87E+01	1.17E+03	5.85E-01	7.80E-01	1.87E+01	1.17E+03	5.85E-01
N2O	2.21E-04	1.32E-02	3.18E-01	1.98E+01	9.92E-03	1.32E-02	3.18E-01	1.98E+01	9.92E-03
CO2e									5.28E+03

Notes:

(1) natural gas criteria pollutant EF factors

(2) Based on maximum hourly boiler fuel use of 60 MMBtu/hr/boiler and fuel HHV of 1049 Btu/scf gives 0.0572 MMscf/hr/boiler.

(3) Based on maximum annual boiler fuel use of 90,000 MMBtu/yr/boiler and fuel HHV of 1049 Btu/scf gives 85.7960 MMscf/yr/boiler.

(4) LNBs w/SCR and GCPs

(5) PM2.5 = PM10

Refs:

(1) EFs from applicant and boiler mfg.

(2) GHG EFs from CCAR General Protocol, June 2006.

Table 5.2A-8 Aux Boiler
Calculation of Noncriteria Pollutant Emissions for Boilers Firing Gaseous Fuels

Boiler Operation Mode: Normal firing mode — # of Units: 1
Ops Hr/Day: 24 Worst Case — Fuel Type: Nat Gas
Ops Hr/Yr: 1500

Calculation of Noncriteria Pollutant Emissions from Each Identical Unit

Compound	Emission Factor, lb/MMscf (1)	Maximum Hourly Emissions, lb/hr (2)	Maximum Daily Emissions, lb/day	Maximum Annual Emissions, lbs/yr	Annual Emissions, ton/yr (3)	All Units Maximum Hourly Emissions, lb/hr	All Units Maximum Daily Emissions, lb/day	All Units Maximum Annual Emissions, lbs/yr	All Units Annual Emissions, ton/yr
Acetaldehyde	8.87E-03	5.07E-04	1.22E-02	7.61E-01	3.81E-04	5.07E-04	1.22E-02	7.61E-01	3.81E-04
Acrolein	4.51E-03	2.58E-04	6.19E-03	3.87E-01	1.93E-04	2.58E-04	6.19E-03	3.87E-01	1.93E-04
Ammonia	(5)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	4.31E-03	2.47E-04	5.92E-03	3.70E-01	1.85E-04	2.47E-04	5.92E-03	3.70E-01	1.85E-04
1,3-Butadiene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethylbenzene	2.25E-03	1.29E-04	3.09E-03	1.93E-01	9.65E-05	1.29E-04	3.09E-03	1.93E-01	9.65E-05
Formaldehyde	8.72E-03	4.99E-04	1.20E-02	7.48E-01	3.74E-04	4.99E-04	1.20E-02	7.48E-01	3.74E-04
Hexane	6.30E-03	3.60E-04	8.65E-03	5.41E-01	2.70E-04	3.60E-04	8.65E-03	5.41E-01	2.70E-04
Naphthalene	2.37E-04	1.36E-05	3.25E-04	2.03E-02	1.02E-05	1.36E-05	3.25E-04	2.03E-02	1.02E-05
PAHs (4)	8.10E-05	4.63E-06	1.11E-04	6.95E-03	3.47E-06	4.63E-06	1.11E-04	6.95E-03	3.47E-06
Propylene	4.63E-01	2.65E-02	6.36E-01	3.97E+01	1.99E-02	2.65E-02	6.36E-01	3.97E+01	1.99E-02
Propylene oxide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene	1.20E-02	6.86E-04	1.65E-02	1.03E+00	5.15E-04	6.86E-04	1.65E-02	1.03E+00	5.15E-04
Xylene	2.77E-02	1.58E-03	3.80E-02	2.38E+00	1.19E-03	1.58E-03	3.80E-02	2.38E+00	1.19E-03
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Notes:
(1) natural gas HAPs emission factors
(2) Based on maximum hourly boiler fuel use of 60 MMBtu/hr/boiler
and fuel HHV of 1049 Btu/scf gives 0.0572 MMscf/hr/boiler.
(3) Based on maximum annual boiler fuel use of 90,000 MMBtu/yr/boiler
and fuel HHV of 1049 Btu/scf gives 85.7960 MMscf/yr/boiler.
(4) Polycyclic aromatic hydrocarbons, excluding naphthalene (treated separately).
(5) LNB only with GCPs

Refs:
CARB Catef Database, Boilers/Heaters, Nat Gas
SDAPCD, B17, Toxics Efs Database

Table 5.2A-9 Cooling Tower

Cooling Tower Particulate Emissions

				Per Tower	Per Cell	All Towers
# of Identical Towers:	1					
Operational Schedule:	Hrs/day	Days/Yr	Hrs/Yr			
	24	365	8760			
Pumping rate of recirculation pumps (gal/min)				108,000.0		
Flow of cooling water (lbs/hr)				53,978,400.0		
Avg TDS of circ water (mg/l or ppmw)				5,050.0		
Flow of dissolved solids (lbs/hr)				272590.92		
Fraction of flow producing drift*				1.00		
Control efficiency of drift eliminators (gal drift/gal flow)				0.000005		
Calculated drift rate (lbs water/hr)				269.9		
PM10 emissions (lbs/hr)				**1.363**	**0.124**	**1.363**
PM10 emissions (lbs/day)				**32.71**	**2.97**	**32.71**
PM10 emissions (tpy)				**5.97**	**0.54**	**5.97**
PM2.5 fraction of PM10				1.00		
PM2.5 emissions (lbs/hr)				**1.363**	**0.124**	**1.363**
PM2.5 emissions (lbs/day)				**32.71**	**2.97**	**32.71**
PM2.5 emissions (tpy)				**5.97**	**0.54**	**5.97**

Notes:
Based on Method AP 42, Section 13.4, Jan 1995
*Technical Report EPA-600-7-79-251a, Page 63
Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift - Volume 1.

Cooling Tower Stack Parameters

Base Elevation	0	feet amsl
Number of Cells	11	
Length of Cooling Tower	0.00	feet
Width of Cooling Tower	0.00	feet
Height of Cooling Tower (to fan deck)	0.00	feet agl
Cell Release Height (fan shroud exit)	0.00	feet agl
Flow/Fan Discharge for each Cell	0	ACFM
Inlet air temperature (ambient):	variable	deg F
Discharge air temperature:	variable	deg F
Drift %	0.0005	

Table 5.2A-10

Calculation of Hazardous and Toxic Pollutant Emissions from Cooling Tower

Cells per Tower:	11	Max Tower Drift Rate:	269.9 lbs/hr	Op Hrs/Day:	24
# of Identical Towers:	1			Op Hrs/Yr:	8760

	ppm
Makeup Water TDS:	1010
Blowdown TDS	5050
Avg Tower Flow TDS:	3030
Avg Tower Flow C of C:	5.00

Constituent	Concentration in Cooling Tower Water		Total Single Tower Emissions, lb/hr	Total Single Tower Emissions, lb/day	Total Single Tower Emissions, ton/yr	Single Cell Emissions, lb/hr	Single Cell Emissions, lb/day	Single Cell Emissions, ton/yr	Total All Towers Emissions, lb/hr	Total All Towers Emissions, lb/day	Total All Towers Emissions, ton/yr
Manganese	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Magnesium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	0.0025	ppm	3.37E-06	8.10E-05	1.48E-05	3.07E-07	7.36E-06	1.34E-06	3.37E-06	8.10E-05	1.48E-05
Arsenic	0.003	ppm	4.05E-06	9.72E-05	1.77E-05	3.68E-07	8.83E-06	1.61E-06	4.05E-06	9.72E-05	1.77E-05
Aluminum	0.1	ppm	1.35E-04	3.24E-03	5.91E-04	1.23E-05	2.94E-04	5.37E-05	1.35E-04	3.24E-03	5.91E-04
Chromium 6	0.005	ppm	6.75E-06	1.62E-04	2.96E-05	6.13E-07	1.47E-05	2.69E-06	6.75E-06	1.62E-04	2.96E-05
Cadmium	0.0005	ppm	6.75E-07	1.62E-05	2.96E-06	6.13E-08	1.47E-06	2.69E-07	6.75E-07	1.62E-05	2.96E-06
Selenium	0.009	ppm	1.21E-05	2.91E-04	5.32E-05	1.10E-06	2.65E-05	4.84E-06	1.21E-05	2.91E-04	5.32E-05
Zinc	0.07	ppm	9.45E-05	2.27E-03	4.14E-04	8.59E-06	2.06E-04	3.76E-05	9.45E-05	2.27E-03	4.14E-04
Mercury	0.0025	ppm	3.37E-06	8.10E-05	1.48E-05	3.07E-07	7.36E-06	1.34E-06	3.37E-06	8.10E-05	1.48E-05
Copper	0.07	ppm	9.45E-05	2.27E-03	4.14E-04	8.59E-06	2.06E-04	3.76E-05	9.45E-05	2.27E-03	4.14E-04
Silver	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	0.005	ppm	6.75E-06	1.62E-04	2.96E-05	6.13E-07	1.47E-05	2.69E-06	6.75E-06	1.62E-04	2.96E-05
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
*	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Notes: (1) Water analysis data supplied by project applicant.
Mean value of Wells PW-1 and PW-2 sample data.

Table 5.2A-11 EXPECTED INTERNAL COMBUSTION ENGINE EMISSIONS

Liquid Fuel

\# of Identical Engines: 1

Emergency Fire Pump

Mfg:	Clarke	
Engine #:	JW6H-UFAD80	
Kw	0	approx.
BHP:	303	
RPM:	-	
Fuel:	#2 Diesel	
Fuel Use:	20	Gph (1)
FuelHHV:	139000	Btu/gal
mmbtu/hr:	2.78	HHV
EPA/CARB Tier #:	3	

Stack Data

Height:	30	Ft.
Diameter:	0.43	Ft.
Temp:	796	deg F
ACFM:	1702	

input the mfg ACFM or calculate per Exhaust sheet)

Area:	0.145	Sq.Ft.
Velocity:	195	Ft/Sec
Max Daily Op Hrs:	1	
Max Annual Op Hrs:	52	

Fuel Wt:	7	Lbs/gal
Fuel S:	0.0015	% wt.
Fuel S:	0.105	Lbs/1000 gal
SO2:	0.21	Lbs/1000 gal

		Single Engine				*All Engines*			
EFs (g/bhp-hr)		**Lb/Hr**	**Lb/Day**	**Lbs/Yr**	**Tons/Yr**	***Lb/Hr***	***Lb/Day***	***Lbs/Yr***	***Tons/Yr***
NOx	2.61	1.74	1.74	90.58	0.045	*1.74*	*1.74*	*90.58*	*0.05*
CO	0.84	0.56	0.56	29.15	0.015	*0.56*	*0.56*	*29.15*	*0.01*
VOC	0.104	0.07	0.07	3.61	0.002	*0.07*	*0.07*	*3.61*	*0.002*
PM10	0.103	0.07	0.07	3.57	0.002	*0.07*	*0.07*	*3.57*	*0.002*
SOx	NA	0.0042	0.0042	0.22	0.0001	*0.0042*	*0.0042*	*0.22*	*0.0001*
	lbs/gal								
CO2	22.38	448	448	23275	12	*448*	*448*	*23275*	*12*
Methane	0.0003	0.01	0.01	0.31	0.000	*0.01*	*0.01*	*0.31*	*0.000*
N2O	0.0001	0.00	0.00	0.10	0.0001	*0.00*	*0.00*	*0.10*	*0.0001*
CO2e					11.7				*11.7*

Notes:

1. fuel consumption based on 0.055 gal/hp-hr (avg EPA and SCAQMD values) if no value given by mfg for specific engine.
2. PM10 equals PM2.5.
3. PM10 used in HRA to represent DPM emissions.
4. GHG EFs from CCAR General Protocol, June 2006.

Table 5.2A-12 Natural Gas Analysis Data

Component Analysis (Average)	Chemical Analysis, % by Wt. (Average)
Methane - 84.5%vol Ethane - 5.58%vol Propane - 2.05%vol Nitrogen - 5.93%vol Oxygen - 0.14%vol	Carbon - 72.8% Hydrogen - 22.88% Nitrogen - 3.55% Oxygen - 1.84% Sulfur - <=0.25 gr/100 scf HHV 1046-1049 btu/scf

Table 5.2A-13

Typical Diesel Fuel Analysis

Parameter	Average Data
Carbon %	85.86
Hydrogen %	13.35
Oxygen %	0.65
Nitrogen %	0.097
Sulfur %	0.0015 – 0.05
Ash %	0.01
Btu/gal (HHV)	~139,000
Lbs/gal	~6.87
Data derived from AB2588 fuel testing for sources in the South Coast AQMD.	

Table 5.2A-14 (3 Pages) Greenhouse Gas Emissions Calculator

Combustion Turbines-Gaseous Fuels

Emissions Analysis Period: Op year

Facility Name: BEP II

Gas Type: Natural Gas

Turbine Device ID: Siemens SGT6-5000

Op Hours: 8760

Turbine Heat Rating: 4039.2 mmbtu/hr (2 units)

Gas Btu Content:	1049	btu/scf	Ref 1, Table C.5	Carbon Content:	14.47	kg/mmbtu
				Frac Oxidized:	0.995	
Annual Gas Usage:	33731	mmscf		CO2/C Ratio:	3.6667	
	35383392	mmbtu/yr		Adjusted EF:	52.7914	kg CO2/mmbtu

Emissions Factors:

CO2	53.05	kg/mmbtu	Ref 1, Table C.5
CH4	0.0059	kg/mmbtu	Ref 1, Table C.6
N2O	0.0001	kg/mmbtu	Ref 1. Table C.6

	kg/yr	**Emissions** metric tons/yr	IPCC GWP/SAR	CO2e metric tons/yr
CO2	1.87E+09	1867938	1	1867938
CH4	2.09E+05	208.762	21	4384.002
N2O	3.54E+03	3.538339	310	1096.885
			Total	**1873419 CO2e metric tons**

Source Specific Emissions Factor References, Data Notes, or Calculation Notes:

1. ***
2. ***
3. ***
4. ***

Greenhouse Gas Emissions Calculator

Boilers-Gaseous Fuels

Emissions Analysis Period:

Facility Name: BEP II

Gas Type: Natural Gas

Boiler Device ID: HRSG-Duct Burners (2 unit total)

Op Hours: 2200

Boiler Heat Rating: 443.2 mmbtu/hr

Gas Btu Content: 1049 btu/scf

Annual Gas Usage: 929 mmscf
975040 mmbtu/yr

Carbon Content: 14.47 kg/mmbtu
Frac Oxidized: 0.995
CO2/C Ratio: 3.6667
Adjusted EF: 52.7914 kg CO2/mmbtu

Emissions Factors:

CO2	53.05	kg/mmbtu
CH4	0.003901	kg/mmbtu
N2O	0.001361	kg/mmbtu

	kg/yr	**Emissions** metric tons/yr	IPCC GWP/SAR	CO2e metric tons/yr
CO2	5.15E+07	51473.71	1	51473.71
CH4	3.80E+03	3.803631	21	79.87625
N2O	1.33E+03	1.327029	310	411.3791
			Total	**51965 CO2e metric tons**

Source Specific Emissions Factor References, Data Notes, or Calculation Notes:
1. ***
2. ***
3. ***
4. ***

Alternate CO_2 Calculation Turbines/HRSGs

Ref:	Siemens Data Sheets, Rev 3, 2-20-09 Avg values for Cases 1-8			
			STP, deg F	60
CO_2, %vol:	4.035		ft3/lb-mol	379.5
Exhaust, lbs/hr	3984928			379500000
Exhaust, temp F	238.5	698.5	0.7445	
Exhaust, H_2O %vol	9.083		0.9092	
Exhaust, mol wt.	28.34			
			Hours/yr	8760
CO_2, ppm	40350		# Units	2
Exhaust density, lbs/ft3	0.0556			
Exhaust flow, acf/hr	71691791			
Exhaust flow, acfm	1194863			
Exhaust flow, dscfm	808724			
CO_2 Emissions	227005	lbs/hr		
	113.5	tons/hr		
	994283	tons/yr		
	1988566	tons/yr all units		
	1807787	**metric tonnes per year all units**		
GHG Sheet Emissions				
Total CH_4	4466.4	CO_2e metric tonnes/yr		
Total N_2O	1520.4	CO_2e metric tonnes/yr		

Alternate Calculation Total

	1813774	**CO_2e metric tonnes/yr**

Tier 3 Emissions Data - John Deere Power Systems

Nameplate Rating Information

Clarke Model	JU6H-UFAD98
Power Rating (BHP / kW)	315 / 235
Certified Speed (RPM)	1760

Certificate Data

John Deere Engine Rating	6068HFC48A
Engine Model Year *	2009
EPA Family Name	9JDXL06.8101
EPA Certificate Number	JDX-NRCI-09-15
CARB Executive Order Number	U-R-004-0361
Emissions Label Part Number	R528920

* The Engine Model Year is listed on the emissions label.

Emissions Data * *

Units	g/hp-hr	g/kW-hr
CO	0.45	0.61
Pm	0.055	0.074
NOx	2.69	3.61
HC	0.06	0.08
NOx + HC	2.75	3.69
Test Engine	PE6068L000130	

* * The emission data listed is measured from the calibration engine under laboratory test conditions. It is intended to represent an "average" engine but is not a guarantee that all engines meet these values.

JOHN DEERE

John Deere Power Systems
3801 W. Ridgeway Ave., PO Box 5100
Waterloo, Iowa USA 50704-5100

JU6H-UFAD98
INSTALLATION & OPERATION DATA
USA Production

Basic Engine Description

Engine Manufacturer	John Deere Co.
Ignition Type	Compression (Diesel)
Number of Cylinders	6
Bore and Stroke - in.(mm)	4.19(106) x 5.00(127)
Displacement - $in.^3$ (L)	415 (6.8)
Compression Ratio	17.0:1
Valves per cylinder - Intake	2
Exhaust	2
Combustion System	Direct Injection
Engine Type	In-Line, 4 Stroke Cycle
Aspiration	Turbocharged
Firing Order (CW Rotation)	1-5-3-6-2-4
Charge Air Cooling Type	Raw Water
Rotation (Viewed from Front) - Clockwise	Standard
Counter-Clockwise	Not Available
Engine Crankcase Vent System	Open
Installation Drawing	D-628
Weight - lb (kg)	1747 (791)

Cooling System

	1760
Engine H_2O Heat -Btu/sec.(kW)	101.5 (107)
Engine Radiated Heat - Btu/sec.(kW)	71 (75)
Heat Exchanger Minimum Flow	
60°F (15°C) Raw H_2O - gal/min. (L/min.)	32 (121)
95°F (35°C) Raw H_2O - gal/min. (L/min.)	43 (163)
Heat Exchanger Maximum Cooling H_2O	
Inlet Pressure - bar (lb./$in.^2$) (kPa)	4 (60) (400)
Flow - gal./min (L/min.)	50 (189)
Thermostat, Start to Open - °F (°C)	180 (82)
Fully Opened - °F (°C)	203 (95)
Engine Coolant Capacity - qt. (L)	13 (11.9)
Coolant Pressure Cap - lb./$in.^2$(kPa)	15 (103)
Maximum Engine H_20 Temperature - °F (°C)	230 (110)
Minimum Engine H_20 Temperature - °F (°C)	160 (71)

Electric System - DC

System Voltage (Nominal)	12 (Standard)	24 (Optional)
Battery Capacity for Ambients Above 32°F (0°C)		
Voltage (Nominal)	12	24
Qty. per Battery Bank	1	2
SAE size per J537	4D-640	4D-640
CCA @ 0°F (-18°C)	640	640
Reserve Capacity - Minutes	285	285
Battery Cable Circuit*, Max Resistance - ohm	0.0012	0.0012
Battery Cable Minimum Size		
0 -120 in. Circuit* Length	00	00
121 - 160 in. Circuit* Length	000	000
161 - 200 in. Circuit* Length	0000	0000
Charging Alternator Output - Amp	40	40
Starter Cranking Amps - @ 60°F (15°C)	440	250

**Positive and Negative Cables Combined Length*

**Positive and Negative Cables Combined Length*

NOTE: This engine is Intendend For Indoor Installation Or In A Weatherproof Enclosure. *(Continued)*

APPENDIX 5.2B

Modeling Support Data

APPENDIX 5.2B

Modeling Support Data

Tables presented in this Appendix are as follows:

In addition, this appendix contains the following figures:

Modeling input/output files are included in the enclosed CD's.

Table 5.2B-1 (2 Pages)

Blythe-II AERMOD Turbine Screening Results
Regular 30/90/210-meter Receptor Grids
130' Stack Heights

Case	1	2	3	4	5	6	7	8	10	12	14	16	18	20	22	24
Evap Cooler	Off	Off	On	On	On	On	On	On	Off	On	On	On	Off	On	On	On
Load	Base	Base	Base	Base	Base	Base	Base	Base	80	80	80	80	60	60	60	60
Duct Firing	On	Off	On	Off	On	Off	On	Off	Off	Off	Off	Off	Off	Off	Off	Off
Ambient Temp, °F	20	20	60	60	95	95	108	108	20	60	95	108	20	60	95	108
Stack Exit Temp (deg.F)	252	266	238	250	222	229	222	229	276	269	182	234	285	285	179	240
Volumetric Flowrate ACFM	856,125	852,807	806,169	802,879	767,541	764,219	763,978	760,653	721,145	687,526	660,196	657,451	631,663	611,871	636,943	595,747
Stack Inside Diameter (ft)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Stack Height (m)	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624	39.624
Stack Exit Temp (deg.K)	395.4	403.2	387.6	394.3	378.7	382.6	378.7	382.6	408.7	404.8	356.5	385.4	413.7	413.7	354.8	388.7
Stack Exit Velocity (m/s)	11.98	11.93	11.28	11.23	10.74	10.69	10.69	10.64	10.09	9.62	9.24	9.20	8.84	8.56	8.91	8.34
Stack Inside Diameter (m)	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532	6.5532
Normal Operations - Short-term Emissions (lb/hr)																
NOx (lb/hr/turbine)	18	16	17	15	16	14	16	14	13	13	12	12	11	10	11	10
CO (lb/hr/turbine)	16.29	15.00	11.57	13.50	15.43	12.75	15.43	12.75	12.00	11.25	11.25	11.25	9.75	9.00	9.75	9.00
SO2 (lb/hr/turbine)	3.6	3.2	3.6	3.2	3.6	3.2	3.6	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
PM10 (lb/hr/turbine)	11	9	11	9	11	9	11	9	9	9	9	9	9	9	9	9
Normal Operations - Unitized Impacts (ug/m3 per 0.5 g/s/turbine)																
1-Hr Unitized Conc (ug/m3)	5.16477	4.99497	5.42527	5.32058	5.60739	5.52486	5.48513	5.53151	5.27778	5.41407	6.85065	5.73721	5.43110	5.46923	7.22798	5.88765
X(m)	706230.0	706230.0	706230.0	706230.0	705810.0	706230.0	706230.0	705810.0	706230.0	706230.0	706230.0	706020.0	706230.0	706230.0	706230.0	706020.0
Y(m)	3723660.0	3723660.0	3723660.0	3723660.0	3723870.0	3723660.0	3723660.0	3723870.0	3723660.0	3723660.0	3722400.0	3723870.0	3723660.0	3723660.0	3722400.0	3723870.0
Z(m)	223.0	223.0	223.0	223.0	217.0	223.0	223.0	217.0	223.0	223.0	195.0	212.0	223.0	223.0	195.0	212.0
YYMMDDHH	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	06082120	05080621	05080621	05080621	06082120	05080621
3-Hr Unitized Conc (ug/m3)	2.78823	2.71026	2.89763	2.85590	2.92156	2.92600	2.91791	2.92598	2.83722	2.89317	3.46249	2.89530	2.89949	2.91301	3.57222	2.87206
X(m)	706230.0	706230.0	706230.0	706230.0	706230.0	706230.0	706230.0	706230.0	706230.0	706230.0	705600.0	706230.0	706230.0	706230.0	705600.0	705810.0
Y(m)	3723660.0	3723660.0	3723660.0	3723660.0	3723660.0	3723660.0	3723660.0	3723660.0	3723660.0	3723660.0	3723870.0	3723660.0	3723660.0	3723660.0	3723870.0	3723870.0
Z(m)	223.0	223.0	223.0	223.0	223.0	223.0	223.0	223.0	223.0	223.0	200.0	223.0	223.0	223.0	200.0	217.0
YYMMDDHH	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621	05080621
8-Hr Unitized Conc (ug/m3)	1.82316	1.78679	1.92091	1.86484	2.10008	2.05872	1.99796	2.06515	1.86864	1.96834	2.44493	2.21857	2.00916	2.05426	2.52955	2.29414
X(m)	706230.0	706230.0	705390.0	706230.0	705390.0	705390.0	705390.0	705390.0	706230.0	705390.0	705180.0	705390.0	705390.0	705390.0	705180.0	705390.0
Y(m)	3723870.0	3723870.0	3724500.0	3723870.0	3724500.0	3724500.0	3724500.0	3724500.0	3723870.0	3724500.0	3724500.0	3724500.0	3724500.0	3724500.0	3724500.0	3724500.0
Z(m)	228.0	228.0	215.0	228.0	215.0	215.0	215.0	215.0	228.0	215.0	205.0	215.0	215.0	215.0	205.0	215.0
YYMMDDHH	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324	06111324
24-Hr Unitized Conc (ug/m3)	0.61049	0.59835	0.68539	0.66363	0.77387	0.75827	0.73310	0.76296	0.70095	0.76218	1.06820	0.89392	0.81029	0.84137	1.06562	0.97165
X(m)	706230.0	706230.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0	714690.0
Y(m)	3723870.0	3723870.0	3720630.0	3720630.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0	3720720.0
Z(m)	228.0	228.0	101.8	101.8	102.1	102.1	102.1	102.1	102.1	102.1	102.1	102.1	102.1	102.1	102.1	102.1
YYMMDDHH	06111324	06111324	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924	02020924
Annual Unit.Conc (ug/m3)			0.08655	0.08373												
X(m)			714120.0	714120.0												
Y(m)			3721860.0	3721860.0												
Z(m)			110.3	110.3												
Normal Operations - Short-term Emissions (g/s/turbine)																
NOx (g/s/turbine)	2.268	2.016	2.142	1.890	2.016	1.764	2.016	1.764	1.638	1.638	1.512	1.512	1.386	1.260	1.386	1.260
CO (g/s/turbine)	2.053	1.890	1.458	1.701	1.944	1.607	1.944	1.607	1.512	1.418	1.418	1.418	1.229	1.134	1.229	1.134
SO2 (g/s/turbine)	0.454	0.403	0.454	0.403	0.454	0.403	0.454	0.403	0.403	0.403	0.403	0.403	0.403	0.403	0.403	0.403
PM10 (g/s/turbine)	1.386	1.134	1.386	1.134	1.386	1.134	1.386	1.134	1.134	1.134	1.134	1.134	1.134	1.134	1.134	1.134
Normal Operations - Short-term Impacts (ug/m3)																
1-Hour NOx (ug/m3)	23.427	20.140	23.242	20.112	22.609	19.492	22.116	19.515	17.290	17.736	20.716	17.349	15.055	13.782	20.036	14.837
1-Hour CO (ug/m3)	21.207	18.881	15.820	18.101	21.802	17.757	21.326	17.778	15.960	15.354	19.428	16.271	13.350	12.404	17.766	13.353
8-Hour CO (ug/m3)	7.486	6.754	5.601	6.344	8.165	6.617	7.768	6.637	5.651	5.582	6.934	6.292	4.939	4.659	6.218	5.203
1-Hour SO2 (ug/m3)	4.690	4.026	4.926	4.288	5.092	4.453	4.980	4.458	4.254	4.364	5.522	4.624	4.377	4.408	5.826	4.745
3-Hour SO2 (ug/m3)	2.532	2.184	2.631	2.302	2.653	2.358	2.649	2.358	2.287	2.332	2.791	2.334	2.337	2.348	2.879	2.315
24-Hour SO2 (ug/m3)	0.554	0.482	0.622	0.535	0.703	0.611	0.666	0.615	0.565	0.614	0.861	0.720	0.653	0.678	0.859	0.783
24-Hour PM10 (ug/m3)	1.692	1.357	1.900	1.505	2.145	1.720	2.032	1.730	1.590	1.729	2.423	2.027	1.838	1.908	2.417	2.204
Normal Operations - Annual Impacts																
NOx (tpy/facility)			163.6	163.6												
SO2 (tpy/facility)			12.0	12.0												
PM10 (tpy/facility)			84.00	84.00												
Annual NOx (ug/m3)			0.407	0.394												
Annual NO2 (ug/m3)**			0.305	0.296												
Annual SO2 (ug/m3)			0.030	0.029												
Annual PM10 (ug/m3)			0.209	0.202												
Start-up/Shutdown Operations																
NOx (lb/hr/turbine) - 1-Hr	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
CO (lb/hr/turbine) - 1-Hr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO (lb/hr/turbine) - 8-Hrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-Hr NOx (ug/m3)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1-Hr CO (ug/m3)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8-Hr CO (ug/m3)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Worst-Case Operating Scenarios are bolded.
**Based on USEPA Ambient Ratio Method (ARM)=75% of NOx impact

Blythe II
Emission Rates and Stack Parameters for Modeling

	Stack Height meters	Temp, deg K	Exhaust Velocity, m/s	Stack Diam, m	Emission Rates, g/s NOx	SO2	CO	PM10	Emission Rates, lb/hr NOx	SO2	CO	PM10
Averaging Period: One hour												
Turbine 1/HRSG	39.624			6.5532	2.268	0.454	2.016	-	18	3.6	16	-
Turbine 2/HRSG	39.624			6.5532	2.268	0.454	2.016	-	18	3.6	16	-
Fire Pump	6.096	796.00	59.55	0.1300	0.21962	5.040E-04	0.071	-	1.743	0.004	0.561	0.069
Aux Boiler	18.288	500.35	12.64	1.0668	0.06930	0.01764	0.233	-	0.55	0.14	1.85	0.42
Averaging Period: Three hours												
Turbine 1/HRSG	39.624			6.5532	-	0.454	-	-	-	3.6	-	-
Turbine 2/HRSG	39.624			6.5532	-	0.454	-	-	-	3.6	-	-
Fire Pump	6.096	796.00	59.55	0.1300	-	1.680E-04	-	-	-	0.00133	-	-
Aux Boiler	18.288	500.35	12.64	1.0668	-	0.01764	-	-	-	0.140	-	-
Averaging Period: Eight hours												
Turbine 1/HRSG	39.624			6.5532	-	-	2.016	-	-	-	16	-
Turbine 2/HRSG	39.624			6.5532	-	-	2.016	-	-	-	16	-
Fire Pump	6.096	796.00	59.55	0.1300	-	-	0.00884	-	-	-	0.070	-
Aux Boiler	18.288	500.35	12.64	1.0668	-	-	0.233	-	-	-	1.850	-
Averaging Period: 24 hours												
Turbine 1/HRSG	39.624			6.5532	-	0.454	-	0.945	-	3.6	-	7.500
Turbine 2/HRSG	39.624			6.5532	-	0.454	-	0.945	-	3.6	-	7.500
Fire Pump	6.096	796.00	59.55	0.1300	-	2.100E-05	-	3.623E-04	-	1.67E-04	-	0.00288
Aux Boiler	18.288	500.35	12.64	1.0668	-	0.01764	-	0.05292	-	0.1400	-	0.4200
Cooling Tower per cell	15.240	"+5 K"	9.56	9.144	-	-	-	0.01569	-	-	-	0.1245
Averaging Period: Annual												
Turbine 1/HRSG	39.624			6.5532	2.471	0.173	-	0.811	19.6119	1.3699	-	6.438
Turbine 2/HRSG	39.624			6.5532	2.471	0.173	-	0.811	19.6119	1.3699	-	6.438
Fire Pump	6.096	796.00	59.55	0.1300	0.00130	2.992E-06	-	5.161E-05	0.01035	2.374E-05	-	4.096E-04
Aux Boiler	18.288	500.35	12.64	1.0668	0.04747	0.0121	-	0.03625	0.377	0.096	-	0.288
Cooling Tower per cell	15.240	297.82	9.65	9.144	-	-	-	0.01569	-	-	-	0.1245
Cold Start (worst case) One hour												
Turbine 1/HRSG	39.624			6.5532	10.483	-	17.363	-	83.2	-	137.8	-
Turbine 2/HRSG	39.624			6.5532	10.483	-	17.363	-	83.2	-	137.8	-
Fire Pump	6.096	796.00	59.55	0.1300	-	-	-	-	-	-	-	-
Aux Boiler	18.288	500.35	12.64	1.0668	0.06930	-	0.233	-	0.55		1.85	-
Cold Start (worst case) 8 hour												
Turbine 1/HRSG	39.624			6.5532	-	-	4.451	-	-	-	35.325	-
Turbine 2/HRSG	39.624			6.5532	-	-	4.451	-	-	-	35.325	-
Fire Pump	6.096	796.00	59.55	0.1300	-	-	0.009	-	-	-	0.070	-
Aux Boiler	18.288	500.35	12.64	1.0668	-	-	0.058	-	-	-	0.463	-

Assumptions:

The aux boiler and turbine operating hours assumptions used in the modeling analysis are larger than those proposed for the permit limits
Aux boiler operation is 24 hours per day and 6000 per year
Fire pump operates 1 hour per day, 52 hours year
Cooling Tower Operates 24-hours per day, 8760 hours per year and has 11 cells
Turbine operates 24 hours per day with duct burning
Aux boiler operates two hours during a 8-hour turbine startup
Annual hours = 6000 no DB + 2270 w/DB + 30 hours cold start + 150 hours warm start + 310 hours shutdown = 8760
Cold start is 180 minutes which is the worst case start
CO 8-hour impacts startup/shutdown calculated as 1 cold start + one shutdown + 1 warm start and 3 hours base load
Fire pump not tested during 1 hour start cycle but is tested during 8-hour start

Table 5.2B-2 Modeling Inputs/Results for Blythe-II Construction Impacts (Combustion Sources as 32 Point Sources)

Short Term Impacts (24 hrs and less)						Long Term Impacts (annual)					
	NOx	CO	SOx	PM10	PM2.5		NOx	CO	SOx	PM10	PM2.5
Combustion (lbs/day)	147.2	62.0	0.15	7.46	7.40	Combustion (tons/year)	19.43	8.18	0.04	0.98	0.98
						Combustion (days/year)**	288	288	288	288	288
Combustion (hrs/day)	10	10	10	10	10	Combustion (hrs/day)	10	10	10	10	10
Combustion (lbs/hr)	14.72	6.20	0.02	0.75	0.74	Combustion (lbs/hr)**	10.65	4.48	0.02	0.54	0.54
Combustion (g/sec)	1.85E+00	7.81E-01	1.89E-03	9.40E-02	9.32E-02	Combustion (g/sec)	1.34E+00	5.65E-01	2.76E-03	6.77E-02	6.77E-02
Construction Dust (lbs/day)				40.1	8.4	Construction Dust (tons/year)				1.43	0.30
						Construction Dust (days/year)				288	288
Construction Dust (hrs/day)				10	10	Construction Dust (hrs/day)				10	10
Construction Dust (lbs/hr)				4.01	0.84	Construction Dust (lbs/hr)**				0.784	0.164
Construction Dust (g/sec)				5.05E-01	1.06E-01	Construction Dust (g/sec)				9.87E-02	2.07E-02
AERMOD Inputs	**304,208 m^2**		**32 Pt.Srcs**								
Combustion (g/s/src)	5.796E-02	2.441E-02	5.906E-05	2.937E-03	2.914E-03	Combustion (g/s/src)	4.192E-02	1.765E-02	8.630E-05	2.114E-03	2.114E-03
Construction Dust ($g/s/m^2$)				1.661E-06	3.479E-07	Construction Dust ($g/s/m^2$)				3.245E-07	6.809E-08
AERMOD Results (ug/m^3)											
Combustion Only						Combustion Only					
1-hour Max	63.538	26.762	0.065	3.22005							
3-hour Max			0.052	2.57399							
8-hour Max		10.226		1.23044							
24-hour Max			0.013	0.64485	0.63966	Annual	2.203		0.005	0.11110	0.11110
All Particulate Sources						All Particulate Sources					
24-hour Max				32.15001	6.76216	Annual				1.23403	0.33119
1-hour NO2 w/ OLM	63.538	for Max 1-hr O3 (ppm)		0.092		Annual NO2 w/ ARM	1.652	based on ARM Ratio of:		75%	
Background (ug/m^3)						Background (ug/m^3)					
1-hour Max	149	2530	47.2								
3-hour Max			31.2								
8-hour Max		1789									
24-hour Max			13.1	88	28	Annual	38.0		2.7	31.0	10.4
Total + Background (ug/m^3)						Total + Background (ug/m^3)					
1-hour Max	213	2557	47.3								
3-hour Max			31.3								
8-hour Max		1799									
24-hour Max			13.1	120	35	Annual	39.7		2.7	32.2	10.7

**Even for construction projects taking less than 12-months or 7 days/wk, the hourly emissions for modeling are still based on total tons (projects<12 months) or tons/year (projects>12months) divided by 365 days since all days in the met dataset (i.e., all 12 months and all 365 days - i.e., 7 days/week) are modeled.

BLYTHE CAA AIRPORT, CALIFORNIA

NCDC 1971-2000 Monthly Normals

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Monthly
Mean Max. Temperature (F)	66.6	72.0	77.6	85.7	93.9	104.1	107.2	105.4	99.6	88.0	74.7	66.0	86.7
Highest Mean Max. Temperature (F)	73.5	77.9	86.2	92.7	102.2	109.7	111.1	109.5	104.1	95.4	82.1	74.9	111.1
Year Highest Occurred	1981	1977	1997	1989	1997	1981	1980	1995	1979	1999	1995	1980	1980
Lowest Mean Max. Temperature (F)	56.8	66.4	70.2	75.0	86.0	98.9	103.0	101.7	90.7	79.7	68.5	59.3	56.8
Year Lowest Occurred	1979	1998	1991	1975	1977	1991	1976	1971	1976	1971	1994	1978	1979
Mean Temperature (F)	54.2	58.9	63.9	71.0	78.9	88.4	93.7	92.5	86.0	74.0	61.1	53.5	73.0
Highest Mean Temperature (F)	60.8	64.1	69.2	77.2	86.8	94.3	97.5	96.4	89.8	78.8	66.3	60.1	97.5
Year Highest Occurred	1981	1995	1997	1989	1997	1981	1980	1995	1979	1988	1995	1980	1980
Lowest Mean Temperature (F)	47.5	55.0	59.2	62.5	72.3	83.1	88.8	88.3	78.6	66.3	55.0	47.6	47.5
Year Lowest Occurred	1972	1990	1991	1975	1977	1998	1987	1976	1986	1971	1994	1971	1972
Mean Min. Temperature (F)	41.7	45.7	50.2	56.2	63.9	72.6	80.2	79.5	72.4	60.0	47.4	40.9	59.2
Highest Mean Min. Temperature (F)	48.0	50.9	54.7	61.7	71.4	78.9	84.8	83.4	77.5	64.9	50.5	45.8	84.8
Year Highest Occurred	1981	1995	1978	1989	1997	1981	1981	1998	1997	1978	1995	1977	1981
Lowest Mean Min. Temperature (F)	32.3	39.9	45.5	50.1	58.3	66.7	72.2	73.7	64.9	53.0	41.4	35.9	32.3
Year Lowest Occurred	1972	1972	1977	1975	1971	1998	1987	1976	1985	1971	1994	1971	1972
Mean Precipitation (in.)	0.46	0.55	0.45	0.14	0.03	0.01	0.32	0.66	0.50	0.23	0.19	0.48	4.02
Highest Precipitation (in.)	2.33	3.03	2.15	1.00	0.22	0.10	2.44	2.09	2.14	1.89	1.84	3.33	3.33
Year Highest Occurred	1993	1998	1992	1999	1996	1972	1984	1979	1976	1972	1985	1984	1984
Lowest Precipitation (in.)	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
Year Lowest Occurred	2000	1997	1999	2000	2000	1999	2000	1999	1994	2000	2000	2000	2000
Heating Degree Days (F)	343.	184.	108.	40.	7.	0.	0.	0.	0.	17.	164.	363.	1226.
Cooling Degree Days (F)	7.	13.	72.	217.	438.	701.	890.	851.	631.	296.	45.	5.	4166.

Western Regional Climate Center, wrcc@dri.edu

BLYTHE CAA AIRPORT, CALIFORNIA

Period of Record General Climate Summary - Temperature

Station:(040927) BLYTHE CAA AIRPORT															
From Year=1948 To Year=2008															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		T
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Day
January	66.7	41.5	54.1	89	25/1951	20	08/1971	61.1	1981	44.1	1949	0.0	0.0	2.
February	72.0	45.4	58.7	93	18/1981	22	16/1990	64.9	1963	52.8	1949	0.2	0.0	0.
March	78.5	50.2	64.3	100	30/1971	30	13/1956	72.9	2004	58.9	1952	3.1	0.0	0.
April	86.4	56.5	71.5	107	08/1989	38	10/1975	77.8	1989	62.7	1975	11.6	0.0	0.
May	95.2	64.4	79.8	114	27/1951	43	29/1971	87.4	1997	72.7	1977	23.8	0.0	0.
June	104.6	72.7	88.7	123	28/1994	46	01/1980	95.0	1981	82.9	1965	29.0	0.0	0.
July	108.4	81.0	94.7	123	28/1995	62	01/1982	98.2	1980	90.0	1987	30.9	0.0	0.
August	106.6	80.2	93.4	120	01/1972	62	30/1957	98.8	1969	88.8	1976	30.6	0.0	0.
September	101.3	73.0	87.2	121	01/1950	53	20/1971	91.2	1956	80.1	1986	28.4	0.0	0.
October	89.8	60.9	75.3	111	01/1980	27	30/1971	81.3	2003	66.4	1971	17.6	0.0	0.
November	75.9	48.6	62.3	95	01/1997	27	20/1994	67.0	1995	55.6	1971	0.8	0.0	0.
December	66.6	41.2	53.9	87	29/1980	24	22/1968	60.5	1980	47.2	1971	0.0	0.0	1.
Annual	87.7	59.7	73.7	123	19940628	20	19710108	75.5	1997	70.2	1971	175.9	0.0	5.
Winter	68.4	42.7	55.6	93	19810218	20	19710108	61.2	1981	49.2	1949	0.2	0.0	5.
Spring	86.7	57.0	71.9	114	19510527	30	19560313	76.7	1997	66.6	1975	38.4	0.0	0.
Summer	106.5	78.0	92.3	123	19940628	46	19800601	96.3	1981	89.4	1976	90.6	0.0	0.
Fall	89.0	60.8	74.9	121	19500901	27	19711030	78.0	2001	68.9	1971	46.8	0.0	0.

Table updated on Apr 28, 2009
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Table 5.2B-3 (3 Pages)

BLYTHE CAA AIRPORT, CALIFORNIA (040927)

Period of Record Monthly Climate Summary

Period of Record : 7/ 1/1948 to 12/31/2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	66.7	72.0	78.5	86.4	95.2	104.6	108.4	106.6	101.3	89.8	75.9	66.6	87.7
Average Min. Temperature (F)	41.5	45.4	50.2	56.5	64.4	72.7	81.0	80.2	73.0	60.9	48.6	41.2	59.7
Average Total Precipitation (in.)	0.47	0.43	0.36	0.16	0.02	0.02	0.24	0.63	0.36	0.26	0.20	0.40	3.56
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 98.4% Min. Temp.: 98.5% Precipitation: 98.5% Snowfall: 98.5% Snow Depth: 98.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, *wrcc@dri.edu*

Table 5.2B-4 (2 Pages)

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	15.0 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m³)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m³)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		—	—	—
Lead[8]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average[9]	—		0.15 µg/m³		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[8]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page ...

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended 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 averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration 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 calender year with a 24-hour average concentration above 150 $\mu g/m^3$ 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 U.S. EPA for further clarification and current federal 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 procedure 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 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 EPA.

8. 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.

9. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Table 5.2B-5 (2 Pages)
Historical Air Quality Data Summary

Mojave Desert Air Basin

County: Riverside

OZONE (ppm)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Peak 1-Hour Indicator					0.143	0.138	0.144	0.142	0.141	0.132	0.140	0.146	0.146							
National 1-Hr. Design Value					0.110	0.140	0.147	0.147	0.140	0.131	0.130	0.130	0.131							
Nat. 8-Hr. Design Value					0.092	0.096	0.101	0.103	0.102	0.096	0.099	0.101	0.101							
Maximum 1-Hr. Concentration					0.140	0.160	0.148	0.140	0.140	0.130	0.130	0.138	0.140							
Max. 8-Hr. Concentration					0.102	0.105	0.127	0.105	0.117	0.102	0.115	0.115	0.108							
Days Above State Standard					19	39	65	32	31	23	33	44	18							
Days Above Nat. 1-Hr. Std.					3	3	10	4	2	1	6	7	1							
Days Above Nat. 8-Hr. Std.					8	30	49	16	20	18	37	39	16							

PM_{10} (ug/m3)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Max. 24-Hour Concentration											112	242								
Max. Annual Geometric Mean																				
Calc Days Above State 24-Hr Std											54	42								
Calc Days Above Nat 24-Hr Std											0	6								

CARBON MONOXIDE (ppm)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Peak 1-Hr. Indicator																				
Max. 24-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

Portions of Riverside County lie within the Salton Sea and South Coast Air Basins.

Mojave Desert Air Basin

County: Riverside

OZONE (ppm)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Peak 8-Hour Indicator (State)	0.117	0.119	0.109	0.115	0.118	0.119										0.076	0.070	0.073	0.070	0.072
Avg. of 4th High 8-Hr. in 3 Yrs (Nat)	0.103	0.102	0.096	0.099	0.101	0.101												0.063	0.061	0.063
Peak 1-Hour Indicator (State)	0.149	0.147	0.135	0.140	0.143	0.144										0.079	0.077	0.079	0.076	0.080
4th High 1-Hr. in 3 Yrs2	0.148	0.147	0.134	0.130	0.130	0.131										0.077	0.077	0.077	0.077	0.084
Max. 8-Hr. Concentration	0.105	0.117	0.102	0.115	0.115	0.108										0.071	0.067	0.072	0.059	0.075
Maximum 1-Hr. Concentration	0.140	0.140	0.130	0.130	0.138	0.140										0.077	0.078	0.084	0.078	0.092
Days Above State 8-Hr. Std.	48	49	45	81	79	39										1	0	1	0	1
Days Above Nat. 8-Hr. Std.	40	39	31	63	59	30										0	0	0	0	0
Days Above State 1-Hr. Std.	32	31	23	33	44	18										0	0	0	0	0

PM_{10} (µg/m³)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
Max. Annual Average (State)																				
Max. Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

No Monitoring Data Available

$PM_{2.5}$ (µg/m³)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average (Nat)																				
Max. Annual Average (State)																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-43

Portions of Riverside County lie within the Salton Sea and South Coast Air Basins.

Table 5.2B-6

MOJAVE DESERT AQMD

EXCEEDANCES OF STANDARDS AND MAXIMUM CONCENTRATIONS **2006**

STATION	OZONE					CARBON MONOXIDE					NITROGEN DIOXIDE			SULFUR DIOXIDE			
	days over state std	days over federal 1hr/8hr	max 8hr ppm	max 1hr ppm	avg 1hr ppm	days over state 1hr/8hr	days over federal 1hr/8hr	max 8hr ppm	max 1hr ppm	avg 1hr ppm	days over state std	max 1hr ppm	avg 1hr ppm	days over state 24h/1h	max 24hr ppm	max 1hr ppm	avg 1hr ppm
29P ADOBE	na	na/na	inc	inc	inc	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
BARSTOW	4	0 / 6	0.094	0.112	0.031	0/0	0/0	1.1	3.5	0.2	0	0.082	0.022	na/na	na	na	na
HESPERIA	22	2 / 18	0.124	0.148	0.038	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
PHELAN	25	2 / 19	0.111	0.137	0.045	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
TRONA	0	0 / 0	0.084	0.091	0.038	NM	NM	NM	NM	NM	0	0.050	0.005	0/0	0.004	0.033	0.001
VICTORVILLE	9	1 / 6	0.105	0.136	0.032	0/0	0/0	1.5	2.2	0.3	0	0.079	0.020	0/0	0.005	0.018	0.001
LANCASTER AVAQMD	22	2 / 16	0.105	0.132	0.036	0/0	0/0	1.6	3.2	0.2	0	0.066	0.015	na/na	na	na	na
Apple Valley	na	na/na	na	na	na	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
29P MARINES	4	0 / 0	0.084	0.100	0.041	0/0	0/0	inc	inc	inc	inc	inc	inc	0/0	inc	inc	inc
MCLB	na	na/na	na	na	na	na/na	na/na	na	na	na	inc	inc	inc	na/na	na	na	na
MDAQMD Totals	**36**	**3 / 30**	**0.124**	**0.148**	**0.037**	**0/0**	**0/0**	**1.5**	**3.5**	**0.3**	**0**	**0.082**	**0.015**	**0**	**0.005**	**0.033**	**0.001**

STATION	WIND SPEED (MPH)					TEOM (PM10) (ug/m3)				TEMP (deg F)			HUMIDITY (%)			SOLAR RAD
	PEAK SPEED		AVERAGE SPEED													
	days w/1hr >40mph	max peak mph	days 24hr avg >30mph	max 1hr avg mph	avg hourly mph	max 1hr pm10 avg	max daily pm10 avg	days avg over 50ug/m3	monthly avg pm10	max 1hr tmp	min 1hr tmp	monthly avg tmp	max 1hr RH %	min 1hr RH %	monthly avg RH %	Avg daily solar Radiation
29P ADOBE	na	na	na	na	na	NM	NM	NM	NM	na	na	na	na	na	na	NM
BARSTOW	12	47	0	28	7.2	NM	NM	NM	NM	112	21	65	94	1	32	NM
HESPERIA	6	48	0	29	7.1	NM	NM	NM	NM	101	28	62	NM	NM	NM	NM
PHELAN	6	50	1	34	7.4	NM	NM	NM	NM	97	28	59	NM	NM	NM	NM
TRONA	20	52	6	35	5.5	882	184	11	23	112	24	68	NM	NM	NM	NM
VICTORVILLE	8	65	2	36	7.2	940	168	34	32	103	24	62	NM	NM	NM	0.328
LANCASTER AVAQMD	1	44	0	23	4.8	198	66	0	24	105	24	62	100	9	40	NM
Apple Valley	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	NM
29P MARINES	4	47	0	28	6.1	909	208	24	28	114	27	70	96	3	28	NM
MCLB	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	NM
LUCERNE	na	na	na	na	na	NM	NM	NM	NM	na	na	na	NM	NM	NM	NM
MDAQMD Totals	**30**	**65**	**8**	**36**	**6.9**	**940**	**184**	**41**	**27**	**112**	**21**	**63**	**94**	**1**	**32**	**0.328**

NM: Never Monitored
na: not active

Note: Included in MDAQMD totals are Barstow, Hesperia, Phelan, 29Palms, Trona, and Victorville.

06/14
2007

Table 5.2B-7

Air Quality Management District

EXCEEDANCES OF STANDARDS AND MAXIMUM CONCENTRATIONS 2007

STATION	OZONE days over state std	OZONE days over federal 1hr/8hr	OZONE max 8hr ppm	OZONE max 1hr ppm	OZONE avg 1hr ppm	CARBON MONOXIDE days over state 1hr/8hr	CARBON MONOXIDE days over federal 1hr/8hr	CARBON MONOXIDE max 8hr ppm	CARBON MONOXIDE max 1hr ppm	CARBON MONOXIDE avg 1hr ppm	NITROGEN DIOXIDE days over state std	NITROGEN DIOXIDE max 1hr ppm	NITROGEN DIOXIDE avg 1hr ppm	SULFUR DIOXIDE days over state 24h/1h	SULFUR DIOXIDE max 24hr ppm	SULFUR DIOXIDE max 1hr ppm	SULFUR DIOXIDE avg 1hr ppm
BARSTOW	2	0 / 3	0.088	0.099	0.032	0/0	0/0	0.7	1.4	0.126	0	0.073	0.020	na/na	na	na	na
HESPERIA	24	2 / 21	0.109	0.132	0.040	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
PHELAN	18	0 / 8	0.095	0.119	0.046	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
TRONA	0	0 / 0	0.084	0.094	0.040	NM	NM	NM	NM	NM	0	0.055	0.004	0/0	0.005	0.014	0.001
VICTORVILLE	7	0 / 6	0.090	0.107	0.033	0/0	0/0	1.6	2.1	0.237	0	0.071	0.018	0/0	0.005	0.009	0.001
LANCASTER AVAQMD	16	0 / 14	0.101	0.118	0.038	0/0	0/0	1.2	2.5	0.202	0	0.064	0.014	na/na	na	na	na
29P MARINES	0	0 / 0	0.083	0.094	0.042	0/0	0/0	inc	inc	inc	inc	inc	inc	0/0	inc	inc	inc
MDAQMD Totals	**29**	**2 / 26**	**0.109**	**0.132**	**0.038**	**0/0**	**0/0**	**1.6**	**2.1**	**0.181**	**0**	**0.073**	**0.014**	**0**	**0.005**	**0.014**	**0.001**

STATION	WIND SPEED (MPH) PEAK SPEED days w/1hr >40mph	WIND SPEED (MPH) PEAK SPEED max peak mph	WIND SPEED (MPH) AVERAGE SPEED days 24hr avg >30mph	WIND SPEED (MPH) AVERAGE SPEED max 1hr avg mph	WIND SPEED (MPH) AVERAGE SPEED avg hourly mph	TEOM (PM10) (ug/m3) max 1hr pm10 ug/m3	TEOM (PM10) (ug/m3) max daily pm10 ug/m3	TEOM (PM10) (ug/m3) days avg over 50ug/m3	TEOM (PM10) (ug/m3) monthly avg pm10 ug/m3	TEMP (deg F) max 1hr tmp Deg F	TEMP (deg F) min 1hr tmp Deg F	TEMP (deg F) monthly avg tmp Deg F	HUMIDITY (%) max 1hr RH %	HUMIDITY (%) min 1hr RH %	HUMIDITY (%) monthly avg RH %	R RAD Avg Daily Solar Radiation Langleys
BARSTOW	13	52	0	28	7.4	NM	NM	NM	NM	111	12	66	97	0	28	NM
HESPERIA	7	50	0	30	7.6	NM	NM	NM	NM	107	18	62	NM	NM	NM	NM
PHELAN	4	45	0	29	7.4	NM	NM	NM	NM	99	14	60	NM	NM	NM	NM
TRONA	7	46	5	35	6.5	865	133	11	19	114	8	69	NM	NM	NM	NM
VICTORVILLE	15	52	2	32	7.2	950	239	35	35	107	16	63	NM	NM	NM	0.337
LANCASTER AVAQMD	2	42	0	26	4.9	267	86	8	24	109	15	63	97	8	36	NM
29P MARINES	8	55	1	31	6.4	732	251	17	29	117	18	70	100	3	27	NM
MDAQMD Totals	**28**	**52**	**6**	**35**	**7.2**	**950**	**239**	**40**	**27**	**114**	**0**	**64**	**97**	**0**	**28**	**0.337**

NM: Never Monitored
na: not active
inc: incomplete

Note: Included in MDAQMD totals are Barstow, Hesperia, Phelan, 29Palms, Trona, and Victorville.

01/14 2008

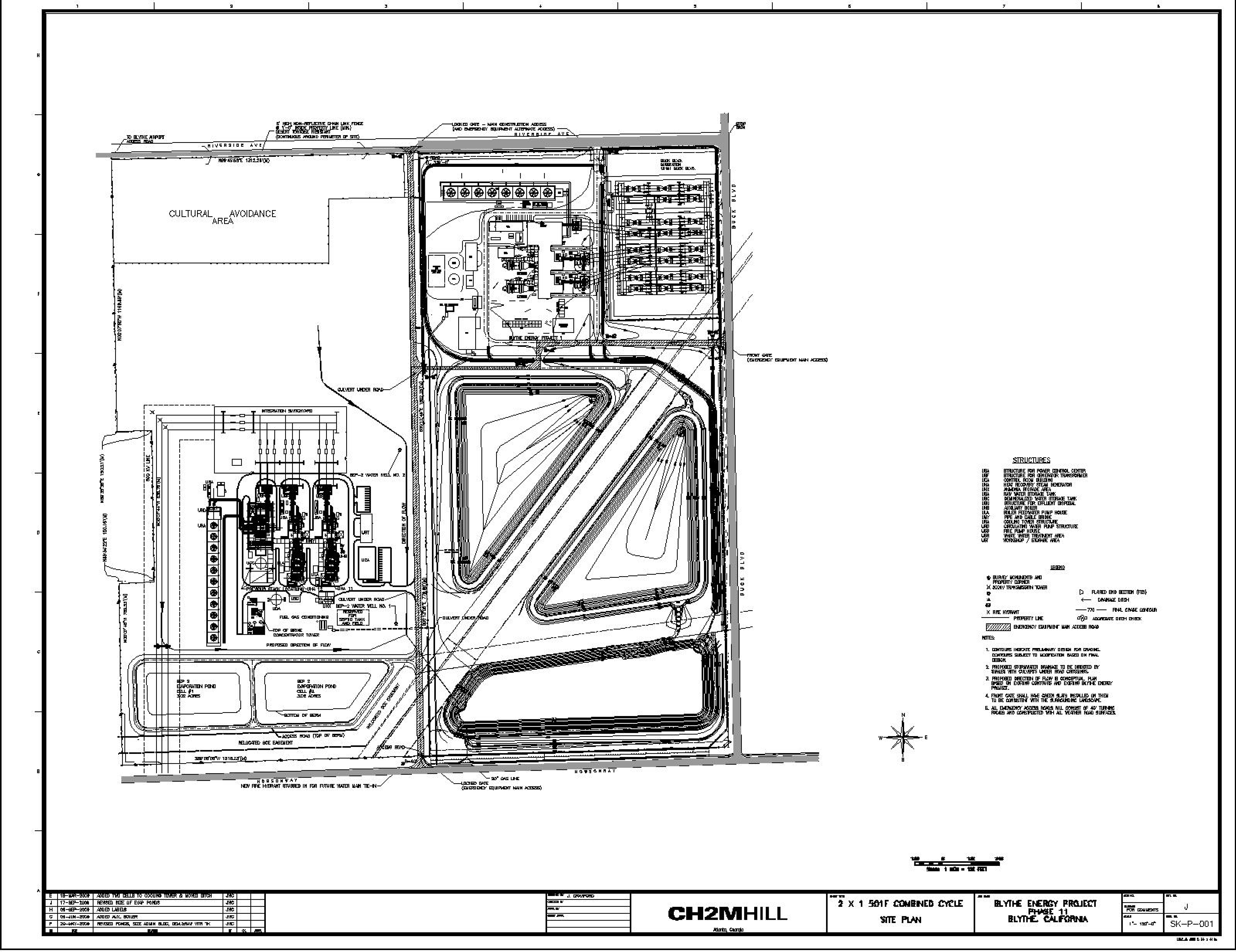
Table 5.2B-8

Air Quality Management District

EXCEEDANCES OF STANDARDS AND MAXIMUM CONCENTRATIONS 2008

STATION	OZONE days over state 1hr/8hr	OZONE days over federal 8hr	OZONE max 8hr ppm	OZONE max 1hr ppm	OZONE avg 1hr ppm	CARBON MONOXIDE days over state 1hr/8hr	CARBON MONOXIDE days over federal 1hr/8hr	CARBON MONOXIDE max 8hr ppm	CARBON MONOXIDE max 1hr ppm	CARBON MONOXIDE avg 1hr ppm	NITROGEN DIOXIDE days over state std	NITROGEN DIOXIDE max 1hr ppm	NITROGEN DIOXIDE avg 1hr ppm	SULFUR DIOXIDE days over state 24h/1h	SULFUR DIOXIDE max 24hr ppm	SULFUR DIOXIDE max 1hr ppm	SULFUR DIOXIDE avg 1hr ppm
BARSTOW	5 / 23	7	0.097	0.104	0.033	0/0	0/0	1.2	1.4	0.111	0	0.081	0.019	na/na	na	na	na
HESPERIA	29 / 80	58	0.107	0.132	0.041	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
PHELAN	32 / 73	50	0.106	0.130	0.046	na/na	na/na	na	na	na	na	na	na	na/na	na	na	na
TRONA	3 / 23	7	0.094	0.100	0.037	NM	NM	NM	NM	NM	0	0.062	0.004	0/0	0.004	0.036	0.001
VICTORVILLE	16 / 58	32	0.098	0.109	0.035	0/0	0/0	1.0	1.4	0.215	0	0.074	0.016	0/0	0.002	0.006	0.001
LANCASTER AVAQMD	18 / 59	39	0.103	0.116	0.038	0/0	0/0	1.0	2.2	0.167	0	0.062	0.013	na/na	na	na	na
29P MARINES	0 / 15	8	0.085	0.093	0.039	0/0	0/0	inc	inc	inc	inc	inc	inc	0/0	inc	inc	inc
MDAQMD Totals	**47 / 89**	**72**	**0.107**	**0.132**	**0.038**	**0/0**	**0/0**	**1.2**	**1.4**	**0.163**	**0**	**0.081**	**0.013**	**0**	**0.004**	**0.036**	**0.001**

STATION	WIND SPEED (MPH) PEAK SPEED days w/1hr >40mph	PEAK SPEED max peak mph	AVERAGE SPEED days 24hr avg >30mph	AVERAGE SPEED max 1hr avg mph	AVERAGE SPEED avg hourly mph	TEOM (PM10) (ug/m3) max 1hr pm10 ug/m3	TEOM max daily pm10 ug/m3	TEOM days avg over 50ug/m3	TEOM monthly avg pm10 ug/m3	TEMP (deg F) max 1hr tmp Deg F	TEMP min 1hr tmp Deg F	TEMP monthly avg tmp Deg F	HUMIDITY (%) max 1hr RH %	HUMIDITY min 1hr RH %	HUMIDITY monthly avg RH %	SOLAR RAD Avg Daily Solar Radiation Langleys
BARSTOW	40	84	8	48	8.3	NM	NM	NM	NM	107	28	66	95	0	31	NM
HESPERIA	12	53	1	33	7.4	NM	NM	NM	NM	103	28	62	NM	NM	NM	NM
PHELAN	10	58	2	36	7.4	NM	NM	NM	NM	97	26	60	NM	NM	NM	NM
TRONA	20	53	4	32	5.7	886	157	22	23	123	28	69	NM	NM	NM	NM
VICTORVILLE	20	59	1	34	7.2	927	286	23	31	103	23	62	NM	NM	NM	0.337
LANCASTER AVAQMD	0	40	0	23	4.9	690	153	16	25	108	27	64	104	8	39	NM
29P MARINES	7	55	2	32	6.3	951	368	44	32	112	28	70	100	3	31	NM



RIVERSIDE AVE
CULTURAL AVOIDANCE AREA
BUCK BLVD
HOBSONWAY
CULVERT UNDER ROAD
INTEGRATION SWITCHYARD
DIRECTION OF FLOW
PROPOSED DIRECTION OF FLOW
FUEL GAS CONDITIONING
EVAPORATION POND
RELOCATED SCE EASEMENT
FRONT GATE (EMERGENCY EQUIPMENT MAIN ACCESS)
STRUCTURES
UBA STRUCTURE FOR POWER CONTROL CENTER
UBF STRUCTURE FOR GENERATOR TRANSFORMER
UCA CONTROL ROOM BUILDING
UHA HEAT RECOVERY STEAM GENERATOR
UGA RAW WATER STORAGE TANK
UGC DEMINERALIZED WATER STORAGE TANK
UHB AUXILIARY BOILER
ULA BOILER FEEDWATER PUMP HOUSE
UMY PIPE AND CABLE BRIDGE
URA COOLING TOWER STRUCTURE
URD CIRCULATING WATER PUMP STRUCTURE
USB FIRE PUMP HOUSE
UST WORKSHOP / STORAGE AREA
LEGEND
SURVEY MONUMENTS AND PROPERTY CORNER
FIRE HYDRANT
PROPERTY LINE
EMERGENCY EQUIPMENT MAIN ACCESS ROAD
FLARED END SECTION (FES)
DRAINAGE DITCH
FINAL GRADE CONTOUR
AGGREGATE DITCH CHECK
NOTES:
1. CONTOURS INDICATE PRELIMINARY DESIGN FOR GRADING. CONTOURS SUBJECT TO MODIFICATION BASED ON FINAL DESIGN.
2. PROPOSED STORMWATER DRAINAGE TO BE DIRECTED BY SWALES WITH CULVERTS UNDER ROAD CROSSINGS.
3. PROPOSED DIRECTION OF FLOW IS CONCEPTUAL. PLAN BASED ON EXISTING CONTOURS AND EXISTING BLYTHE ENERGY PROJECT.
4. FRONT GATE SHALL HAVE GREEN SLATS INSTALLED ON THEM TO BE CONSISTENT WITH THE SURROUNDING LANDSCAPE.
5. ALL EMERGENCY ACCESS ROADS WILL CONSIST OF 40' TURNING RADIUS AND CONSTRUCTED WITH ALL WEATHER ROAD SURFACES.
J-17-SEP-2008 REVISED SIZE OF EVAP PONDS
H 05-SEP-2008 ADDED LABELS
G 04-JUN-2008 ADDED AUX. BOILER
CH2MHILL
2 X 1 501F COMBINED CYCLE
SITE PLAN
BLYTHE ENERGY PROJECT PHASE 11
BLYTHE, CALIFORNIA
FOR COMMENTS
SK-P-001

FIGURE 1-1

Figure 5.2B-2

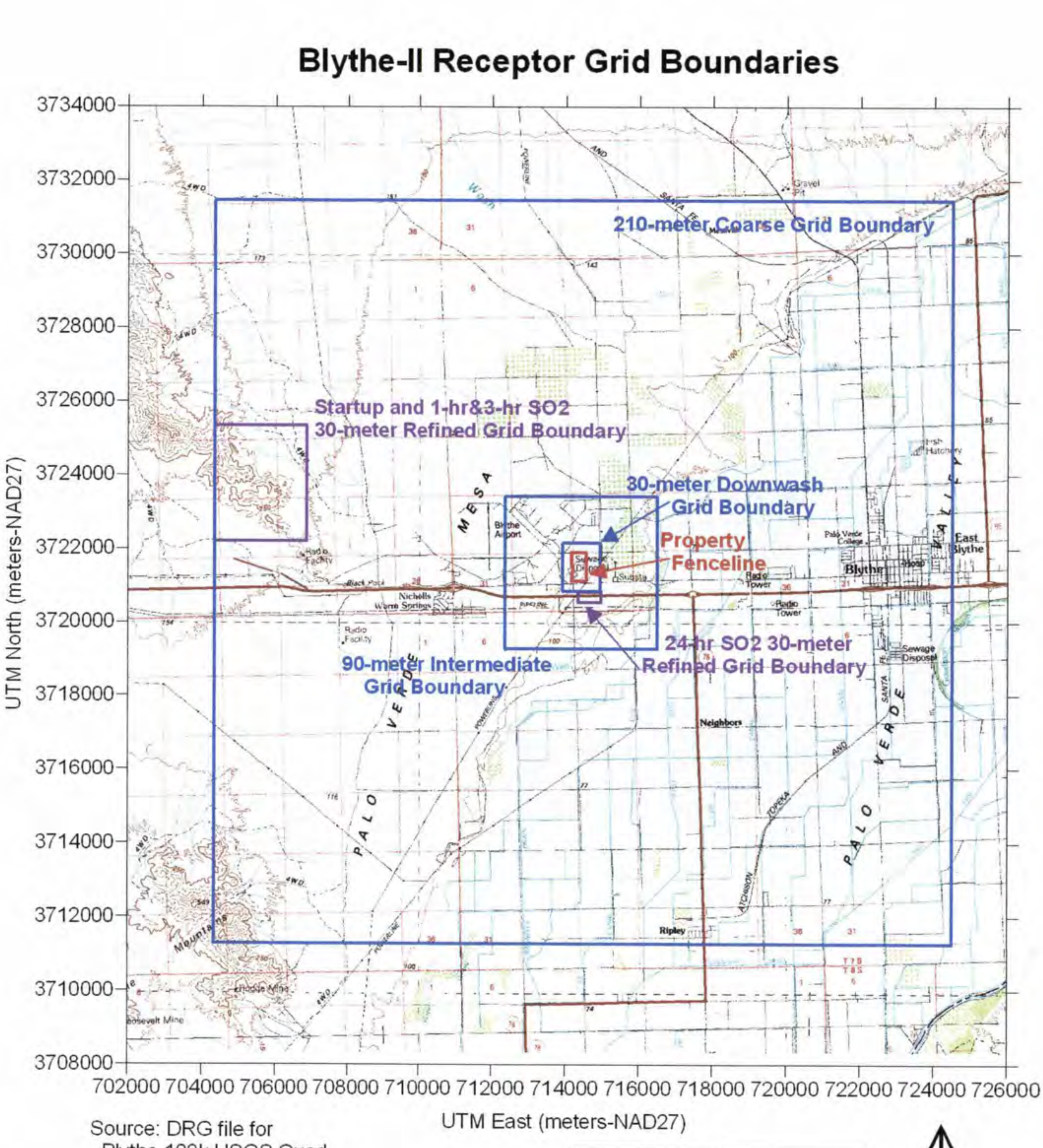
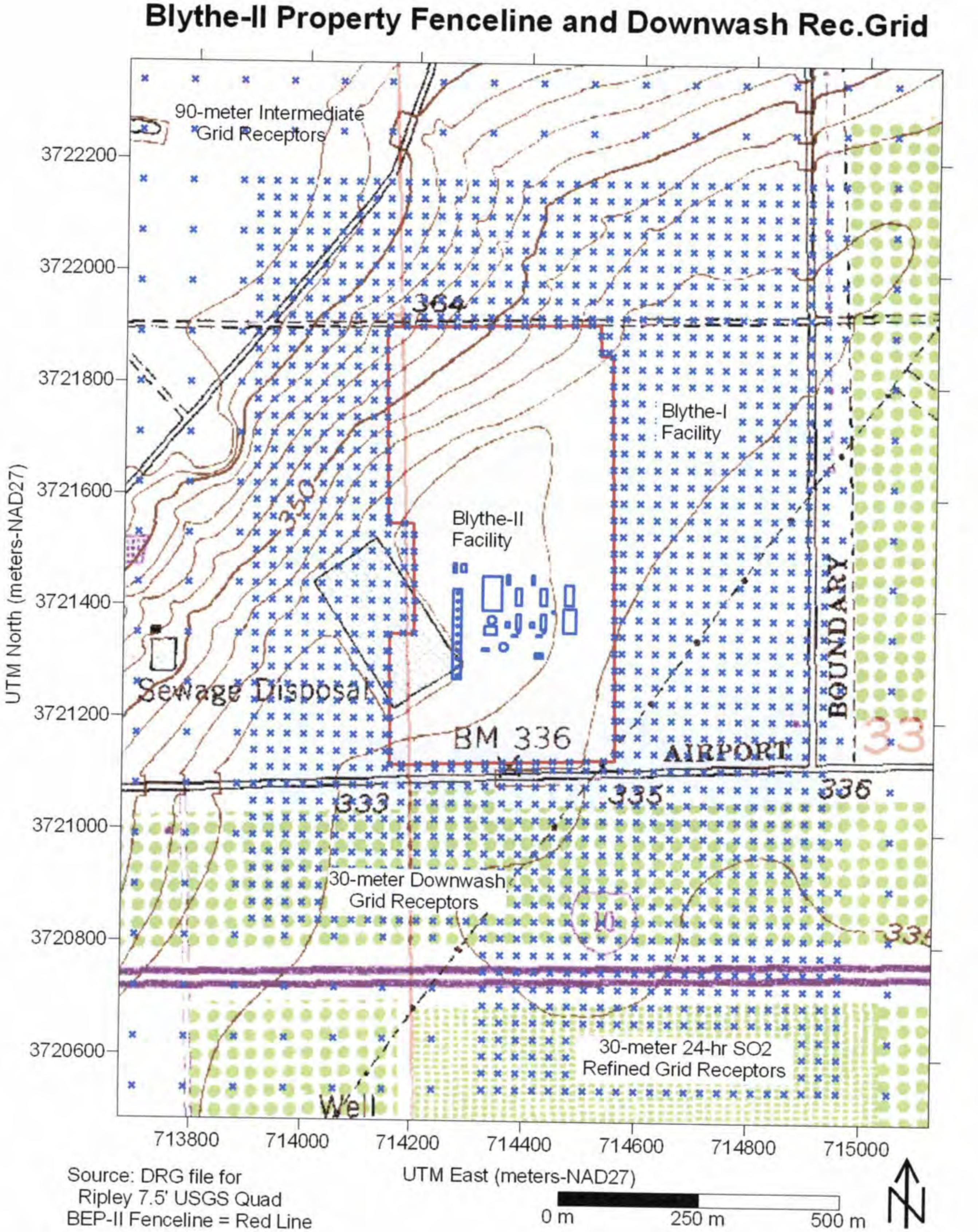

Blythe-II Receptor Grid Boundaries
210-meter Coarse Grid Boundary
Startup and 1-hr&3-hr SO2
30-meter Refined Grid Boundary
30-meter Downwash
Grid Boundary
Property
Fenceline
24-hr SO2 30-meter
Refined Grid Boundary
90-meter Intermediate
Grid Boundary
UTM North (meters-NAD27)
UTM East (meters-NAD27)
3734000
3732000
3730000
3728000
3726000
3724000
3722000
3720000
3718000
3716000
3714000
3712000
3710000
3708000
702000 704000 706000 708000 710000 712000 714000 716000 718000 720000 722000 724000 726000
Source: DRG file for
Blythe 100k USGS Quad
0 m
4000 m
8000 m
N
Blythe
East Blythe
Ripley
Neighbors
Nichells Warm Springs
Blythe Airport
PALO VERDE
MESA

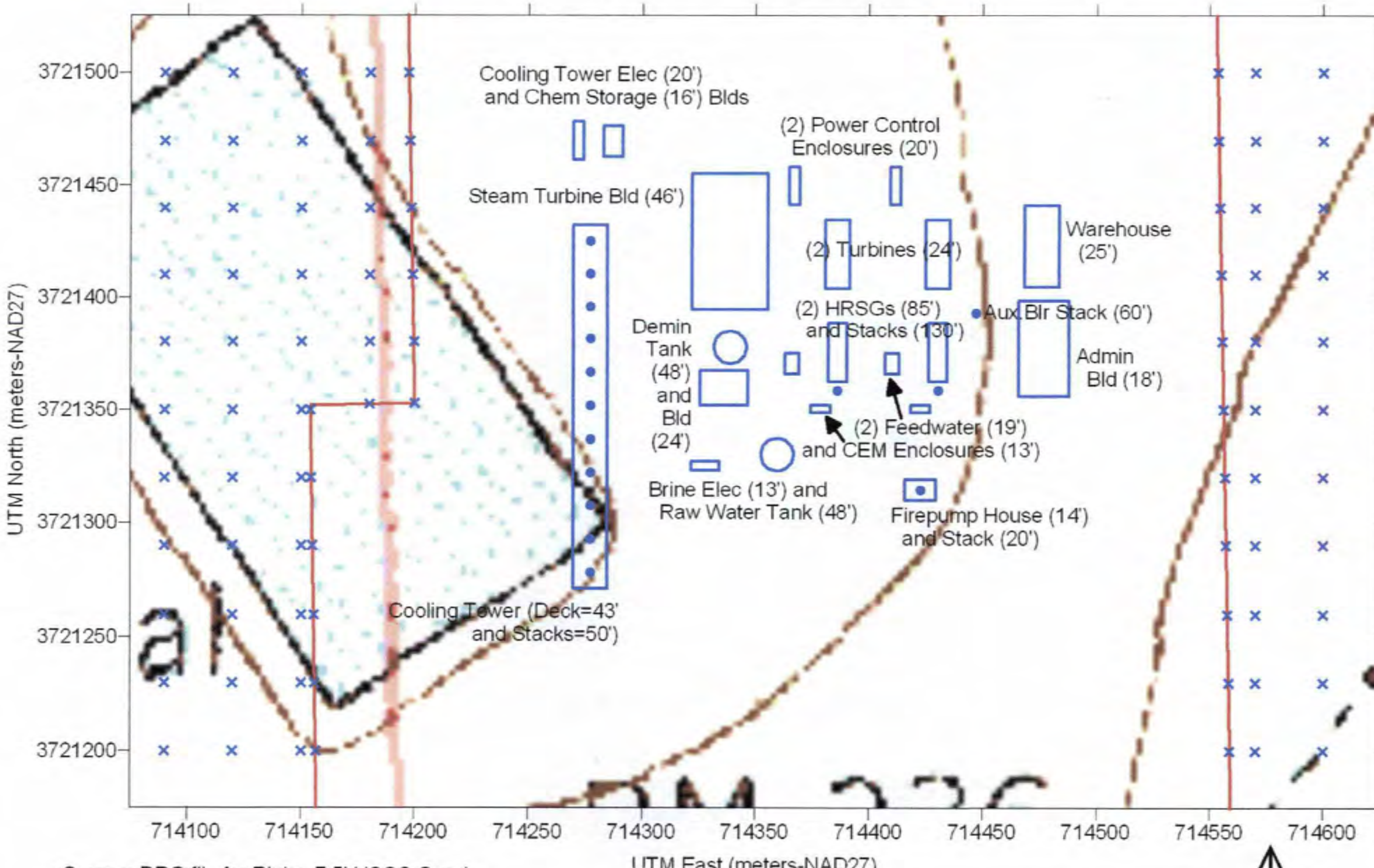
Figure 5.2B-3



Source: DRG file for Ripley 7.5' USGS Quad
BEP-II Fenceline = Red Line

Figure 5.2B-4

Blythe-II BPIP Structures



Source: DRG file for Ripley 7.5' USGS Quad
BEP-II Fenceline = Red Line

Figure 5.2B-5

Mojave Desert Air Basin Monitoring Stations (2006-2008)

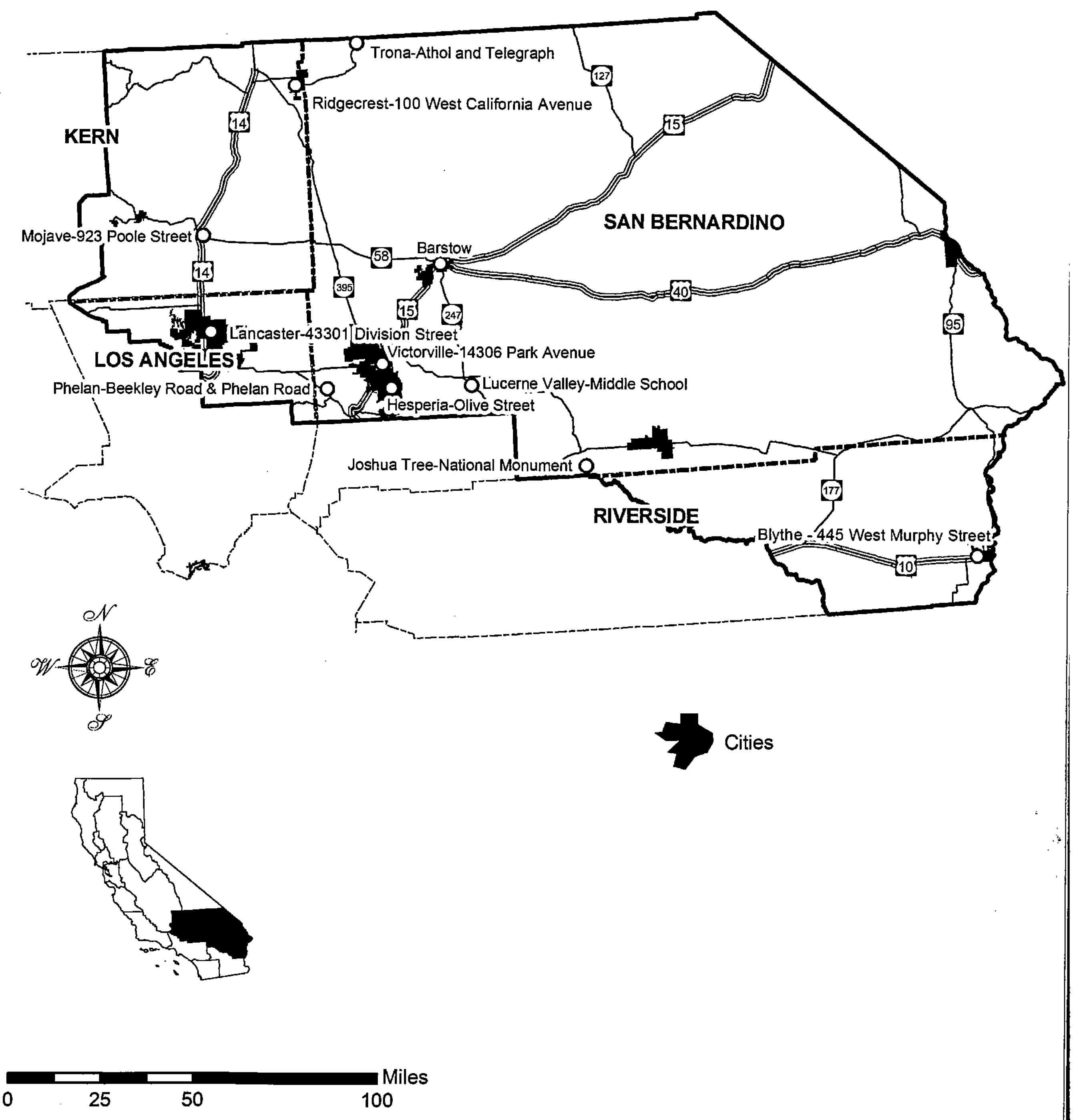


Figure 5.2B-6
BLYTHE AIRPORT 2002-2006
ANNUAL WIND ROSE

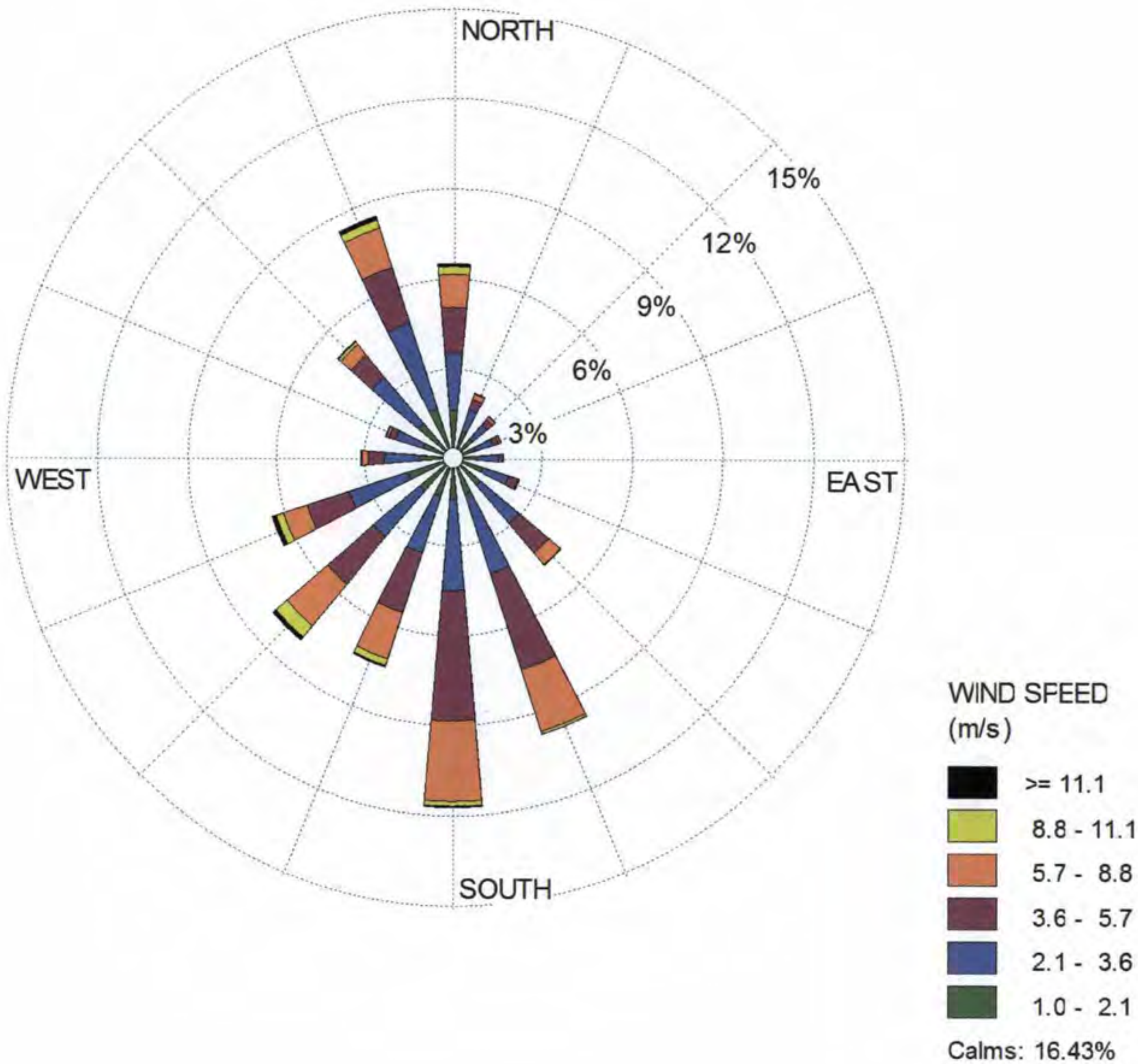


Figure 5.2B-7
BLYTHE AIRPORT 2002-2006
WINTER WIND ROSE

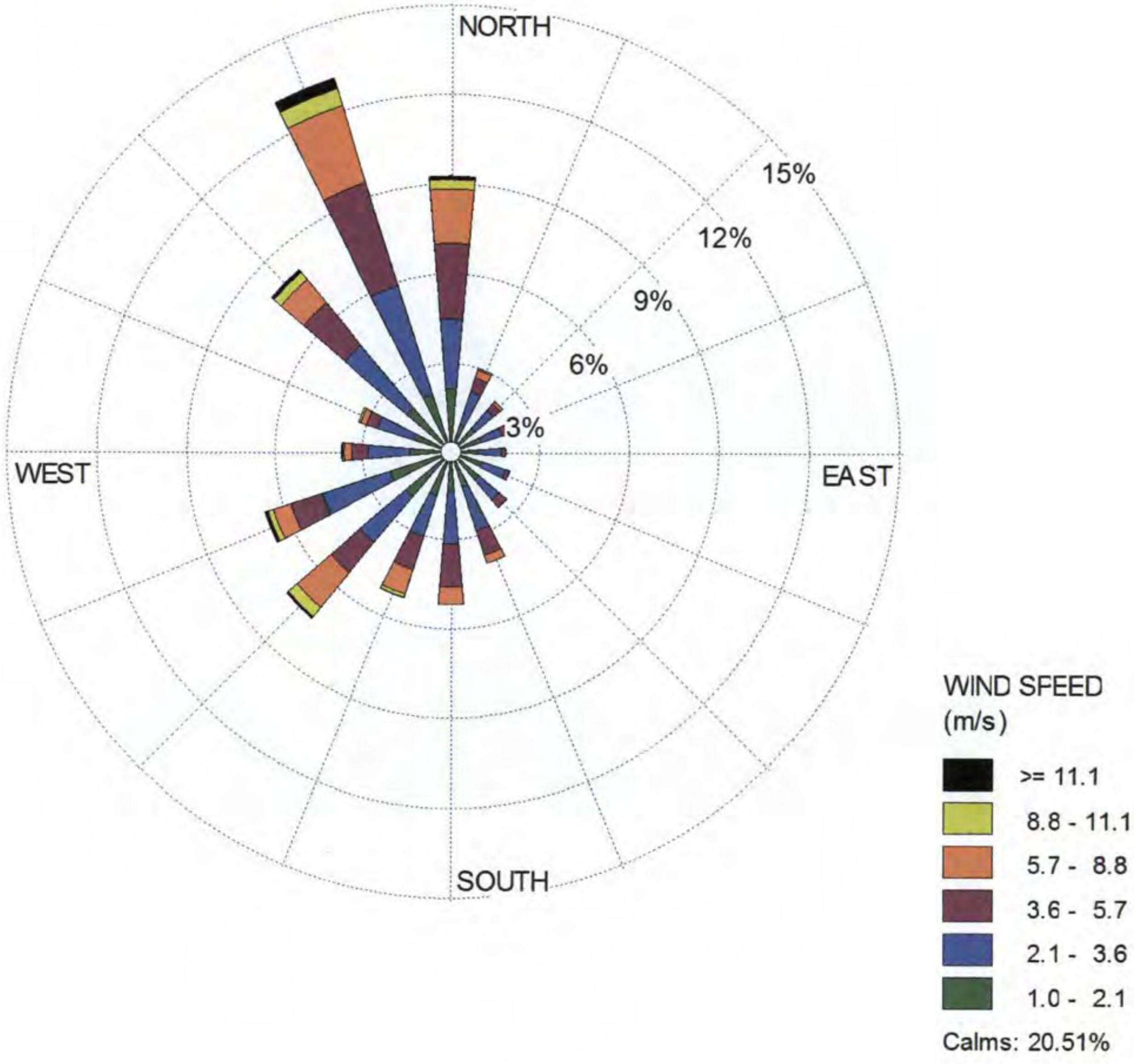


Figure 5.2B-8
BLYTHE AIRPORT 2002-2006
SPRING WIND ROSE

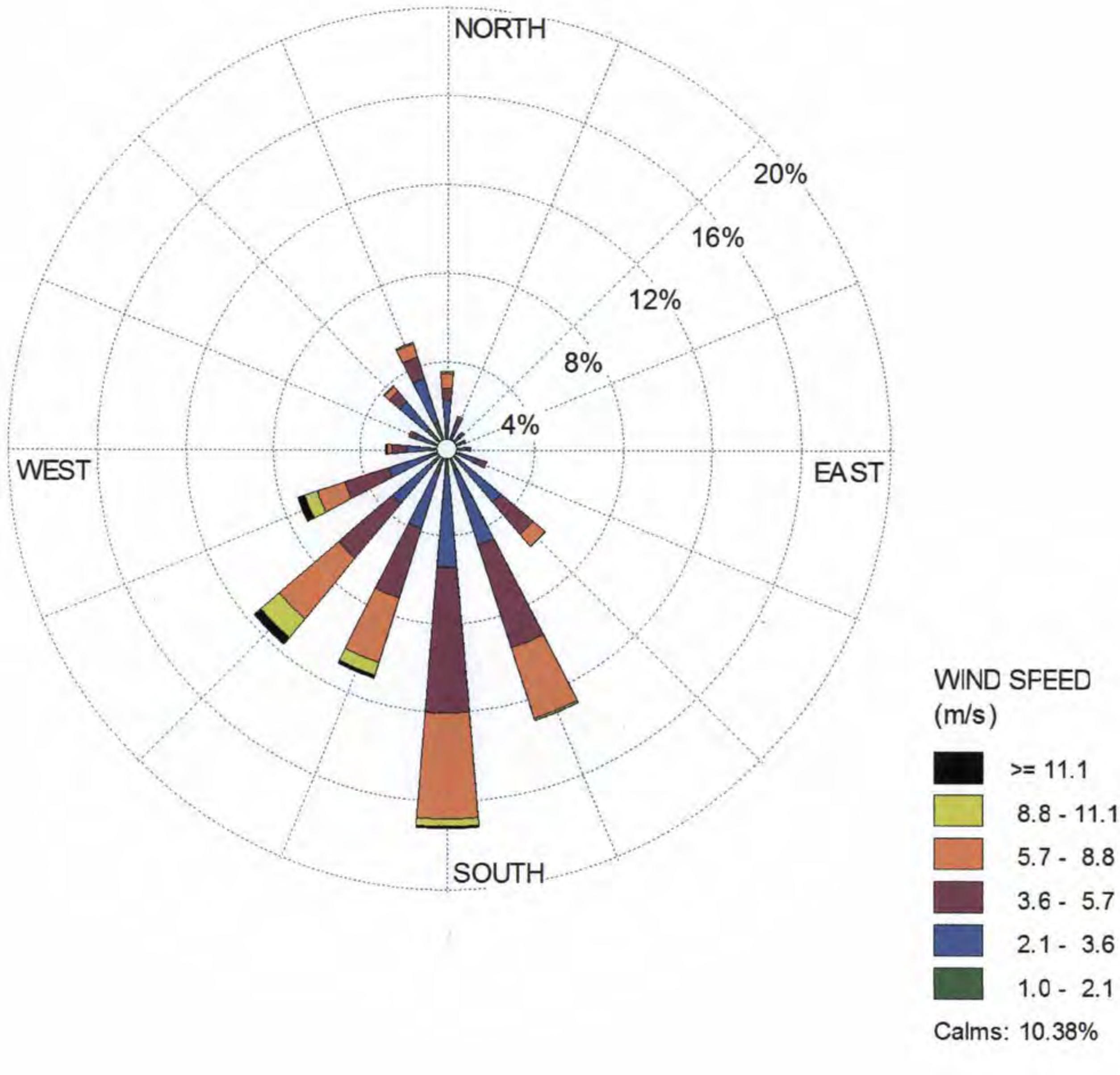


Figure 5.2B-9
BLYTHE AIRPORT 2002-2006
SUMMER WIND ROSE

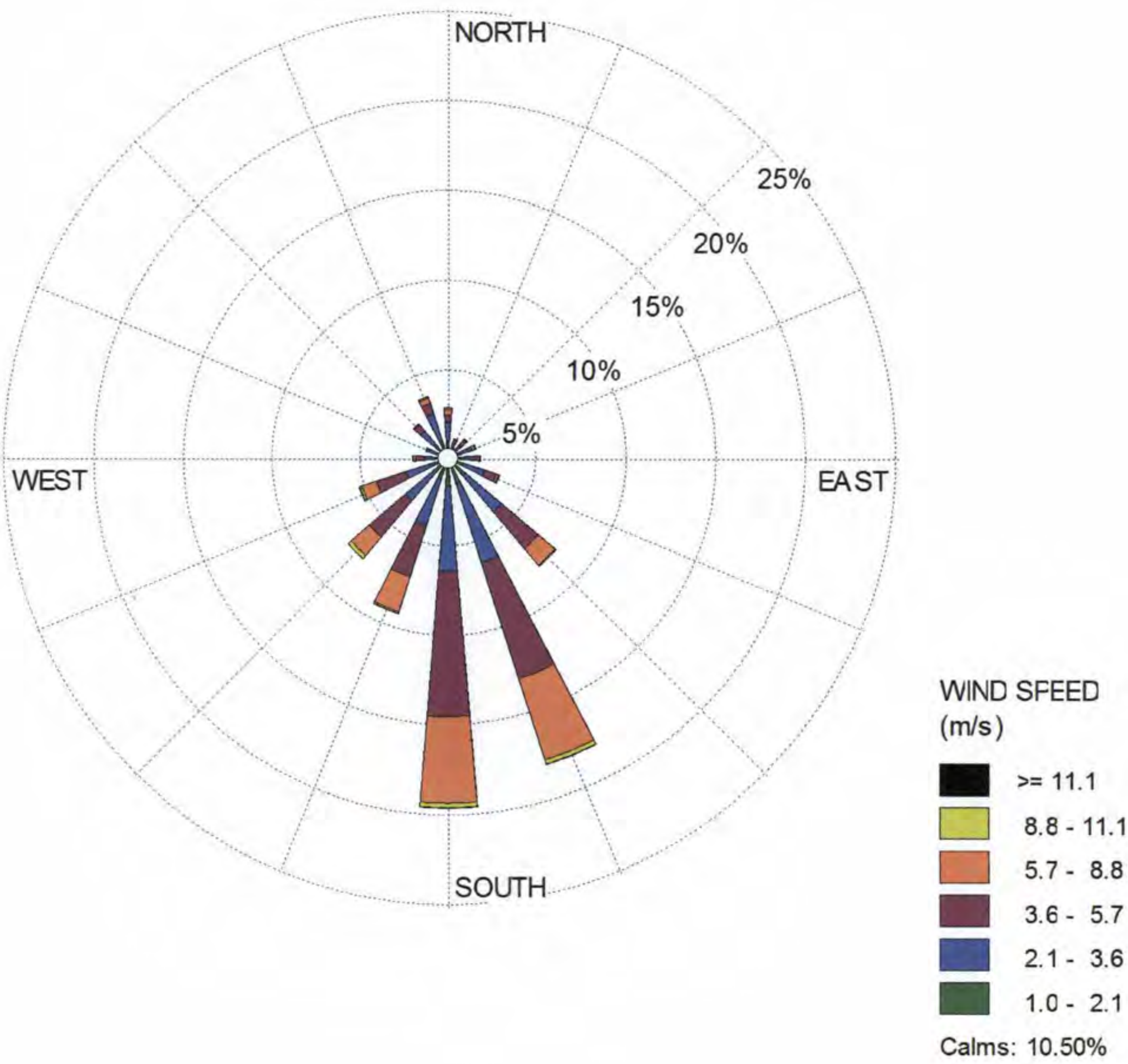
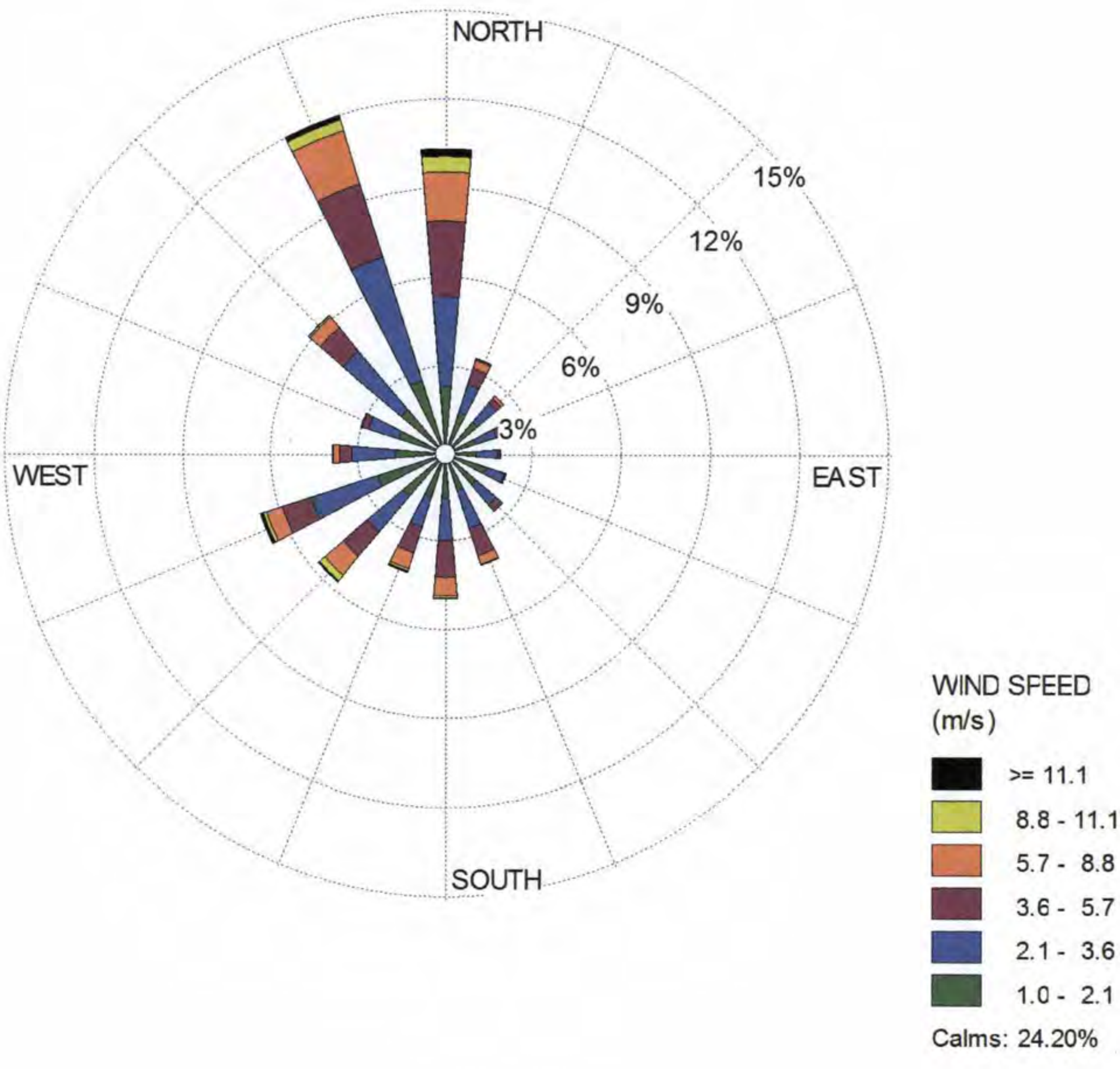


Figure 5.2B-10
BLYTHE AIRPORT 2002-2006
FALL WIND ROSE



APPENDIX 5.2C

Protocol for Increments Analysis

APPENDIX 5.2C

Protocol for Increments Analysis

Overview of Requirements for Increments Analysis

The federal Prevention of Significant Deterioration (PSD) program is intended to ensure that economic growth in areas with good air quality occurs without causing the deterioration of that air quality to unhealthful levels. The PSD program contains a number of requirements that apply to new or modified sources of air pollution that are located in clean air areas.

These PSD program requirements, applied on a pollutant-specific basis, include conducting an increments analysis to demonstrate that no increments will be exceeded as a result of the proposed new or modified source.

The Blythe II Energy Project, is expected to trigger the requirements of the PSD program. Therefore, an increment analysis is proposed at this time. The following protocol is proposed for the PSD impacts analysis for the BEP II project.

April 29, 2009

Ms. Carol Bohnenkamp
AIR-3
United States Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, CA. 94105

Re: Air Quality Modeling Protocol for the Blythe Energy Project Phase II

Dear Ms. Bohnenkamp:

Attached is the Air Quality Modeling Protocol for the Blythe Energy Project Phase II (BEPII). Caithness Energy is proposing to construct and operate a nominal 520-megawatt (MW) power generation facility located approximately 5 miles west of Blythe, California in eastern Riverside County. The proposed project is located adjacent to the Blythe Airport on land just east of the airport. The project will encompass approximately 76 acres. The site is bounded on the south by Hobsonway and on the east by Buck Boulevard. The coordinates of the project are 714386.08 meters easting, 3721358.46 meters northing (NAD27, Zone 11). The project will include:

- Installation of new power generation equipment consisting of two (2) turbines/heat recovery steam generators (HRSG), rated at approximately 170 MW each, operating in combined-cycle mode.
- Install a new diesel powered fire pump.
- Installation of a single steam turbine rated at approximately 180 megawatts
- Installation an 11 cell cooling tower.
- Installation of all required auxiliary support systems.

The proposed project will be a major new source as defined by the Mojave Desert Air Quality Management District's Siting Regulations, and will be subject to District requirements for emission offsets and air quality modeling analyses for criteria pollutants and toxics. The proposed project will also trigger the Prevention of Significant Deterioration (PSD) significant emission rates for some of the pollutants.

The applicant will submit air quality impact analyses to the Mojave Desert Air Quality Management District (AQMD), the California Energy Commission (CEC) as well as the Environmental Protection Agency (EPA) Region 9. The modeling analysis will include impact evaluations for those pollutants shown in Table 1 and the CEC requirements for evaluation of project air quality impacts. The purpose of this document is to establish the procedure for meeting the AQMD and CEC air quality modeling requirements for the proposed project.

Table 1 PSD Significant Emissions Thresholds	
Pollutant	**Cumulative Increase (tons/yr)**
NO_x	100
SO_2	100
CO	100
PM10/PM2.5	100

The project area is in federal attainment for the following pollutants: nitrogen dioxide, particulate matter 10 and 2.5 microns in diameter, sulfur dioxide, and carbon monoxide. The area is federal non-attainment for ozone. The project will result in emissions that will exceed PSD significance thresholds for oxides of nitrogen (NO_x), particulate matter with an aerodynamic diameter of 10 microns and 2.5 microns (PM10/2.5), volatile organic compounds (VOC or ROC), and carbon monoxide (CO). Furthermore, emissions of, sulfur dioxide (SO_2) are expected to be below the significance levels. The project will also trigger CEC modeling requirements for cumulative and construction-based impacts.

The project area is state attainment for NO_x, SO_2, and CO. The area is state non-attainment for ozone and PM10/2.5. Emissions from the proposed project will exceed the AQMD thresholds defining a major source for purposes of New Source Review (NSR). The project triggers the AQMD offset requirements for NO_x (as a precursor to ozone) PM10/2.5, and ROC (also as a precursor to ozone) as emissions of other criteria pollutants (SO_2 and CO) are less than the offset trigger levels. As part of the major PSD source permit application, an air quality, toxics, increment, and cumulative impacts analyses are required. Modeled ambient impacts are expected to be below the levels at which preconstruction monitoring is required. The results of these analyses will be presented in detail in the AFC and the application for a Determination of Compliance.

As part of application process and in accordance with the EPA and AQMD requirements, a modeling protocol is required. This modeling protocol outlines the proposed use of air dispersion modeling techniques that will be used to assess impacts from the proposed facility, and has been prepared by Atmospheric Dynamics, Inc. on behalf of the Blythe Energy Project Phase II. This protocol also follows modeling guidance provided by the U.S. Environmental Protection Agency (USEPA) in its "*Guideline on Air Quality Models*" (including supplements), the National Park Service's

"Permit Application Guidance for New Air Pollution Sources" (Bunyak, 1993), the Federal Land Managers' *"Air Quality Related Values Workgroup (FLAG) Draft Phase I Report"* (June 2008), and the *"Interagency Workgroup on Air Quality Modeling (IWAQM) Phase II Recommendations"* (1998), as well as other modeling guidance documents.

Impacts from operation of the facility will be compared to the following in Table 2:

Table 2 Air Quality Criteria	NO_2	PM10/2.5	CO	SO_2
PSD Significant Impact Levels	✓	✓	✓	
PSD Monitoring Exemption Levels	✓	✓	✓	
PSD Increments	✓	✓		
Ambient Air Quality Standards	✓	✓	✓	✓
Class I and Class II Visibility	✓	✓		✓
Impacts to Soils and Vegetation	✓	✓	✓	✓
Class I Area Acid Deposition	✓			✓

Concurrent with the submittal of the Application for Certification (AFC) to the California Energy Commission, the applicant will be applying to the Mojave Desert AQMD for an Authority to Construct and a Determination of Compliance for the proposed project. Attached for your review is a description of the analytical approach that will be used to comply with AQMD modeling requirements for the project.

We look forward to working with you. If you have any questions, please do not hesitate to call me at (805) 569-6555. Thank you for your attention in this matter.

Sincerely,
Atmospheric Dynamics, Inc.

Gregory Darvin

Gregory S. Darvin
Senior Meteorologist

cc:
Keith Golden, California Energy Commission
MDAQMD

INTRODUCTION AND FACILITY DESCRIPTION

The proposed project site is located approximately 5 miles west of Blythe, California in eastern Riverside County. The proposed project is located adjacent to the Blythe Airport on land just east of the airport. The project will encompass approximately 76 acres. The site is bounded on the south by Hobsonway and on the east by Buck Boulevard. The coordinates of the project are 714386.08 meters easting, 3721358.46 meters northing (NAD27, Zone 11). The site currently is made up of open areas located in flat rural desert terrain.

The power plant will consist of two Siemens Westinghouse SGT6-5000F-Class Combustion Turbine Generators, two Heat Recovery Steam Generators (HRSGs) with duct burners; a single condensing Steam Turbine Generator; a bank of mechanical draft wet cooling towers; and associated support equipment. Duct firing will be provided in the HRSGs, and will be used to supplement steam generation capacity during summer conditions when exhaust energy from the gas turbines declines. Approximately 180 MW will be produced by the steam turbine.

The project will use the Siemens Flex Start, or quick start technology to limit emissions during startup and shutdown events. These turbines will incorporate water injection for primary NO_x control. Each turbine/HRSG will have its own exhaust stack. In addition to water injection, each unit will be equipped with an SCR system using ammonia as the reaction agent in the final NO_x control process, and CO oxidation catalyst for control of CO emissions. Emissions of NOx are expected to be 2.0 ppm (1-hour), CO at 2.0 ppm (3-hour), and VOC at 1.0 ppm, all at 15 percent O_2. Each stack will have a CEMS as required by the AQMD and Title IV acid rain regulations.

Each of the new turbines/HRSGs will operate in combined-cycle mode and will fire natural gas only. Other equipment to be located on the modified site will support the combustion process such as demineralized water production system, water storage tank and forwarding pumps, electrical switchyard area, ammonia storage and containment area, administration building, gas compressor area, etc.

In addition, the facility is proposing to install an emergency fire pump. This engine will meet all applicable U.S. Environmental Protection Agency (USEPA) Tier 3 emissions standards as applicable.

PROPOSED AIR QUALITY DISPERSION MODELS

United States Environmental Protection Agency (USEPA) dispersion models proposed for use to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations include the AERMOD modeling system (version 07026 with the associated meteorological and receptor processing programs AERMET version 06341, AERSURFACE version 08009, and AERMAP version 09040) for modeling most facility operational and construction impacts in both simple and complex terrain, the Building Profile Input Program for PRIME (BPIP-PRIME version 04274) for determining building dimensions for downwash calculations in the models, the SCREEN3 model (version 96043) for determining inversion breakup impacts, and the use of the California Health Risk Assessment models/protocols for determining toxic impacts, which includes the HARP On-Ramp program. These models, along with options for their use and how they are used, are discussed below. These models will be used for the following:

- Comparison of operational and construction impacts to significant impact levels (SILs), ambient monitoring significance thresholds, California Ambient Air Quality Standards (CAAQS), National Ambient Air Quality Standards (NAAQS), and PSD Increments using AERMOD;
- Cumulative impacts analyses with AERMOD in accordance with local/state/ USEPA/CEC requirements;
- Toxics analyses using ARB algorithms as incorporated into state/CEC requirements; and
- Assessment of impacts to soil and vegetation

Joshua Tree National Park is located approximately 80 kilometers west-northwest of the Project location. Additionally, San Jacinto Wilderness is located 170 kilometers west and San Gorgonio Wilderness is 200 kilometers west-northwest. Following the most recent FLAG Workshop procedures (June 2008), the use of Best Available Control Technology (BACT), the use of emission offsets, and because the predominant wind directions are not towards these Class I areas, the Federal Land Managers may allow the project to "screen out" of a full CALMET/CALPUFF analysis. Both the National Park Service (Joshua Tree) and the U.S. Forrest Service (San Jacinto and San Gorgonio) have been contacted with regards to this project and will formally comment on the project along with the analysis needed for the PSD permit. If a formal CALMET/CALPUFF analysis is required, a separate modeling protocol will be submitted. Class I significance modeling for the increment will be assessed, however.

EXISTING METEOROLOGICAL AND AIR QUALITY DATA

Available Meteorological Data: Hourly observations of certain meteorological parameters are used to define the area's dispersion characteristics. These data are used in approved air dispersion models for defining a project's impact on air quality. These data must meet certain criteria established by the USEPA and the following discussion details the proposed data and its applicability to this project.

The meteorological data for the AERMOD modeling analyses will be processed with the USEPA meteorological preprocessor program AERMET (version 06341) using the latest USEPA guidance (i.e., AERMOD Implementation Guide, revised January 9, 2008). The surface meteorological data processed for AERMOD were five recent years (2002-2006) of Automated Surface Observing Systems (ASOS) data from Blythe Airport. Due to its proximity, the Blythe Airport data are considered to be representative of dispersion conditions for the project site. These five years of surface data were selected because they are the most recent five years available at the time of the data processing that also met the minimum 90% data recovery rate requirement (for each calendar year) after combining with concurrent upper-air data. ASOS surface data for Blythe Airport were ordered and downloaded from the National Climatic Data Center (NCDC) website in CDO-3505 format, converted to SAMSON format using the Russ Lee freeware program NCDC-CNV (which also interpolates missing data in accordance with USEPA procedures), and then combined with upper-air data from Tucson, Arizona (upper air sounding data were downloaded from the NOAA/RAOB website for the same time period and processed by AERMET in accordance the latest USEPA guidance cited above).

As part of the input requirements into AERMET and AERMOD, a land use classification must be made. The area surrounding the Blythe Airport and project site was determined to be rural following the methods outlined by the Auer land use classification method. Albedo, Bowen Ratio, and Surface Roughness must be classified by month. These values were determined with the USEPA preprocessor program AERSURFACE (version 08009), again using the latest USEPA guidance (i.e., AERMOD Implementation Guide cited above and the AERSURFACE User's Guide (USEPA-454/B-08-001). Because of the relatively homogeneous land use surrounding the meteorological data and project sites, one 360-degree sector (to a distance of one km) was selected for Surface Roughness (USEPA guidance for Albedo and Bowen Ratio assumes one large ten km area for these parameters).

The area surrounding the project site, within three (3) km, can be characterized as rural, made up mostly of shrubland, pasture/hay, and bare rock/sand/clay, based on review of the 1992 land use/land cover data as well as Google Earth data. Figure 1 displays an aerial photograph that outlines the rural area surrounding the project site. In accordance with the Auer land use classification methodology (USEPA's "*Guideline on Air Quality Models*"), land use within the area circumscribed by a three km radius around the facility is greater than 50 percent rural as shown in Figure 1. Therefore, in the modeling analyses supporting the permitting of the facility, no urban coefficients will be assigned.

Air Quality Modeling Meteorological Data Representativeness: The proposed use of the five (5) years of NCDC surface meteorological data collected at the Blythe Airport ASOS monitoring location would satisfy the definition of on-site data. USEPA defines the term "on-site data" to mean data that would be representative of atmospheric dispersion conditions at the source and at locations where the source may have a significant impact on air quality. Specifically, the meteorological data requirement originates from the Clean Air Act in Section 165(e)(1), which requires an analysis "of the ambient air quality at the proposed site and in areas which may be affected by emissions from such facility for each pollutant subject to regulation under [the Act] which will be emitted from such facility." This requirement and USEPA's guidance on the use of on-site monitoring data are also outlined in the On-Site Meteorological Program Guidance for Regulatory Modeling Applications (USEPA, 1987). The representativeness of meteorological data is dependent upon: (a) the proximity of the meteorological monitoring site to the area under consideration; (b) the complexity of the topography of the area; (c) the exposure of the meteorological sensors; and (d) the period of time during which the data are collected.

First, the meteorological monitoring site and proposed project location are in close proximity, at approximately the same elevation and with exactly the same topography surrounding each location. Second, the ASOS monitoring site and proposed project location are located roughly about the same distance and in the same orientation to significant terrain features that might influence wind flow patterns. In addition, there are no nearby (localized) significant terrain features between or surrounding the proposed project site and/or the meteorological monitoring site that would limit the use of the meteorological data for the proposed project. Third, as discussed below, the surface characteristics roughness length, Bowen ratio, and albedo are relatively consistent throughout the area and are nearly identical between the project site and the ASOS location.

Representativeness is defined in the document "Workshop on the Representativeness of Meteorological Observations" (Nappo et. al., 1982) as "the extent to which a set of measurements taken in a space-time domain reflects the actual conditions in the same or different space-time domain taken on a scale appropriate for a specific application." Judgments of representativeness should be made only when sites are climatologically similar, as is the case with the meteorological monitoring site and the proposed project location. In determining the representativeness of the meteorological data set for use in the dispersion models at the project site, the consideration of the correlation of terrain features to prevailing meteorological conditions, as discussed earlier, would be nearly identical to both locations since the orientation and aspect of terrain at the proposed project location correlates well with the prevailing wind fields as measured by and contained in the meteorological dataset. In other words, the same mesoscale and localized geographic and topographic features that influence wind flow patterns at the meteorological monitoring site also influence the wind flow patterns at the proposed project site.

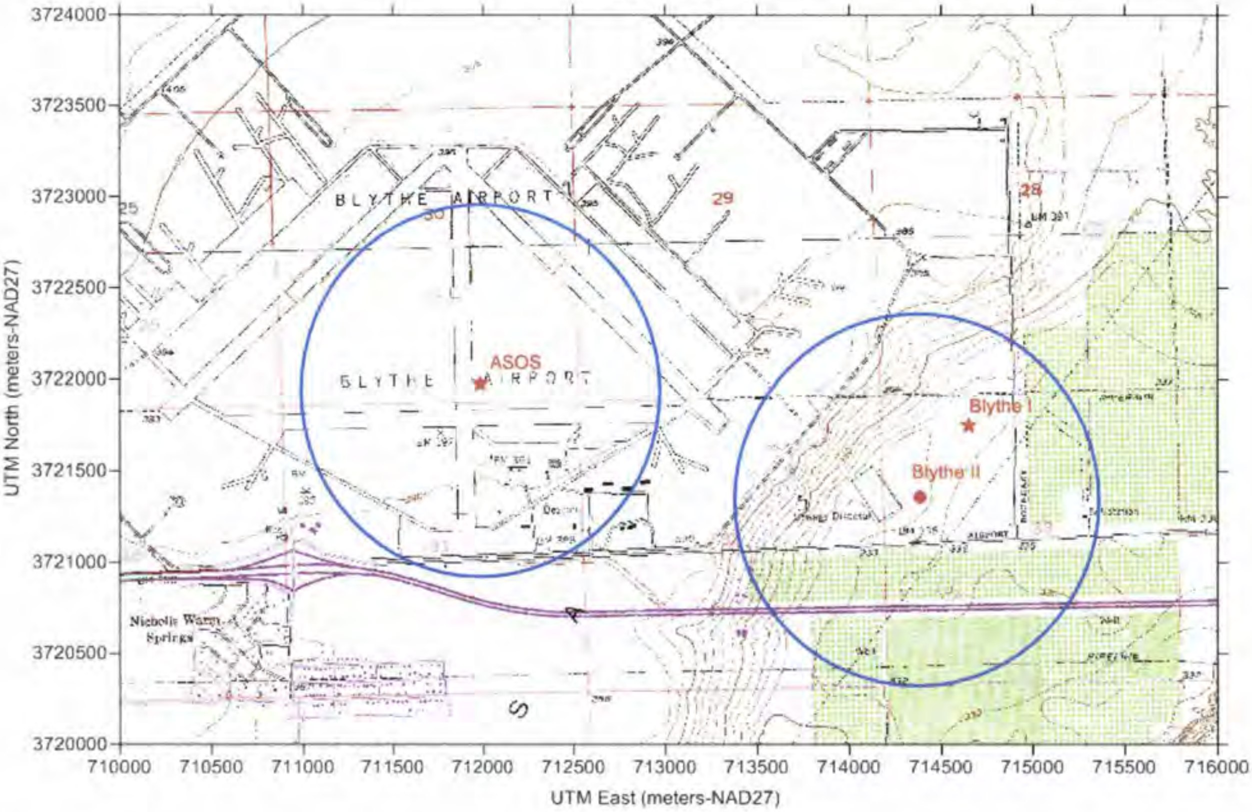
FIGURE 1
3-km RADIUS AROUND PROJECT SITE

Surface characteristics were determined with AERSURFACE using Land Use/Land Cover (LULC) data in accordance with USEPA guidance documents ("*AERMOD Implementation Guide,*" 1/09/08; and "*AERSURFACE User's Guide,*" EPA-454/B-08-001, 1/08) as described below. AERSURFACE uses U.S. Geological Survey (USGS) National Land Cover Data 1992 archives (NLCD92) to determine the midday albedo, daytime Bowen ratio, and surface roughness length representative of the surface meteorological station. ***Bowen ratio*** is based on a simple unweighted geometric mean while ***albedo*** is based on a simple unweighted arithmetic mean for the 10x10 km square area centered on the selected location (i.e., no direction or distance dependence for either parameter). ***Surface roughness length*** is based on an inverse distance-weighted geometric mean for upwind distances up to one (1) km from the selected location. The circular surface roughness length area (1-km radius) can be divided into any number of sectors as appropriate (USEPA guidance recommends that no sector be less than 30^{o} in width). For this analysis, only one 360 degree sector was used.

Running AERSURFACE at both the ASOS and proposed site locations produced almost identical results for both Bowen ratio and Albedo, based on the 10 kilometer area around each location. Similarly, there were minimal variations in land cover and roughness lengths between the two locations based on a one kilometer radius as displayed in Figure 2. Both areas are predominantly rural. Table 1 presents the AERSURFACE land use types within one kilometer of the ASOS and project location. Based on the Auer land use classifications, both locations are classified as rural and there is good correlation of the rural characteristic land types between the two locations. Within the one kilometer radius around the Blythe ASOS site, there is a 5.4 percent urban classification, but review of the Google Earth data suggests that much of this is due to the airport being classified as LULC category 23 (transportation). Comparing the LULC data at the project site to the ASOS monitoring site showed that the same general land use categories exist around the project site and the ASOS site, with the both locations having over 75 percent associated with agriculture. Thus, the predominant land use in the area is made up of shrubland and agriculture activities.

Table 1	**Land Cover Counts/Surface Roughness**	**Blythe-II (BL1KM)**		
LULC Category		**Count**	**%Rural**	**%Urban**
0	Outside Boundary:	0		
11	Open Water:	0	0.0%	
12	Perennial Ice/Snow:	0	0.0%	
21	Low Intensity Residential:	43	0.1%	
22	High Intensity Residential:	19		0.1%
23	Commercial/Industrial/Transp:	1650		5.3%
31	Bare Rock/Sand/Clay:	4339	13.8%	
32	Quarries/Strip Mines/Gravel:	0	0.0%	
33	Transitional:	0	0.0%	
41	Deciduous Forest:	0	0.0%	
42	Evergreen Forest:	73	0.2%	
43	Mixed Forest:	58	0.2%	
51	Shrubland:	11902	37.9%	
61	Orchards/Vineyard/Other:	2063	6.6%	
71	Grasslands/Herbaceous:	1408	4.5%	
81	Pasture/Hay:	6737	21.4%	
82	Row Crops:	1966	6.3%	
83	Small Grains:	955	3.0%	
84	Fallow:	0	0.0%	
85	Urban/Recreational Grasses:	199	0.6%	
91	Woody Wetlands:	1	0.0%	
92	Emergent Herbaceous Wetlands:	0	0.0%	
99	Missing Data:	0		
	Total:	31413	94.6%	5.4%

Figure 2
1-KM Radius



Comparing the AERSURFACE outputs in Table 2, using one 360 degree sector around each location, shows that the average surface characteristics by season are also very similar. For roughness length, the variations between the two sites are minimal. Roughness lengths are often categorized into classes between 0 (water) and 4 (urban). Open land areas, low vegetation areas, and agriculture are often assigned roughness lengths of 0.01 (class 1) to 0.16 (class 2). Thus, it is noted that there are no changes in classes between both sites and the predominant land use activity in the project and ASOS locations are associated with agriculture/open area land uses.

TABLE 2 SURFACE CHARACTERISTICS FROM AERSURFACE

		BLYTHE ASOS			PROJECT SITE		
Season	**Sector**	**Albedo**	**Bowen Ratio**	**Roughness Length (Class)**	**Albedo**	**Bowen Ratio**	**Roughness Length (Class)**
1	1	0.21	2.15	0.077 (1)	0.22	2.15	0.075 (1)
2	1	0.19	1.02	0.094 (1.5)	0.15	1.02	0.090 (1.5)
3	1	0.22	1.50	0.148 (2)	0.21	1.50	0.146 (2)
4	1	0.22	2.15	0.148 (2)	0.22	2.15	0.146 (2)

Additional meteorological monitoring sites were also investigated for use as surface data for the modeling analysis. Southern California Edison collected data near the southwestern edge of Blythe. However, this data does not contain all the parameters needed for AERMOD. Further, the site is located in an area that is more urban in its surface characteristics. No other surface meteorological data sets were identified in the project area. Given the immediate location of the ASOS data to the project site, Blythe Airport data was considered the most representative.

For these reasons as discussed above, the Blythe ASOS meteorological data selected for the proposed project are expected to satisfy the definition of representative meteorological data. Thus, it is our assessment that the meteorological data collected at the Blythe Airport ASOS site are identical to the dispersion conditions at the project site and to the regional area. This data will be processed using AERMET (Version 06341) based on one 360 degree sector for roughness lengths.

As part of the AERMET input requirements, Albedo, Bowen Ratio, and Surface Roughness must be classified by month/season. These values were calculated with AERSURFACE for the meteorological data location (33.61822°N, 114.71581°W, NAD83 geographic coordinates) based on arid conditions, no snow cover during the winter season, and airport location. Other AERSURFACE inputs/outputs are listed in Table 3. Monthly total precipitation data for the Blythe Airport Coop precipitation data (available on the Western Regional Climate Center website) for the years modeled were compared to the 30-year period from 1970-2000 in order to classify each month as dry, average, or wet in accordance with the USEPA guidance documents cited above.

TABLE 3
Blythe Airport Monthly Input/Output Parameters for AERMET

Month	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
Seasonal Assumptions for Surface Roughness (meters) and Albedo:												
Season	Fall	Fall	Fall	Fall	Summer	Summer	Summer	Summer	Summer	Summer	Fall	Fall
Arid	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Airport	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Surface Roughness (meters):												
	0.100	0.100	0.100	0.100	0.102	0.102	0.102	0.102	0.102	0.102	0.100	0.100
Albedo	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Bowen Ratio based on the following surface moisture contents:[1]												
2002	Dry	Dry	Dry	Avg	Avg	Avg	Dry	Dry	Wet	Avg	Avg	Dry
2003	Avg	Wet	Avg	Wet	Avg	Avg	Avg	Dry	Avg	Avg	Wet	Dry
2004	Dry	Avg	Wet	Wet	Avg	Avg	Dry	Dry	Avg	Wet	Wet	Avg
2005	Wet	Wet	Avg	Avg	Avg	Avg	Dry	Wet	Avg	Wet	Avg	Dry
2006	Dry	Dry	Avg	Avg	Avg	Wet	Avg	Wet	Wet	Avg	Avg	Dry
Bowen Ratio by Year/Month:												
2002	6.08	6.08	6.08	3.15	2.17	2.17	3.98	3.98	0.94	2.17	3.15	6.08
2003	3.15	1.25	3.15	1.25	2.17	2.17	2.17	3.98	2.17	2.17	1.25	6.08
2004	6.08	3.15	1.25	1.25	2.17	2.17	3.98	3.98	2.17	0.94	1.25	3.15
2005	1.25	1.25	3.15	3.15	2.17	2.17	3.98	0.94	2.17	0.94	3.15	6.08
2006	6.08	6.08	3.15	3.15	2.17	0.94	2.17	0.94	0.94	2.17	3.15	6.08
Dry/Average/Wet designate total monthly rainfall amounts for the year/month shown that fall into the lower 30^{th}												

percentiles / middle 40th percentiles / upper 30th percentiles, respectively, for a standardized 30-year climatological period (in this case, 1971-2000) for the Blythe Airport Cooperative station.

Existing Baseline Air Quality Data: The nearest criteria pollutant air quality monitoring sites to the proposed project site would be the stations located at Bethel Island, Modesto and Stockton. Ambient monitoring data for these sites for the most recent 4-year period (2005-2008) is summarized in Table 4. Data from these sites is estimated to present a reasonable representation of background air quality for the project site and impact area.

Table 4 Monitoring Data Summary (Highest Monitored Values)

Pollutant	Site	Avg. Time	2005	2006	2007	2008
Ozone, ppm	Blythe	1-hr	.084	.078	.092	.074
		8-hr	.072	.059	.075	.067
Pollutant	**Site**	**Avg. Time**	**2005**	**2006**	**2007**	**2008**
PM_{10}, µg/m^3	29 Palms	24-hr	70	43	58	-
		Annual	17.3	15.1	19.2	-
$PM_{2.5}$, µg/m^3	NS	24-hr	-	-	-	-
		Annual	-	-	-	-
Pollutant	**Site**	**Avg. Time**	**2005**	**2006**	**2007**	**2008**
CO, ppm	29 Palms	1-hr	-	-	-	-
		8-hr	2.03	1.31	1.03	-
Pollutant	**Site**	**Avg. Time**	**2005**	**2006**	**2007**	**2008**
NO_2, ppm	29 Palms	1-hr	.035	.037	.036	-
		Annual	.006	.006	-	-
Pollutant	**Site**	**Avg. Time**	**2005**	**2006**	**2007**	**2008**
SO_2, ppm	29 Palms	1-hr	-	-	-	-
		3-hr	-	-	-	-
		24-hr	.005	.004	.002	-
		Annual	.002	.001	.001	-

Table 5 shows the background air quality values based upon the data presented in Table 4. The background values represent the highest values reported for the site during any single year of the most recent three-year period.

Table 5 Background Air Quality Values

Pollutant and Averaging Time	Background Value, μg/m^3
Ozone – 1-hr	184
Ozone – 8-hr	147
PM_{10} – 24-hr	58
PM_{10} – Annual	19.2
$PM_{2.5}$ – 24-hr	-
$PM_{2.5}$ – Annual	-
CO – 1-hr	-
CO – 8-hr	2256
NO_2 – 1-hr	69.8
NO_2 – Annual	11.2
SO_2 – 1-hr	-
SO_2 – 3-hr	10.4
SO_2 – 24-hr	13.1
SO_2 – Annual	5.3

Average of the high values for all years, all applicable stations.

The attainment status of the proposed project site is designated for the NAAQS and CAAQS as follows:

Table 6
MDAQMD Attainment Status Table

Pollutant	Averaging Time	Federal Status	State Status
Ozone	1-hr	-	Nonattainment
Ozone	8-hr	Unclassified/Attainment	Nonattainment
CO	All	Unclassified/Attainment	Unclassified
NO_2	All	Unclassified/Attainment	Attainment
SO_2	All	Unclassified	Attainment
PM_{10}	All	Unclassified	Nonattainment
$PM_{2.5}$	All	Unclassified	Unclassified/Attainment

Source: CARB website status maps, 9/2008

AIR QUALITY MODELING PROCEDURES WITH AERMOD/SCREEN3

Several dispersion models are proposed for use to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations as described above. AERMOD and SCREEN3 will be used to determine facility impacts on Class II areas in the immediate Project vicinity in simple, intermediate, and complex terrain areas during both Project operations and during construction of the Project. The AERMOD and SCREEN3 models will be used for comparison of impacts to significant impact levels, monitoring significance thresholds, and compliance with PSD Increments and AAQS.

Screening Modeling: A variety of facility operating conditions (e.g., minimum, maximum, and average ambient temperatures) and a range of turbine loads will be conducted to identify which operating condition causes worst-case ambient air impacts. The modeling will be performed for stack characteristics and emissions for all applicable short-term averaging times (pollutants and averaging times with AAQS) using one or five years of the selected meteorological dataset (described above). The worst-case short-term operating condition(s) so identified will be used in the refined modeling described below. Source characteristics for annual average impacts will be based on average operating conditions (i.e., average annual temperature, average operating load and duct-firing conditions, and worst-case annual emissions based on permitted hours of operation for normal and startup, shutdown, and malfunction conditions). If the screening modeling with both sets of all five years of meteorological data shows that one of the datasets is worst-case for all averaging times (i.e., surface characteristics for the Project site vs. surface characteristics for the meteorological monitoring location), the refined modeling will only be performed with that dataset.

Refined Modeling: The purpose of the refined modeling analysis will be to demonstrate that air emissions from the Project will not cause or contribute to a NAAQS/CAAQS violation and will not cause a significant health risk impact. For modeling the project's operational impacts under normal and startup, shutdown, or malfunction conditions due to emissions from the proposed sources (as well as temporary project construction impacts) on nearby simple, complex, and intermediate terrain, the AERMOD model will be used with both sets of five (5) years of hourly meteorological data (unless the screening shows that one data is predominant as described above). The Federal rule adopting AERMOD as a preferred USEPA model became effective December 9, 2005. Therefore, the most recent version of AERMOD will be used for the Project modeling analyses (AERMOD version 07026 and AERMAP version 09040). AERMOD is a steady-state plume dispersion model that simulates transport and dispersion from multiple point, area, or volume sources based on updated characterizations of the atmospheric boundary layer. AERMOD uses Gaussian distributions in the vertical and horizontal for stable conditions, and in the horizontal for convective conditions; the vertical distribution for convective conditions is based on a bi-Gaussian probability density function of the vertical velocity. For elevated terrain

AERMOD incorporates the concept of the critical dividing streamline height, in which flow below this height remains horizontal, and flow above this height tends to rise up and over terrain. AERMOD also uses the advanced PRIME algorithm to account for building wake effects.

As part of the input requirements into AERMET and AERMOD, a land use classification must be made. The area surrounding the Project site was determined to be primarily rural following the methods outlined by the Auer land use classification method. As part of the AERMET input requirements, albedo, Bowen ratio, and Surface Roughness must be classified by season. These values will be determined with the AERSURFACE using the latest USEPA guidance (i.e., AERMOD Implementation Guide, revised January 9, 2008, and the AERSURFACE User's Guide (USEPA-454/B-08-001) as described earlier. AERMOD input data options are listed below following these USEPA modeling guidance documents.

- Final plume rise
- Stack tip downwash
- Regulatory default option (i.e., calm and missing meteorological data processing and elevated terrain heights option)

Flagpole receptors are not proposed to be used. AERMAP will be used to calculate receptor elevations and hill height scales for all receptors from DEM data in accordance with USEPA guidance.

Annual NO_2 concentrations will be calculated using the Ambient Ratio Method (ARM), adopted in Supplement C to the *Guideline on Air Quality Models* (USEPA, 1994). The Guideline allows a nationwide default conversion rate of 75% for annual NO_2/NO_x ratios.

Should NO_2 concentrations need to be examined in a more rigorous manner, the Ozone Limiting Method (OLM) will be used. Hourly ozone data collected at the appropriate monitoring station (most likely Twenty Nine Palms) will be used in the OLM analysis to calculate hourly NO_2 concentrations from hourly NO_x concentrations. The years of ozone data used will be for the same years as the meteorological data modeled. The OLM is incorporated into the AERMOD program and involves an initial comparison of the estimated maximum NO_x concentration and the ambient O_3 concentration to determine which is the limiting factor to NO_2 formation. If the O_3 concentration is greater than the maximum NO_x concentration, total conversion is assumed. If the NO_x concentration is greater than the O_3 concentration, the formation of NO_2 is limited by the ambient O_3 concentration. In this case, the NO_2 concentration is set equal to the O_3 concentration plus a correction factor that accounts for in-stack and near-stack thermal conversion (typically 10% is used).

Fumigation Modeling: The SCREEN3 model was used to evaluate inversion breakup and shoreline fumigation impacts for all short-term averaging periods (24 hours or less). The methodology outlined in EPA-454/R-92-019 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised) will be followed for this analysis. Combined impacts for all sources under fumigation conditions will be evaluated based on EPA modeling guidelines.

Specifically, inversion breakup analyses will be performed with SCREEN3. For sources with plume heights less than the TIBL height or not subject to inversion breakup fumigation, their contributions to fumigation impacts were determined using SCREEN3 with all meteorological conditions and ignoring terrain at the distance of the maximum fumigation concentration. The fumigation concentration is then combined with the maximum SCREEN3 concentration from the other sources. The combined fumigation concentrations are also compared to the maximum SCREEN3 concentrations under normal dispersion for all meteorological conditions. If fumigation impacts are less than SCREEN3 maxima under normal dispersion, no further analysis is required based on Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (EPA-454/R-92-019).

If fumigation impacts exceed SCREEN3 maxima, then fumigation impacts longer than 1-hour averages will be evaluated based on Section 4.5.3 of Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (EPA-454/R-92-019) guidance on converting to 3-, 8- and 24-hour average concentrations.

Based upon land use classification, the following procedures were recommended for rural land use by the EPA:

- Run SCREEN3 in rural mode, then calculate fumigation impacts. For sources not subject to fumigation, also run SCREEN3 using flat terrain for downwind distances equal to maximum fumigation distances. Determine maximum combined impacts as discussed above.

- Calculate the SCREEN3 maximum impact for normal dispersion for all SCREEN3 meteorological conditions for flat terrain for all sources. For fumigation impacts greater than the SCREEN3 maxima under normal dispersion, multiply the distance dependent ratio times the highest fumigation impacts.

- Adjust concentration for appropriate averaging periods.

GEP Stack Height and Downwash: Stack locations and heights and building locations and dimensions will be input to BPIP-PRIME. The first part of BPIP-PRIME determines and reports on whether a stack is being subjected to wake effects from a structure or structures. The second part calculates direction-dependent "equivalent building dimensions" if a stack is being influenced by structure wake effects. The BPIP-PRIME output is formatted for use in AERMOD input files.

Receptor Selection: Receptor and source base elevations will be determined from US Geological Survey (USGS) Digital Elevation Model (DEM) data using the 7-1/2-minute format (*i.e.*, most likely 10 to 30-meter spacing between grid nodes for this area). All coordinates (both sources and receptors) will be referenced to UTM North American Datum system implicit in the DEM data used (most likely NAD27, Zone 11). The receptors from the DEM files will be placed exactly on the DEM nodes if possible. Every effort will be made to maintain receptor spacing across DEM file boundaries.

Cartesian coordinate receptor grids will be used to provide adequate spatial coverage surrounding the project area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. The maximum extent of the significant impact isopleth for any pollutant will be used to represent the impact radius.

For the full impact analyses, a nested grid will be developed to fully represent the significance area(s) and maximum impact area(s). The downwash receptor grid will have a receptor spacing of 30-meters along the facility fence line and out to 500 meters from the Project. A intermediate receptor grid with 90-meter receptor spacing will extend from the downwash receptor grid out to three (3) kilometers meters from the Project (or more as necessary to calculate the significant impact area). A coarse grid with 210 meter resolution will extend outwards to 10 kilometers. When maximum impacts occur in areas outside the 50-meter spaced receptor grid, additional refined receptor grids with 50-meter resolution will be placed around the maximum impacts and extended as necessary to determine maximum impacts. Ambient concentrations within the facility fence line will not be calculated. DEM receptor locations will be input into AERMAP (version 09040) along with 30-meter DEM data files to calculate hill height scales as per USEPA guidance.

Ambient Air Quality Impact Analyses: In evaluating the impacts of the proposed project on ambient air quality, ADI will model the ambient impacts of the project, add those impacts to background concentrations, and compare the results to the state and Federal ambient standards for SO_2, NO_2, PM_{10}, $PM_{2.5}$, and CO. The project impacts will also be compared to the PSD significance levels in Table 5.

In accordance with AQMD and USEPA guidance (40 CFR part 51, Appendix W, Sections 11.2.3.2 and 11.2.3.3), the highest modeled concentration will be used to compare with the significant impact levels (SILs). The highest modeled concentration will be used to demonstrate compliance with all short-term and annual CAAQS/NAAQS. With respect to the Federal PM2.5 24-hour standard, the 98^{th} percentile will be used. Compliance with other short-term NAAQS may also be demonstrated consistent with the format of the short-term NAAQS (see 40 CFR 50).

PSD Increment Consumption Analysis

Increment consumption of NO_2 and PM10 will be evaluated if impacts from the facility are above PSD modeling significance levels as listed in Table 7. This project is expected to trigger the baseline date for PM2.5, thus the project only impacts will be compared to the proposed PM2.5 increment. For NO_2 and PM10, the appropriate increment consuming sources will be determined in consultation with the AQMD and EPA to determine total increment consumption.

Preconstruction Monitoring Requirements

The Mojave Desert AQMD and EPA rules require an applicant's air quality analysis to contain preconstruction ambient air quality monitoring data for purposes of establishing background pollutant concentrations in the impact area of the proposed facility. However, an applicant may be exempted from the requirement for preconstruction monitoring if the predicted air quality impacts of the facility do not exceed the specified *de minimis* levels listed in Table 8. An applicant may also, at the APCO's discretion, rely on existing continuous air quality monitoring data collected at District-approved monitoring stations to satisfy the requirement for preconstruction monitoring.

Table 7
PSD Ambient Significance Levels

Pollutant/ Avg. Period		Significance Level (μg/m³)	Class I Increment (μg/m³)	Class II Increment (μg/m³)
	- Annual	1	2	20
	- 24-hour	5	5	91
SO_2	- 3-hour	25	25	512
PM10	- Annual	1	4	17
/2.5	- 24-hour	5	8	30
NO_2	- Annual	1	2.5	25
	- 1-hour	19	-	-

Table 8 Preconstruction Monitoring Thresholds	
CO: 8-hr average	575 µg/m³
PM_{10}: 24-hr average	10 µg/m³
NO_2: annual average	14 µg/m³
SO_2: 24-hr average	13 µg/m³

ADDITIONAL IMPACTS ANALYSIS

The additional impacts analysis is an assessment of the impacts of air, ground, and water pollution on soils, vegetation, and visibility caused by any increase in emissions of any regulated pollutant from the modification under review, and from associated growth. There are four parts of the additional impacts analysis: 1) growth, 2) ambient air quality impact analysis, 3) soils, water, and vegetation analysis, and 4) visibility impairment. This analysis will follow USEPA's guidance provided in the New Source Review Workshop Manual (October 1990 draft).

The growth analysis will quantify the number of new employees, the availability of housing in the area, and associated commercial and industrial growth, and construction related activities and mobile sources. The number of new employees is not envisioned to be large enough to result in a quantifiable increase in emissions from residential, commercial, or industrial growth (e.g., less than 15 new employees). In addition, emissions from construction activities at the site are expected to be insignificant since the new turbine/HRSG will be placed on an existing developed power plant site, where there will be minimal necessity for soil movement or excavation/filling operations.

While Class II visibility is not protected, a visual plume blight analysis must be performed as required under the PSD program. As such, the VISCREEN model will be used to assess this potential.

CLASS I AREA IMPACTS

As discussed earlier, the FLMs may exempt this project from performing a formal Class I impact assessment with CALMET/CALPUFF on AQRVs (deposition and visibility). However, a Class I significance modeling for the increment will be assessed.

ADDITIONAL IMPACTS ANALYSIS REQUIRED FOR CEC ANALYSES

The additional impacts analysis is an assessment of the impacts of air pollution on soils and vegetation, which includes the potential impacts of deposition. Additionally, cumulative impacts and construction impacts will be assessed.

Screening Health Risk Assessment: A screening health risk assessment will be conducted to evaluate air toxics. The latest version of the Health Risk Assessment Program (HARP version 1.2a) and the HARP On-Ramp will be used to characterize risks from the proposed facility. These models, along with options for their use and how they are used, are discussed below. The screening health risk assessment will be conducted in accordance with the procedures developed by the California Air Resources Board and the Office of Environmental Health Hazard Analysis.

The HARP program is a tool that assists with the programmatic requirements of the Air Toxics Hot Spots Program, and it can be used for preparing health risk assessments for other related programs such as air toxic control measure development or facility permitting applications. HARP is a computer based risk assessment program, which combines the tools of emission inventory database, facility prioritization, air dispersion modeling, and risk assessment analysis. Use of HARP promotes statewide consistency in the area of risk assessment, increases the efficiency of evaluating potential health impacts, and provides a cost effective tool for developing facility health risk assessments. HARP may be used on single sources, facilities with multiple sources, or multiple facilities in close proximity to each other.

The HARP On-Ramp program will be used to convert the AERMOD output files into a form that can be used by HARP. The HARP On-Ramp program is basically a post-processor that will take ASCII post files from AERMOD and process these files to calculate acute, chronic, and cancer impacts, identical to the methods used in the current version of HARP.

The screening health risk assessment will be carried out in three steps. First, emissions of toxic air pollutants from the project will be calculated. Next, the HARP On-Ramp subroutine will be used to convert the maximum AERMOD concentration at each receptor due to the operation of the proposed project. A separate analysis will be conducted for construction generated PM_{10}, as per CEC requirements. The high-resolution receptor grids as derived from the facility AERMOD modeling will then be used in HARP. Finally, the HARP will be used to evaluate acute, chronic and cancer risks through inhalation and non-inhalation pathways based upon the maximum predicted concentration at each receptor. Some of the assumptions used in running the HARP program will be set as follows:

- Emission rates for non-criteria pollutants will be based upon the expected fuel use of the engines.

- Number of residents affected will be based upon the updated 2000 population data for those census tracts or portions of census tracts, which lie within the maximum impact receptor radius of the proposed facility.
- Number of workers affected will be based upon the county average percentage of non-farm workers as compared to the total county population in 2000. This average was applied to all affected census tracts.
- Deposition velocity is taken to be 0.02 m/s, as recommended by ARB for controlled sources.
- Fraction of residents with gardens is taken to be 0.15, which is probably conservatively high for the urban area.
- Fraction of produce grown at home is taken to be 0.05, which is also believed to be conservatively high.

The receptor grids used for the HARP risk analyses are similar to those used for the refined modeling, with the addition of discrete receptor annotations representing the 1st, 2nd, and 3rd highest impact points, *i.e.*, MIR-1, MIR-2, and MIR-3. In addition, the point of maximum impact (PMI), maximally exposed individual resident (MEIR), and the maximally exposed individual worker (MEIW) will be shown. A complete list of the discrete sensitive receptors within 1 mile of the facility will be included in the application as well as census tract population data, census tract maps and affected tracts within 6 miles of the facility.

The HARP program results for acute and chronic inhalation and chronic non-inhalation exposures, cancer burden and individual cancer risk (workplace and residential) for the combustion sources will be summarized. Separate calculations will be shown for each type of exposure and risk.

<u>Cumulative Impacts</u>: Pursuant to CEC guidelines, a cumulative impacts analysis will be required and must consider the additional impacts of the following sources located within 8 miles of the project site.

- Sources with impacts on existing air quality that are not reflected in the ambient air quality data used to establish background. These sources are generally those which have received permits authorizing construction but are not yet in operation and sources which have commenced operations subsequent to the data used to establish background air quality levels. Data derived from the Mojave Desert AQMD, CARB, and USEPA AIRS monitoring data systems indicate that air quality data for the project region is available up to the end of year 2008. As such the cumulative analysis will concentrate on the above types of sources permitted or becoming operational after January 1, 2008.

<u>Construction Impacts Analysis:</u> The potential ambient impacts from air pollutant emissions during the construction of the project will be evaluated by air quality modeling that will account for the construction site location and the surrounding

topography; the sources of emissions during construction, including vehicle and equipment exhaust emissions; and fugitive dust. Construction of the proposed project will be divided into three main construction phases: (1) site preparation; (2) construction of foundations; and (3) installation and assembly of mechanical and electrical equipment. The construction impacts analysis will include a schedule for construction operation activities. Site preparation is expected to include site excavation, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction of the foundations will begin. Once the foundations are finished, the installation and assembly of the mechanical and electrical equipment will begin.

Fugitive dust emissions from the construction of the project result from (1) dust entrained during excavation and grading at the construction site; (2) dust entrained during onsite travel on paved and unpaved roads and across the unpaved construction site; (3) dust entrained during aggregate and soil loading and unloading operations; (4) dust entrained from raw material transfer to and from material stockpiles; and (5) wind erosion of areas disturbed during construction activities. Heavy equipment exhaust emissions result from (1) exhaust from the heavy equipment used for excavation, grading, and construction of onsite structures; (2) exhaust from a water truck used to control construction dust emissions; (3) exhaust from diesel welding machines, gasoline-powered generators, air compressors, and water pumps; and (4) exhaust from gasoline-powered pickup trucks and Diesel flatbed trucks used onsite to transport workers and materials around the construction site. Diesel and gasoline truck exhaust emissions will result from transport of mechanical and electrical equipment to the project site and transport of rubble and debris from the site to an appropriate landfill. Diesel exhaust emissions may also result from transport of raw materials to and from stockpiles.

Emissions from a worst-case day will be calculated for each of the three main construction phases and only the phase with the highest emissions will be modeled. As the construction impacts are expected to occur for a relatively short time compared with the lifetime of the project, only short-term averaging periods (24 hours or less) will be included in the construction modeling analysis.

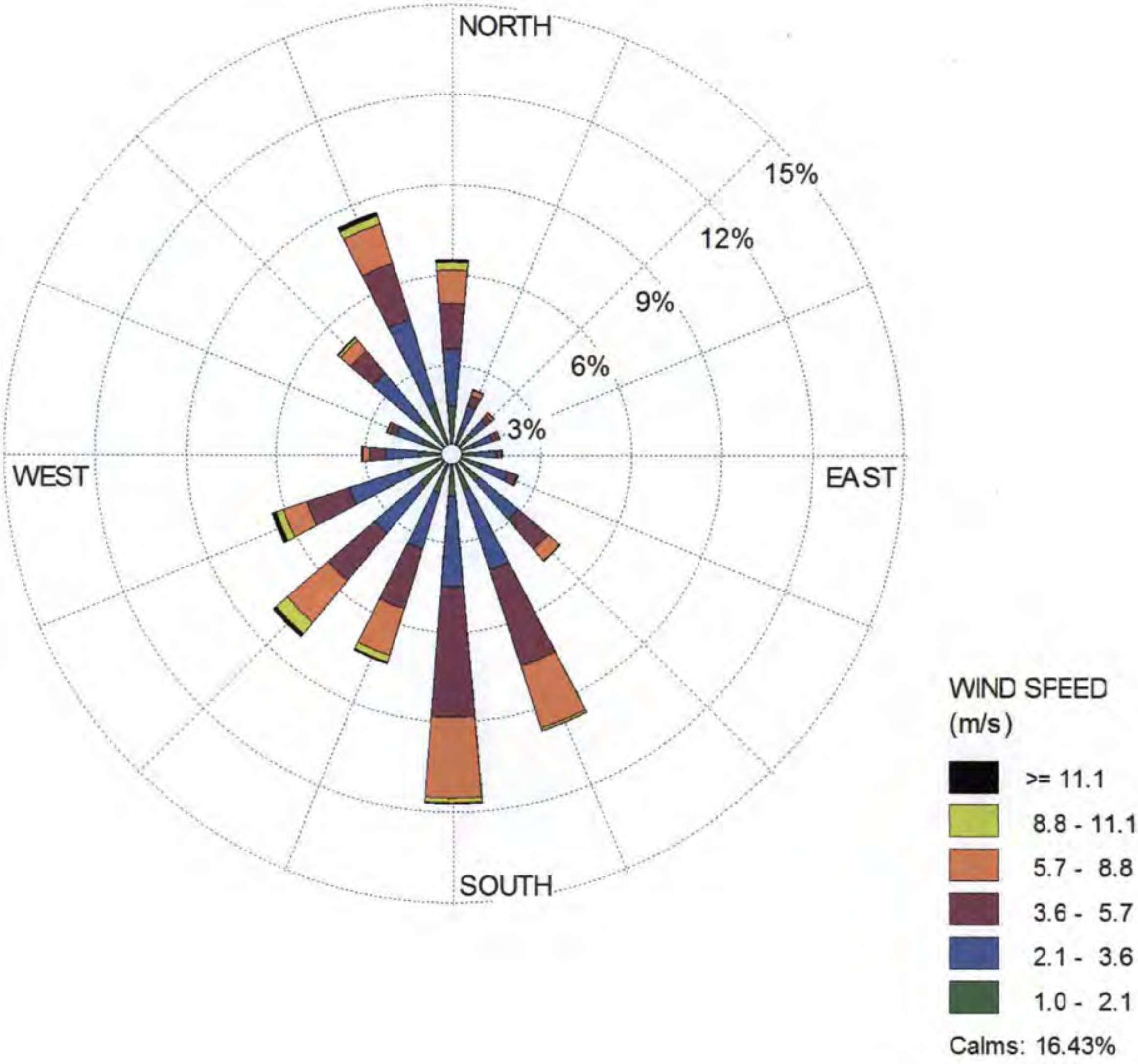
The same USEPA-approved model (AERMOD), receptor grids, modeling options with the exception of the TOXICS keyword to reduce model run time, and meteorological data as described earlier for Project operations will be used to estimate ambient impacts from construction emissions. The construction site in the modeling analysis will be represented as either area or volume sources for fugitive dust emissions and as area, volume, or point sources for combustion emissions.

FINAL MODELING SUBMITTAL

As part of the final modeling analyses, the Mojave Desert AQMD, EPA, and CEC will be supplied with the following materials:

- Copies of sections of the US Geological Survey (USGS) 7-1/2-minute (1:24,000) map(s) showing the facility;
- Modeling summaries of maximum impacts for each air quality model;
- All modeling outputs (including BPIP and meteorological files) on CD-ROM disc, together with a description of all filenames;
- Plot plan showing emission points, nearby buildings (including dimensions), property lines, fence lines, and
- Figure showing the building identifiers in the BPIP run(s) and plot plan.

Annual Blythe Airport Wind Rose
2002-2006



United States Department of the Interior
NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

August 18, 2009

Gregory Darvin
Atmospheric Dynamics, Inc.
2925 Puesta del Sol
Santa Barbara, California 93105

Dear Mr. Darvin:

We reviewed the information you provided in your July 30, 2009, email message regarding modifications at the Blythe II power plant. The Blythe II facility is located approximately 95 kilometers southeast of Joshua Tree National Park, a Class I air quality area administered by the National Park Service. According to your information, the Blythe II project will be modifications to the original permit from 2005. The project will remain the same in that it is a combined cycle power plant with two natural gas fired turbines and heat recovery steam generating units, cooling tower, and a fire pump for emergency operation. The modification will include the replacement of the turbines with new Siemens Flex Start units, which will reduce the startup times along with the startup emissions. The Blythe II project modifications will cause emissions of nitrogen oxide to be reduced by approximately 28 tons per year (TPY), sulfur dioxide emissions to be reduced by approximately 10 TPY, particulate matter to increase by 2 TPY and volatile organic compounds to increase by 28 TPY. As you stated in your email message, a modeling analysis showed the worst-case change in extinction at Joshua Tree National Park was 2.05% with the maximum nitrogen deposition at 0.00036 kg/ha/yr. This analysis was based on the current permitted emissions. Based on the proposed new emission rates and distance from Joshua Tree National Park, the National Park Service anticipates that additional modeling would not show any significant impacts to air quality related values (AQRV) at the Class I area. Therefore, we are not requesting that any further Class I AQRV analysis be conducted for the Prevention of Significant Deterioration permit application.

Our screening of this analysis does not indicate agreement with any AQRV analysis protocols or conclusions applicants may make independent of Federal Land Manager review. Please note that we are specifically addressing an AQRV analysis for the Class I area managed by the National Park Service. The state and/or the Environmental Protection Agency may have a different opinion regarding the need for a Class I increment analysis.

APPENDIX 5.2D

Health Risk Assessment Support Data

Appendix 5.2D

Health Risk Assessment Support Data

Health Risk Assessment Process, Goals, Assumptions, and Uses

"In recent years, the public has become increasingly aware of the presence of harmful chemicals in our environment. Many people express concerns about pesticides and other foreign substances in food, contaminants in drinking water, and toxic pollutants in the air. Others believe these concerns are exaggerated or unwarranted. How can we determine which of these potential hazards really deserve attention? How do we, as a society, decide where to focus our efforts and resources to control these hazards? When we hear about toxic threats that affect us personally, such as the discovery of industrial waste buried in our neighborhood or near our children's school, how concerned should we be?

Health risk assessment is a scientific tool designed to help answer these questions. Government agencies rely on risk assessments to help them determine which potential hazards are the most significant. Risk assessments can also guide regulators in abating environmental hazards. Members of the public who learn the basics of risk assessment can improve their understanding of both real and perceived environmental hazards, and they can work more effectively with decision makers on solutions to environmental problems.

Chemicals can be either beneficial or harmful, depending on a number of factors, such as the amounts to which we are exposed. Low levels of some substances may be necessary for good health, but higher levels may be harmful. Health risk assessments are used to determine if a particular chemical poses a significant risk to human health and, if so, under what circumstances. Could exposure to a specific chemical cause significant health problems? How much of the chemical would someone have to be exposed to before it would be dangerous? How serious could the health risks be? What activities might put people at increased risk?

If it were possible to prevent all human exposure to all hazardous chemicals, there would be no need for risk assessment. However, the total removal of harmful pollutants from the environment is often infeasible or impossible, and many naturally occurring substances also pose health risks. Risk assessment helps scientists and regulators identify serious health hazards and determine realistic goals for reducing exposure to toxics so that there is no significant health threat to the public.

Estimating the hazards posed by toxic chemicals in the environment involves the compilation and evaluation of complex sets of data. Government regulators, therefore, turn to specialists to perform or assist with risk assessments. These specialists include scientists with degrees in toxicology (the study of the toxic effects of chemicals) and epidemiology (the study of disease or illness in populations) as well as physicians, biologists, chemists, and engineers.

The term "health risk assessment" is often misinterpreted. People sometimes think that a risk assessment will tell them whether a current health problem or symptom was caused by exposure to a chemical. This is not the case. Scientists who are searching for links between chemical exposures and health problems in a community may conduct an epidemiologic study. These studies typically include a survey of health problems in a community and a comparison of health problems in that community with those in other cities, communities, or the population as a whole.

Although they are both important, health risk assessments and epidemiologic studies have different objectives. Most epidemiologic studies evaluate whether *past* chemical exposures may be responsible for documented health problems in a specific group of people. In contrast, health risk assessments are used to estimate whether *current* or *future* chemical exposures will pose health risks to a broad population, such as a city or a community. Scientific methods used in health risk assessment cannot be used to link individual illnesses to past chemical exposures, nor can health risk assessments and epidemiologic studies prove that a specific toxic substance caused an individual's illness.

The U.S. Environmental Protection Agency (U.S. EPA) is a leading risk assessment agency at the federal level. In California, the Office of Environmental Health Hazard Assessment (OEHHA) in the California Environmental Protection Agency (Cal/EPA) has the primary responsibility for developing procedures and practices for performing health risk assessments. Other agencies within Cal/EPA, such as the Department of Pesticide Regulation and the Department of Toxic Substances Control, have extensive risk assessment programs of their own but work closely with OEHHA.

The Department of Pesticide Regulation uses risk assessments to make regulatory decisions concerning safe pesticide uses. The Department of Toxic Substances Control uses risk assessments to determine requirements for the management and cleanup of hazardous wastes. OEHHA's health risk assessments are used by the Air Resources Board to develop regulations governing toxic air contaminants, and by the Department of Health Services to develop California's drinking water standards. These agencies' decisions take into account the seriousness of potential health effects along with the economic and technical feasibility of measures that can reduce the health risks.

Health risk assessment requires both sound science and professional judgment and is a constantly developing process. Cal/EPA is nationally recognized for developing new procedures that improve the accuracy of risk assessments. Cal/EPA also works closely with U.S. EPA in all phases of risk assessment.

The risk assessment process is typically described as consisting of four basic steps: hazard identification, exposure assessment, dose-response assessment, and risk characterization. Each of these steps will be explained in the following text.

Hazard Identification

In the first step, hazard identification, scientists determine the types of health problems a chemical could cause by reviewing studies of its effects in humans and laboratory animals. Depending on the chemical, these health effects may include short-term ailments, such as headaches; nausea; and eye, nose, and throat irritation; or chronic diseases, such as cancer. Effects on sensitive populations, such as pregnant women and their developing fetuses, the elderly, or those with health problems (including those with weakened immune systems), must also be considered. Responses to toxic chemicals will vary depending on the amount and length of exposure. For example, short-term exposure to low concentrations of chemicals may produce no noticeable effect, but continued exposure to the same levels of chemicals over a long period of time may eventually cause harm. An important step in hazard identification is the selection of key research studies that can provide accurate, timely information on the hazards posed to humans by a particular chemical. The selection of a study is based upon factors such as whether the study has been peer reviewed by qualified scientists, whether the study's findings have been verified by other studies, and the species tested (human studies provide the best evidence). Some studies may involve humans that have been exposed to the chemical, while others may involve studies with laboratory animals.

Human data frequently are useful in evaluating human health risks associated with chemical exposures. Human epidemiologic studies typically examine the effects of chemical exposure on a large number of people, such as employees exposed to varying concentrations of chemicals in the workplace. In many cases, these exposures took place prior to the introduction of modern worker-safety measures.

One weakness of occupational studies is that they generally measure the effects of chemicals on healthy workers and do not consider children, the elderly, those with pre-existing medical conditions, or other sensitive groups. Since occupational studies are not controlled experiments, there may be uncertainties about the amount and duration of exposure or the influence of lifestyle choices, such as smoking or alcohol use, on the health of workers in the studies. Exposure of workers to other chemicals at the same time may also influence and complicate the results.

Laboratory studies using human volunteers are better able to gauge some health effects because chemical exposures can then be measured with precision. But these studies usually involve small numbers of people and, in conformance with ethical and legal requirements, use only adults who agree to participate in the studies. Moreover, laboratory studies often use simple measurements that identify immediate responses to the chemical but might miss significant, longer-term health effects. Scientists can also use physicians' case reports of an industrial or transportation accident in which individuals were unintentionally exposed to a chemical. However, these reports may involve very small numbers of people, and the level of exposure to the chemical could be greater than exposures to the same chemical in the environment. Nevertheless, human studies are preferred for risk assessment, so OEHHA makes every effort to use them when they are available.

Because the effects of the vast majority of chemicals have not been studied in humans, scientists must often rely on animal studies to evaluate a chemical's health effects. Animal studies have the advantage of being performed under controlled laboratory conditions that reduce much of the uncertainty related to human studies. If animal studies are used, scientists must determine whether a chemical's health effects in humans are likely to be similar to those in the animals tested. Although effects seen in animals can also occur in humans, there may be subtle or even significant differences in the ways humans and experimental animals react to a chemical. Comparison of human and animal metabolism may be useful in selecting the animal species that should be studied, but it is often not possible to determine which species is most like humans in its response to a chemical exposure. However, if similar effects were found in more than one species, the results would strengthen the evidence that humans may also be at risk.

Exposure Assessment

In exposure assessment, scientists attempt to determine how long people were exposed to a chemical; how much of the chemical they were exposed to; whether the exposure was continuous or intermittent; and how people were exposed — through eating, drinking water and other liquids, breathing, or skin contact. All of this information is combined with factors such as breathing rates, water consumption, and daily activity patterns to estimate how much of the chemical was taken into the bodies of those exposed.

People can be exposed to toxic chemicals in various ways. These substances can be present in the air we breathe, the food we eat, or the water we drink. Some chemicals, due to their particular characteristics, may be both inhaled and ingested. For example, airborne chemicals can settle on the surface of water, soil, leaves, fruits, vegetables, and forage crops used as animal feed. Cows, chickens, or other livestock can become contaminated when eating, drinking, or breathing the chemicals present in the air, water, feed, and soil. Fish can absorb the chemicals as they swim in contaminated water or ingest contaminated food. Chemicals can be absorbed through the skin, so infants and children can be exposed simply by crawling or playing in contaminated dirt. They can also ingest chemicals if they put their fingers or toys in their mouths after playing in contaminated dirt. Chemicals can also be passed on from nursing mothers to their children through breast milk.

To estimate exposure levels, scientists rely on air, water, and soil monitoring; human blood and urine samples; or computer modeling. Although monitoring of a pollutant provides excellent data, it is time consuming, costly, and typically limited to only a few locations. For those reasons, scientists often rely on computer modeling, which uses mathematical equations to describe how a chemical is released and to estimate the speed and direction of its movement through the surrounding environment. Modeling has the advantage of being relatively inexpensive and less time consuming, provided all necessary information is available and the accuracy of the model can be verified through testing.

Computer modeling is often used to assess chemical releases from industrial facilities. Such models require information on the type of chemicals released, facilities' hours of operation, industrial processes that release the chemicals, smokestack height and temperature, any pollution-control equipment that is used, surrounding land type (urban or rural), local topography and meteorology, and census data regarding the exposed population.

In all health risk assessments, scientists must make assumptions in order to estimate human exposure to a chemical. For example, scientists assessing the effects of air pollution may need to make assumptions about the time people spend outdoors, where they are more directly exposed to pollutants in the ambient air, or the time they spend in an area where the pollution is greatest. An assessment of soil contamination may require scientists to make assumptions about people's consumption of fruits and vegetables that may absorb soil contaminants.

To avoid underestimating actual human exposure to a chemical, scientists often look at the range of possible exposures. For example, people who jog in the afternoon, when urban air pollution levels are highest, would have much higher exposures to air pollutants than people who come home after work and relax indoors. Basing an exposure estimate on a value near the higher end of a range of exposure levels (closer to the levels experienced by the jogger than by the person remaining indoors) provides a realistic worst-case estimate of exposure. These kinds of conservative assumptions, which presume that people are exposed to the highest amounts of a chemical that can be considered credible, are referred to as "health-protective" assumptions.

The exposure estimates for the project analysis were conducted using HARP. HARP (version 1.4a) is currently the approved model for use in assessing health risks from facilities such as the WCP Expansion project. HARP-On Ramp was also used to accommodate and process the AERMOD output files for use in HARP.

Dose-Response Assessment

In dose-response assessment, scientists evaluate the information obtained during the hazard identification step to estimate the amount of a chemical that is likely to result in a particular health effect in humans.

An established principle in toxicology is that "the dose makes the poison." For example, a commonplace chemical like table salt is harmless in small quantities, but it can cause illness in large doses. Similarly, hydrochloric acid, a hazardous chemical, is produced naturally in our stomachs but can be quite harmful if taken in large doses.

Scientists perform a dose-response assessment to estimate how different levels of exposure to a chemical can impact the likelihood and severity of health effects. The dose-response relationship is often different for many chemicals that cause cancer than it is for those that cause other kinds of health problems.

The dose-response estimates for the project analysis were conducted using HARP (version 1.4a).

Cancer Effects

For chemicals that cause cancer, the general assumption in risk assessment has been that there are no exposures that have "zero risk" unless there is clear evidence otherwise. In other words, even a very low exposure to a cancer-causing chemical may result in cancer if the chemical happens to alter cellular functions in a way that causes cancer to develop. Thus, even very low exposures to carcinogens might increase the risk of cancer, if only by a very small amount.

Several factors make it difficult to estimate the risk of cancer. Cancer appears to be a progressive disease because a series of cellular transformations is thought to occur before cancer develops. In addition, cancer in humans often develops many years after exposure to a chemical. Also, the best information available on the ability of chemicals to cause cancer often comes from studies in which a limited number of laboratory animals are exposed to levels of chemicals that are much higher than the levels humans would normally be exposed to in the environment. As a result, scientists use mathematical models based on studies of animals exposed to high levels of a chemical to estimate the probability of cancer developing in a diverse population of humans exposed to much lower levels. The uncertainty in these estimates may be rather large. To reduce these uncertainties, risk assessors must stay informed of new scientific research. Data from new studies can be used to improve estimates of cancer risks.

Non-cancer Effects

Non-cancer health effects (such as asthma, nervous system disorders, birth defects, and developmental problems in children) typically become more severe as exposure to a chemical increases. One goal of dose-response assessment is to estimate levels of exposure that pose only a low or negligible risk for non-cancer health effects. Scientists analyze studies of the health effects of a chemical to develop this estimate. They take into account such factors as the quality of the scientific studies, whether humans or laboratory animals were studied, and the degree to which some people may be more sensitive to the chemical than others. The estimated level of exposure that poses no significant health risks can be reduced to reflect these factors.

Risk Characterization

The last step in risk assessment brings together the information developed in the previous three steps to estimate the risk of health effects in an exposed population. In the risk characterization step, scientists analyze the information developed during the exposure and dose-response assessments to describe the resulting health risks that are expected to occur in the exposed population. This information is presented in different ways for cancer and non-cancer health effects, as explained below.

Cancer Risk

Cancer risk is often expressed as the maximum number of new cases of cancer projected to occur in a population of one million people due to exposure to the cancer-causing substance over a 70-year lifetime. For example, a cancer risk of one in one million means that in a population of one million people, not more than one additional person would be expected to develop cancer as the result of the exposure to the substance causing that risk.

An individual's actual risk of contracting cancer from exposure to a chemical is often less than the theoretical risk to the entire population calculated in the risk assessment. For example, the risk estimate for a drinking-water contaminant may be based on the health-protective assumption that the individual drinks two liters of water from a contaminated source daily over a 70-year lifetime. However, an individual's actual exposure to that contaminant would likely be lower due to a shorter time of residence in the area. Moreover, an individual's risk not only depends on the individual's exposure to a specific chemical but also on his or her genetic background (i.e., a family history of certain types of cancer); health; diet; and lifestyle choices, such as smoking or alcohol consumption.

Cancer risks presented in risk assessments are often compared to the overall risk of cancer in the general U.S. population (about 250,000 cases for every one million people) or to the risk posed by all harmful chemicals in a particular medium, such as the air. The cancer risk from breathing current levels of pollutants in California's ambient air over a 70-year lifetime is estimated to be 760 in one million.

Non-cancer Risk

Non-cancer risk is usually determined by comparing the actual level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects, even in the most susceptible people. Levels of exposure at which no adverse health effects are expected are called "health reference levels," and they generally are based on the results of animal studies. However, scientists usually set health reference levels much lower than the levels of exposure that were found to have no adverse effects in the animals tested. This approach helps to ensure that real health risks are not underestimated by adjusting for possible differences in a chemical's effects on laboratory animals and humans; the possibility that some humans, such as children and the elderly, may be particularly sensitive to a chemical; and possible deficiencies in data from the animal studies.

Depending on the amount of uncertainty in the data, scientists may set a health reference level 100 to 10,000 times lower than the levels of exposure observed to have no adverse effects in animal studies. Exposures above the health reference level are not necessarily hazardous, but the risk of toxic effects increases as the dose increases. If an assessment determines that human exposure to a chemical exceeds the health reference level, further investigation is warranted.

Risk managers rely on risk assessments when making regulatory decisions, such as setting drinking water standards, or developing plans to clean up hazardous waste sites. Risk managers are responsible for protecting human health, but they must also consider public acceptance, as well as technological, economic, social, and political factors, when arriving at their decisions. For example, they may need to consider how much it would cost to remove a contaminant from drinking water supplies or how seriously the loss of jobs would affect a community if a factory were to close due to the challenge of meeting regulatory requirements that are set at the most stringent level.

Health risk assessments can help risk managers weigh the benefits and costs of various alternatives for reducing exposure to chemicals. For example, a health risk assessment of a hazardous waste site could help determine whether placing a clay cap over the waste to prevent exposure would offer the same health protection as the more costly option of removing the waste from the site.

One of the most difficult questions of risk management is: How much risk is acceptable? While it would be ideal to completely eliminate all exposure to hazardous chemicals, it is usually not possible or feasible to remove all traces of a chemical once it has been released into the environment. The goal of most regulators is to reduce the health risks associated with exposure to hazardous pollutants to a negligibly low level.

Regulators generally presume that a one-in-one million risk of cancer from life-long exposure to a hazardous chemical is an "acceptable risk" level because the risk is extremely low compared to the overall cancer rate. If a drinking water standard for a cancer-causing chemical were set at the level posing a "one-in-one million" risk, it would mean that not more than one additional cancer case (beyond what would normally occur in the population) would potentially occur in a population of one million people drinking water meeting that standard over a 70-year lifetime.

Actual regulatory standards for chemicals or hazardous waste cleanups may be set at less stringent risk levels, such as one in 100,000 (not more than one additional cancer case per 100,000 people) or one in 10,000 (not more than one additional cancer case per 10,000 people). These less stringent risk levels are often due to economic or technological considerations. Regulatory agencies generally view these higher risk levels to be acceptable if there is no feasible way to reduce the risks further."[1]

1 A Guide to Health Risk Assessment, CalEPA-Office of Environmental Health Hazard Assessment, 1001 I Street, Sacramento, Ca. 95812, (est. 2001).

The following tables summarize the results of the HRA performed by the proposed BEP II facility.

TABLE 5.2D-1 CRITERIA AND AIR TOXIC POLLUTANTS EMITTED FROM BEP II FACILITY	
NOx	Propylene Oxide
CO	Toluene
VOC*	Xylene
SOx	Arsenic
PM10/PM2.5	Aluminum
Ammonia	Cadmium
PAHs	Chromium VI
Acetaldehyde	Copper
Acrolein	Iron
Benzene	Lead
1-3 Butadiene	Mercury
Ethylbenzene	Manganese
Formaldehyde	Nickel
Hexane (n-Hexane)	Silver
Naphthalene	Zinc
Propylene	

Table 5.2D-2 Significant Health Effect Threshold Levels for MDAQMD	
Risk Category	**Risk Threshold**
Moderate Risk	>1 x 10^{-6}
Significant Risk	>=100 X 10^{-6} HI >= 10
Significant Health Risk	>=10 x 10^{-6} HI >= 1

Per Rule 1320 MDAQMD

The other assumptions used in running the HARP program were as follows:

- Emission rates for non-criteria pollutants are taken from AFC Section 5.2, and from Appendix I.
- Number of residents affected is based upon the updated 2000 population data for those census tracts or portions of census tracts which lie within the maximum impact receptor radius of the proposed facility.
- All receptors were treated as residential receptors, which allows for the assumption that the MIR, if assumed residential, will represent the highest risk and no other receptor will show risks higher than the MIR. This deletes the need for running worker risks. The HARP risk run options as recommended by South Coast AQMD (Chico, 10-20-05) were utilized (i.e., for cancer – 70-year and derived adjusted method; for chronic – 70-year and derived OEHHA method; for acute – no options).

- Deposition velocity is taken to be 0.02 m/s, as recommended by ARB for controlled emission sources.
- Fraction of residents with gardens is taken to be 0.05 which is likely conservatively high for the urban area near the project site.
- Fraction of produce grown at home is taken to be 0.05, which is also likely to be conservatively high.

The HARP program is a tool that assists with the programmatic requirements of the Air Toxics Hot Spots Program, and it can be used for preparing health risk assessments for other related programs such as air toxic control measure development or facility permitting applications. HARP is a computer based risk assessment program which combines the tools of emission inventory database, facility prioritization, air dispersion modeling, and risk assessment analysis. Use of HARP promotes statewide consistency in the area of risk assessment, increases the efficiency of evaluating potential health impacts, and provides a cost effective tool for developing facility health risk assessments. HARP may be used on single sources, facilities with multiple sources, or multiple facilities in close proximity to each other. The receptor grid used in HARP was a combination of the following:

1. All identified grid receptors as input from the AERMOD analysis,
2. All identified sensitive receptors within the primary impact area as defined by the AERMOD analysis.

The HARP program results for acute and chronic inhalation and chronic non-inhalation exposures, cancer burden and individual cancer risk (workplace and residential) for the combustion source and cooling tower are included in the CD with this Appendix. The results of the HARP calculations are summarized below.

The modeling results show that the maximum modeled cancer risk from BEP II is expected to be $1.81xE^{-6}$. This risk is slightly above the one in one million level, i.e., the MDAQMD "moderate risk" value, but well below the "significant risk" and "significant health risk" thresholds established by MDAQMD. T-BACT for combined cycle combustion turbines is the use of clean fuels (natural gas) and the operation of a CO catalyst. These T-BACT technologies are proposed for BEP II, and as such, the significant risk threshold for BEP II is 10 in a million. The chronic and acute non-cancer hazard indices are 0.0296 and 0.3477, respectively. Both are well below the significant impact level of 1.0. Detailed calculations and results for each significant receptor are included in the modeling results, which are being submitted electronically.

TABLE 5.2D-3 HEALTH RISK ASSESSMENT SUMMARY		
	Turbines, Cooling Tower, FP Engine, Aux Boiler	
Risk Category	**Facility Values**	**Applicable Significance Threshold**
Cancer Risk	1.81 E-6	See Table 5.2D-2
Chronic Hazard Index	0.0295	
Acute Hazard Index	0.1150	
Acute Hazard Index*	0.348	
Cancer Burden	n/a	

Facility MIR location coordinates: Cancer and chronic MIR – Receptor 12034, 714270mE, 3721903mN *Acute MIR – Receptor 3914, 706230mE, 3723660mN

Diesel Fuel Related Health Risk

With respect to emissions from diesel fueled engines, use of the diesel PM emissions factor and exposure factors is approved by CARB for the characterization of diesel engine exhaust and subsequent risk exposures. The diesel PM factor includes the range of fuel bound, and potentially emitted metals, PAHs, and a wide variety of other semi-volatile substances. CARB notes the following in Appendix K of the current HARP Users Manual:

1. The surrogate for whole diesel exhaust is diesel PM. PM10 is the basis for the potential risk calculations.
2. When conducting an HRA, the potential cancer risk from inhalation exposure to diesel PM will outweigh the potential non-cancer health effects.
3. When comparing whole diesel exhaust to speciated diesel exhaust, potential cancer risk from inhalation exposure to whole diesel exhaust will outweigh the multi-pathway cancer risk from the speciated compounds. For this reason, there will be few situations where an analysis of multi-pathway risk is necessary.

With respect to diesel particulate related risk values, the following should be noted:

The US Department of Energy (DOE) as well as the US Environmental Protection Agency (EPA) have disagreed with the CARB/OEHHA and South Coast AQMD positions on the relative threat and relative contribution of diesel exhaust to "toxic" air pollution, and neither of the agencies, including the EPA's prestigious Health Effects Institute identify diesel exhaust as a "known" carcinogen, since the scientific studies show only "weak" cancer links. EPA and DOE believe that the studies relied upon by CARB and SCAQMD are flawed in that they use a problematic elemental carbon surrogate for ambient diesel particulate matter and ignored a significant portion of PM2.5 captured at the SCAQMD's own monitoring stations. In view of these conflicting studies, we suggest that caution be used in the decision making process regarding diesel PM and its associated risks, i.e., the actual risks may be much lower than those calculated by HARP. In turn, the overall risk calculated for the facility may be lower than calculated due to the influence of DPM risk. The risk table above reports the facility risk values with DPM.

The calculated health effects as summarized above do not exceed the district significance threshold values, therefore the health effects would be considered "not significant" and may even be "zero".

The following tables and figures are presented at the end of this appendix:

- Table 5.2D-4 Census Tract Numbers and Population Data
- Table 5.2D-5 MDAQMD TAC Summary
- Table 5.2D-6 Sensitive Receptor Listing
- Table 5.2D-7 OEHHA/CARB Risk Assessment Health Values

- Figure 5.2D-1 Sensitive Receptor Map
- Figure 5.2D-2 Census Tracts in the Immediate Impact Area
- Figure 5.2D-3 MIR Location Map

Risk Assessment input and output files are included on the modeling CD. Due to the length of the HRA input and output files, hard copies are not provided in this appendix.

Table 5.2D-4

Census Tract Data for Project Region

Tract #	2000 Population	2008 Population
458	11127	15122
459	1951	2651
460	1613	2192
461.01	2854	3879
461.02	2247	3054
461.03	2619	3559
462	3335	4532
9403	0	0

Ref. US Census Bureau Website, 5/2009
2008 data represents a 35.9% population increase over 2000 data apportioned equally to the county and tract population data.

Table 5.2D-5 MDAQMD TAC Summary

TAC	Statewide Year 2008 Emissions (tons/yr)	MDAB Year 2008 Emissions (tons/yr)	Predicted Cancer Risk, per 10^6
Acetaldehyde	9103	349	ND
Benzene	10794	397	ND
1,3 Butadiene	3754	111	ND
Carbon tetrachloride	4.04	0.07	ND
Chromium 6	0.61	0.02	ND
Para-Dichlorobenzene	1508	-	ND
Formaldehyde	20951	799	ND
Methylene Chloride	6436	-	ND
Perchloroethylene	4982	-	ND
Diesel PM	35884	1450	ND

ND = no data

Table 5.2D-6 Identified Sensitive Receptors and Distances from Site

Blythe II Sensitive Receptors

	Google Earth Data			Dist. From	Dist. From	Receptor		**NAD27**	
Receptor ID	UTM Em	UTM Nm	Elev., ft.	Site, m.	Site, ft.	#	**UTM Em**	**UTM Nm**	**Elev, ft.**
Site	**714301**	**3721601**	331	na	na		714385	3721361	331
Sch	721725	3721961	268	7432.7	24386.8	1	721809	3721721	268
HS	722107	3722656	271	7877.0	25844.3	2	722191	3722416	271
MS	722098	3722911	272	7906.3	25940.5	3	722182	3722671	272
College	722793	3721635	270	8492.1	27862.5	4	722877	3721395	270
Hosp	723115	3721776	271	8815.7	28924.4	5	723199	3721536	271
ES	723374	3720929	269	9097.9	29850.1	6	723458	3720689	269
HS	723564	3721723	271	9263.8	30394.5	7	723648	3721483	271
ES	722911	3722595	272	8667.2	28437.0	8	722995	3722355	272
AP (work)	712188	3721678	393	2114.4	6937.4	9	712272	3721438	393
BEP1 (work)	714631	3721934	336	468.8	1538.2	10	714715	3721694	336
Res Cluster	711644	3720606	390	2837.2	9308.8	11	711728	3720366	390
Res Cluster	713496	3721087	349	955.1	3133.7	12	713580	3720847	349
Res Cluster	717982	3722238	266	3735.7	12256.9	13	718066	3721998	266
Res Cluster	717205	3721326	261	2917.0	9570.7	14	717289	3721086	261
Res Cluster	719348	3721614	264	5047.0	16559.3	15	719432	3721374	264
Res Cluster	720204	3721201	266	5916.5	19412.2	16	720288	3720961	266
West City Pop Area	721393	3721463	267	7093.3	23273.3	17	721477	3721223	267
City Center	723081	3721551	2079	8780.1	28807.6	18	723165	3721311	2079
Work	718604	3720767	261	4383.1	14380.9	19	718688	3720527	261

Table 5.2D-7 (14 Pages)

CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical Abstract Number ▼	Noncancer Effects								Cancer Risk					
		Acute Inhalation (µg/m³)	Date Value Reviewed [Added] ◆	8-Hour Inhalation (µg/m³)	Date Value Reviewed [Added] ◆	Chronic Inhalation (µg/m³)	Date Value Reviewed [Added] ◆	Chronic Oral (mg/kg-d)	Date Value Reviewed [Added] ◆	Inhalation Unit Risk (µg/m³)⁻¹ *	Inhalation Cancer Potency Factor (mg/kg-d)⁻¹ *	Date Value Reviewed [Added] ◆	Oral Slope Factor (mg/kg-d)⁻¹	Date Value Reviewed [Added] ◆	MWAF ♣
ACETALDEHYDE	75-07-0	4.7E+02	12/08	3.0E+02	12/08	1.4E+02	12/08			2.7E-06	1.0E-02	4/99 [5/93]			1
ACETAMIDE	60-35-5									2.0E-05	7.0E-02	4/99			1
ACROLEIN	107-02-8	2.5E+00	12/08	7.0E-01	12/08	3.5E-01	12/08								1
ACRYLAMIDE	79-06-1									1.3E-03	4.5E+00	4/99 [7/90]			1
ACRYLIC ACID	79-10-7	6.0E+03	4/99												1
ACRYLONITRILE	107-13-1					5.0E+00	12/01			2.9E-04	1.0E+00	4/99 [1/91]			1
ALLYL CHLORIDE	107-05-1									6.0E-06	2.1E-02	4/99			1
2-AMINOANTHRAQUINONE	117-79-3									9.4E-06	3.3E-02	4/99			1
AMMONIA	7664-41-7	3.2E+03	4/99			2.0E+02	2/00								1
ANILINE	62-53-3									1.6E-06	5.7E-03	4/99			1
ARSENIC AND COMPOUNDS (INORGANIC)[TAC]	7440-38-2 1016 [1015]	2.0E-01	12/08	1.5E-02	12/08	1.5E-02	12/08	3.5E-06	12/08	3.3E-03 TAC	1.2E+01	7/90	1.5E+00	10/00	1
ARSINE	7784-42-1	2.0E-01	12/08	1.5E-02	12/08	1.5E-02	12/08								1
ASBESTOS[TAC] ¤	1332-21-4									1.9E-04 TAC ¤	2.2E+02	3/86			333.33
BENZENE[TAC]	71-43-2	1.3E+03	4/99			6.0E+01	2/00			2.9E-05[TAC]	1.0E-01	1/85			1
BENZIDINE (AND ITS SALTS) *values also apply to:*	92-87-5									1.4E-01	5.0E+02	4/99 [1/91]			1
Benzidine based dyes	*1020*									*1.4E-01*	*5.0E+02*	*4/99 [1/91]*			*1*
Direct Black 38	*1937-37-7*									*1.4E-01*	*5.0E+02*	*4/99 [1/91]*			*1*
Direct Blue 6	*2602-46-2*									*1.4E-01*	*5.0E+02*	*4/99 [1/91]*			*1*
Direct Brown 95 (technical grade)	*16071-86-6*									*1.4E-01*	*5.0E+02*	*4/99 [1/91]*			*1*
BENZYL CHLORIDE	100-44-7	2.4E+02	4/99							4.9E-05	1.7E-01	4/99			1
BERYLLIUM AND COMPOUNDS	7440-41-7 [1021]					7.0E-03	12/01	2.0E-03	12/01	2.4E-03	8.4E+00	4/99 [7/90]			1
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)	111-44-4									7.1E-04	2.5E+00	4/99			1
BIS(CHLOROMETHYL)ETHER	542-88-1									1.3E-02	4.6E+01	4/99 [1/91]			1
BROMINE AND COMPOUNDS	7726-95-6 [1040]														1
POTASSIUM BROMATE	7758-01-2									1.4E-04	4.9E-01	4/99 [10/93]			1

Table last updated: February 9, 2009

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

		Noncancer Effects								Cancer Risk					
Substance	Chemical▼ Abstract Number	Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Inhalation* Unit Risk (µg/m³)⁻¹	Inhalation* Cancer Potency Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	M♣ W A F
1,3-BUTADIENE^TAC	106-99-0					2.0E+01	1/01			1.7E-04 TAC	6.0E-01	7/92			1
CADMIUM AND COMPOUNDS^TAC	7440-43-9 [1045]					2.0E-02	1/01	5.0E-04	10/00	4.2E-03 TAC	1.5E+01	1/87			1
CARBON DISULFIDE	75-15-0	6.2E+03	4/99			8.0E+02	5/02								1
CARBON MONOXIDE	630-08-0	2.3E+04	4/99												1
CARBON TETRACHLORIDE^TAC (Tetrachloromethane)	56-23-5	1.9E+03	4/99			4.0E+01	1/01			4.2E-05 TAC	1.5E-01	9/87			1
CHLORINATED PARAFFINS	108171-26-2									2.5E-05	8.9E-02	4/99			1
CHLORINE	7782-50-5	2.1E+02	4/99			2.0E-01	2/00								1
CHLORINE DIOXIDE	10049-04-4					6.0E-01	1/01								1
4-CHLORO-O-PHENYLENEDIAMINE	95-83-0									4.6E-06	1.6E-02	4/99			1
CHLOROBENZENE	108-90-7					1.0E+03	1/01								1
CHLORODIFLUOROMETHANE ... (see Fluorocarbons)															
CHLOROFORM^TAC	67-66-3	1.5E+02	4/99			3.0E+02	4/00			5.3E-06 TAC	1.9E-02	12/90			1
Chlorophenols	*1060*														*1*
PENTACHLOROPHENOL	87-86-5									5.1E-06	1.8E-02	4/99			1
2,4,6-TRICHLOROPHENOL	88-06-2									2.0E-05	7.0E-02	4/99 [1/91]			1
CHLOROPICRIN	76-06-2	2.9E+01	4/99			4.0E-01	12/01								1
p-CHLORO-o-TOLUIDINE	95-69-2									7.7E-05	2.7E-01	4/99			1
CHROMIUM 6+^TAC *values also apply to:*	18540-29-9					2.0E-01	1/01	2.0E-02	10/00	1.5E-01 TAC	5.1E+02	1/86	Ø		1
Barium chromate	*10294-40-3*					*2.0E-01*	*1/01*	*2.0E-02*	*10/00*	*1.5E-01 TAC*	*5.1E+02*	*1/86*	*Ø*		*0.2053*
Calcium chromate	*13765-19-0*					*2.0E-01*	*1/01*	*2.0E-02*	*10/00*	*1.5E-01 TAC*	*5.1E+02*	*1/86*	*Ø*		*0.3332*
Lead chromate	*7758-97-6*					*2.0E-01*	*1/01*	*2.0E-02*	*10/00*	*1.5E-01 TAC*	*5.1E+02*	*1/86*	*Ø*		*0.1609*
Sodium dichromate	*10588-01-9*					*2.0E-01*	*1/01*	*2.0E-02*	*10/00*	*1.5E-01 TAC*	*5.1E+02*	*1/86*	*Ø*		*0.397*
Strontium chromate	*7789-06-2*					*2.0E-01*	*1/01*	*2.0E-02*	*10/00*	*1.5E-01 TAC*	*5.1E+02*	*1/86*	*Ø*		*0.2554*
CHROMIUM TRIOXIDE (as chromic acid mist)	1333-82-0					2.0E-03	1/01	2.0E-02	10/00	1.5E-01 TAC	5.1E+02	1/86	Ø		0.52
COPPER AND COMPOUNDS	7440-50-8 [1067]	1.0E+02	4/99												1
p-CRESIDINE	120-71-8									4.3E-05	1.5E-01	4/99			1
CRESOLS (mixtures of)	1319-77-3					6.0E+02	1/01								1
m-CRESOL	108-39-4					6.0E+02	1/01								1

Table 1
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		Noncancer Effects								Cancer Risk					
Substance	Chemical▼ Abstract Number	Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Inhalation* Unit Risk (µg/m³)⁻¹	Inhalation* Cancer Potency Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	M♣ W A F
o-CRESOL	95-48-7					6.0E+02	1/01								1
p-CRESOL	106-44-5					6.0E+02	1/01								1
CUPFERRON	135-20-6									6.3E-05	2.2E-01	4/99			1
Cyanide Compounds (inorganic)	*57-12-5 1073*	*3.4E+02*	*4/99*			*9.0E+00*	*4/00*								*1*
HYDROGEN CYANIDE (Hydrocyanic acid)	74-90-8	3.4E+02	4/99			9.0E+00	4/00								1
2,4-DIAMINOANISOLE	615-05-4									6.6E-06	2.3E-02	4/99			1
2,4-DIAMINOTOLUENE	95-80-7									1.1E-03	4.0E+00	4/99			1
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	96-12-8									2.0E-03	7.0E+00	4/99 [1/92]			1
p-DICHLOROBENZENE	106-46-7					8.0E+02	1/01			1.1E-05	4.0E-02	4/99 [1/91]			1
3,3-DICHLOROBENZIDINE	91-94-1									3.4E-04	1.2E+00	4/99 [1/91]			1
1,1,-DICHLOROETHANE (Ethylidene dichloride)	75-34-3									1.6E-06	5.7E-03	4/99			1
1,1-DICHLOROETHYLENE ... (see Vinylidene Chloride)															
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)	117-81-7									2.4E-06	8.4E-03	4/99 [1/92]	8.4E-03	10/00	1
DIESEL EXHAUST ... (see Particulate Emissions from Diesel-Fueled Engines)															
DIETHANOLAMINE	111-42-2					3.0E+00	12/01								
p-DIMETHYLAMINOAZOBENZENE	60-11-7									1.3E-03	4.6E+00	4/99			1
N,N-DIMETHYL FORMAMIDE	68-12-2					8.0E+01	1/01								1
2,4-DINITROTOLUENE	121-14-2									8.9E-05	3.1E-01	4/99			1
1,4-DIOXANE⁺ (1,4-Diethylene dioxide)	123-91-1	3.0E+03	4/99			3.0E+03	4/00			7.7E-06	2.7E-02	4/99 [1/91]			1
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)	106-89-8	1.3E+03	4/99			3.0E+00	1/01			2.3E-05	8.0E-02	4/99 [1/92]			1
1,2-EPOXYBUTANE	106-88-7					2.0E+01	1/01								1
ETHYL BENZENE	100-41-4					2.0E+03	2/00			2.5E-06	8.7E-3	11/07			1
ETHYL CHLORIDE (Chloroethane)	75-00-3					3.0E+04	4/00								1
ETHYLENE DIBROMIDE TAC (1,2-Dibromoethane)	106-93-4					8.0E-01	12/01			7.1E-05 TAC	2.5E-01	7/85			1
ETHYLENE DICHLORIDE TAC (1,2-Dichloroethane)	107-06-2					4.0E+02	1/01			2.1E-05 TAC	7.2E-02	9/85			1
ETHYLENE GLYCOL	107-21-1					4.0E+02	4/00								1
ETHYLENE GLYCOL BUTYL ETHER ... (see Glycol ethers)															

Table last updated: February 9, 2009

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical Abstract Number ▼	Noncancer Effects								Cancer Risk					
		Acute Inhalation (µg/m^3)	Date ♦ Value Reviewed [Added]	8-Hour Inhalation (µg/m^3)	Date ♦ Value Reviewed [Added]	Chronic Inhalation (µg/m^3)	Date ♦ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date ♦ Value Reviewed [Added]	Inhalation Unit Risk (µg/m^3)$^{-1}$ *	Inhalation Cancer Potency Factor (mg/kg-d)$^{-1}$ *	Date ♦ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)$^{-1}$	Date ♦ Value Reviewed [Added]	MWAF ♣
ETHYLENE OXIDE[TAC] (1,2-Epoxyethane)	75-21-8					3.0E+01	1/01			8.8E-05 TAC	3.1E-01	11/87			1
ETHYLENE THIOUREA	96-45-7									1.3E-05	4.5E-02	4/99			1
Fluorides	1101	*2.4E+02*	*4/99*			1.3E+01	8/03	4.0E-02	8/03						*1*
HYDROGEN FLUORIDE (Hydrofluoric acid)	7664-39-3	2.4E+02	4/99			1.4E+01	8/03	4.0E-02	8/03						1
FORMALDEHYDE[TAC]	50-00-0	5.5E+01	12/08	9.0E+00	12/08	9.0E+00	12/08			6.0E-06 TAC	2.1E-02	3/92			1
GLUTARALDEHYDE	111-30-8					8.0E-02	1/01								1
GLYCOL ETHERS	1115														1
ETHYLENE GLYCOL BUTYL ETHER – EGBE	111-76-2	1.4E+04	4/99												1
ETHYLENE GLYCOL ETHYL ETHER – EGEE	110-80-5	3.7E+02	4/99[1/92]			7.0E+01	2/00								1
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA	111-15-9	1.4E+02	4/99			3.0E+02	2/00								1
ETHYLENE GLYCOL METHYL ETHER – EGME	109-86-4	9.3E+01	4/99			6.0E+01	2/00								1
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA	110-49-6					9.0E+01	2/00								1
HEXACHLOROBENZENE	118-74-1									5.1E-04	1.8E+00	4/99 [1/91]			1
HEXACHLOROCYCLOHEXANES (mixed or technical grade)	608-73-1									1.1E-03	4.0E+00	4/99 [1/91]	4.0E+00	10/00 [1/92]	1
alpha-HEXACHLOROCYCLOHEXANE	319-84-6									1.1E-03	4.0E+00	4/99 [1/91]	4.0E+00	10/00 [1/92]	1
beta-HEXACHLOROCYCLOHEXANE	319-85-7									1.1E-03	4.0E+00	4/99 [1/91]	4.0E+00	10/00 [1/92]	1
gamma-HEXACHLOROCYCLOHEXANE (Lindane)	58-89-9									3.1E-04	1.1E+00	4/99	1.1E+00	10/00	1
n-HEXANE	110-54-3					7.0E+03	4/00								1
HYDRAZINE	302-01-2					2.0E-01	1/01			4.9E-03	1.7E+01	4/99 [7/90]			1
HYDROCHLORIC ACID (Hydrogen chloride)	7647-01-0	2.1E+03	4/99			9.0E+00	2/00								1
HYDROGEN BROMIDE … (see Bromine & Compounds)															
HYDROGEN CYANIDE … (see Cyanide & Compounds)															
HYDROGEN FLUORIDE … (see Fluorides & Compounds)															

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical ▼ Abstract Number	Noncancer Effects: Acute Inhalation (µg/m³)	Date ◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date ◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date ◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date ◆ Value Reviewed [Added]	Cancer Risk: Inhalation Unit Risk (µg/m³)⁻¹ *	Inhalation Cancer Potency Factor (mg/kg-d)⁻¹ *	Date ◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date ◆ Value Reviewed [Added]	M‡ W A F
HYDROGEN SELENIDE ... (see Selenium & Compounds)															
HYDROGEN SULFIDE	7783-06-4	4.2E+01	4/99[7/90]			1.0E+01	4/00								1
ISOPHORONE	78-59-1					2.0E+03	12/01								
ISOPROPYL ALCOHOL (Isopropanol)	67-63-0	3.2E+03	4/99			7.0E+03	2/00								1
LEAD AND COMPOUNDS TAC ♫* (inorganic) *values also apply to:*	7439-92-1 1128 [1130]									1.2E-05 TAC	4.2E-02	4/97	8.5E-03	10/00	1
Lead acetate	*301-04-2*									*1.2E-05 TAC*	*4.2E-02*	*4/97*	*8.5E-03*	*10/00*	*0.637*
Lead phosphate	*7446-27-7*									*1.2E-05 TAC*	*4.2E-02*	*4/97*	*8.5E-03*	*10/00*	*0.7659*
Lead subacetate	*1335-32-6*									*1.2E-05 TAC*	*4.2E-02*	*4/97*	*8.5E-03*	*10/00*	*0.7696*
LINDANE ... (see gamma-Hexachlorocyclohexane)															
MALEIC ANHYDRIDE	108-31-6					7.0E-01	12/01								1
MANGANESE AND COMPOUNDS	7439-96-5 [1132]			1.7E-01	12/08	9.0E-02	12/08								1
MERCURY AND COMPOUNDS (INORGANIC)	7439-97-6 [1133]	6.0E-01	12/08	6.0E-02	12/08	3.0E-02	12/08	1.6E-04	12/08						1
Mercuric chloride	*7487-94-7*	*6.0E-01*	*12/08*	*6.0E-02*	*12/08*	*3.0E-02*	*12/08*	*1.6E-04*	*12/08*						*1*
METHANOL	67-56-1	2.8E+04	4/99			4.0E+03	4/00								1
METHYL BROMIDE (Bromomethane)	74-83-9	3.9E+03	4/99			5.0E+00	2/00								1
METHYL tertiary-BUTYL ETHER	1634-04-4					8.0E+03	2/00			2.6E-07	1.8E-03	11/99			1
METHYL CHLOROFORM (1,1,1-Trichloroethane)	71-55-6	6.8E+04	4/99			1.0E+03	2/00								1
METHYL ETHYL KETONE (2-Butanone)	78-93-3	1.3E+04	4/99												1
METHYL ISOCYANATE	624-83-9					1.0E+00	12/01								1
METHYL MERCURY ... (see Mercury & Compounds)															
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)	101-14-4									4.3E-04	1.5E+00	4/99			1
METHYLENE CHLORIDE TAC (Dichloromethane)	75-09-2	1.4E+04	4/99			4.0E+02	2/00			1.0E-06 TAC	3.5E-03	7/89			1
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)	101-77-9					2.0E+01	12/01			4.6E-04	1.6E+00	4/99	1.6E+00	10/00	1
METHYLENE DIPHENYL ISOCYANATE	101-68-8					7.0E-01	1/01								1
MICHLER'S KETONE (4,4'-Bis(dimethylamino)benzophenone)	90-94-8									2.5E-04	8.6E-01	4/99			1
N-NITROSODI-n-BUTYLAMINE	924-16-3									3.1E-03	1.1E+01	4/99 [1/92]			1

Table last updated: February 9, 2009

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

		Noncancer Effects								Cancer Risk					
Substance	Chemical▼ Abstract Number	Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Inhalation* Unit Risk $(\mu g/m^3)^{-1}$	Inhalation* Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$	Date◆ Value Reviewed [Added]	Oral Slope Factor $(mg/kg\text{-}d)^{-1}$	Date◆ Value Reviewed [Added]	M± W A F
N-NITROSODI-n-PROPYLAMINE	621-64-7									2.0E-03	7.0E+00	4/99 [1/91]			1
N-NITROSODIETHYLAMINE	55-18-5									1.0E-02	3.6E+01	4/99 [1/91]			1
N-NITROSODIMETHYLAMINE	62-75-9									4.6E-03	1.6E+01	4/99 [1/91]			1
N-NITROSODIPHENYLAMINE	86-30-6									2.6E-06	9.0E-03	4/99			1
N-NITROSO-N-METHYLETHYLAMINE	10595-95-6									6.3E-03	2.2E+01	4/99 [7/90]			1
N-NITROSOMORPHOLINE	59-89-2									1.9E-03	6.7E+00	4/99 [7/92]			1
N-NITROSOPIPERIDINE	100-75-4									2.7E-03	9.4E+00	4/99 [7/92]			1
N-NITROSOPYRROLIDINE	930-55-2									6.0E-04	2.1E+00	4/99 [7/90]			1
NAPHTHALENE ... (see Polycyclic aromatic hydrocarbons)															
NICKEL AND COMPOUNDS[TAC] *values also apply to:*	7440-02-0 [1145]	6.0E+00	4/99			5.0E-02	2/00	5.0E-02	10/00	2.6E-04 TAC	9.1E-01	8/91			1
Nickel acetate	*373-02-4*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*0.3321*
Nickel carbonate	*3333-67-3*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*0.4945*
Nickel carbonyl	*13463-39-3*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*0.3438*
Nickel hydroxide	*12054-48-7*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*0.6332*
Nickelocene	*1271-28-9*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*0.4937*
NICKEL OXIDE	1313-99-1	6.0E+00	4/99			1.0E-01	2/00	5.0E-02	10/00	2.6E-04 TAC	9.1E-01	8/91			0.7859
Nickel refinery dust from the pyrometallurgical process	*1146*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*1*
Nickel subsulfide	*12035-72-2*	*6.0E+00*	*4/99*			*5.0E-02*	*2/00*	*5.0E-02*	*10/00*	*2.6E-04 TAC*	*9.1E-01*	*8/91*			*0.2443*
NITRIC ACID	7697-37-2	8.6E+01	4/99												1
NITROGEN DIOXIDE	10102-44-0	4.7E+02	4/99[1/92]												1
p-NITROSODIPHENYLAMINE	156-10-5									6.3E-06	2.2E-02	4/99			1
OZONE	10028-15-6	1.8E+02	4/99[1/92]												1
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES[TAC] ■¶	9901					5.0E+00 TAC	8/98			3.0E-04 TAC	1.1E+00	8/98			1
PENTACHLOROPHENOL ... (see Chlorophenols)															

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Substance	Chemical▼ Abstract Number	Noncancer Effects								Cancer Risk					
		Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Inhalation* Unit Risk (µg/m³)⁻¹	Inhalation* Cancer Potency Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	M‡ W A F
PERCHLOROETHYLENE[TAC] (Tetrachloroethylene)	127-18-4	2.0E+04	4/99			3.5E+01 TAC	10/91			5.9E-06 TAC	2.1E-02	10/91			1
PHENOL	108-95-2	5.8E+03	4/99			2.0E+02	4/00								1
PHOSGENE	75-44-5	4.0E+00	4/99												1
PHOSPHINE	7803-51-2					8.0E-01	9/02								1
PHOSPHORIC ACID	7664-38-2					7.0E+00	2/00								1
PHTHALIC ANHYDRIDE	85-44-9					2.0E+01	1/01								1
PCB (POLYCHLORINATED BIPHENYLS) (unspeciated mixture) [lowest risk] ☼*	1336-36-3									2.0E-05	7.0E-02	4/99	7.0E-02	10/00	1
PCB (POLYCHLORINATED BIPHENYLS) (unspeciated mixture) [low risk] ☼*	1336-36-3									1.1E-04	4.0E-01*		4.0E-01*		1
PCB (POLYCHLORINATED BIPHENYLS) (unspeciated mixture) [high risk] ☼*	1336-36-3									5.7E-04	2.0E+00	4/99	2.0E+00	10/00	1
PCB (POLYCHLORINATED BIPHENYLS (speciated) ϖ															
3,3',4,4'-TETRACHLOROBIPHENYL (PCB 77)	32598-13-3					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
3,4,4',5-TETRACHLOROBIPHENYL (PCB 81)	70362-50-4					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
2,3,3',4,4'-PENTACHLOROBIPHENYL (PCB 105)	32598-14-4					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
2,3,4,4',5-PENTACHLOROBIPHENYL (PCB 114)	74472-37-0					8.0E-02	8/03	2.0E-05	8/03	1.9E-02	6.5E+01	8/03	6.5E+01	8/03	1
2,3',4,4',5-PENTACHLOROBIPHENYL (PCB 118)	31508-00-6					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
2,3',4,4',5'-PENTACHLOROBIPHENYL (PCB 123)	65510-44-3					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
3,3',4,4',5-PENTACHLOROBIPHENYL (PCB 126)	57465-28-8					4.0E-04	8/03	1.0E-07	8/03	3.8E+00	1.3E+04	8/03	1.3E+04	8/03	1
2,3,3',4,4',5-HEXACHLOROBIPHENYL (PCB 156)	38380-08-4					8.0E-02	8/03	2.0E-05	8/03	1.9E-02	6.5E+01	8/03	6.5E+01	8/03	1
2,3,3',4,4',5'-HEXACHLOROBIPHENYL (PCB 157)	69782-90-7					8.0E-02	8/03	2.0E-05	8/03	1.9E-02	6.5E+01	8/03	6.5E+01	8/03	1

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Substance	Chemical▼ Abstract Number	Noncancer Effects								Cancer Risk					
		Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Inhalation* Unit Risk (µg/m³)⁻¹	Inhalation* Cancer Potency Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	M‡ W A F
2,3',4,4',5,5'-HEXACHLOROBIPHENYL (PCB 167)	52663-72-6					4.0E+00	8/03	1.0E-03	8/03	3.8E-04	1.3E+00	8/03	1.3E+00	8/03	1
3,3',4,4',5,5'-HEXACHLOROBIPHENYL (PCB 169)	32774-16-6					4.0E-03	8/03	1.0E-06	8/03	3.8E-01	1.3E+03	8/03	1.3E+03	8/03	1
2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (PCB 189)	39635-31-9					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
POLYCHLORINATED DIBENZO-*P*-DIOXINS (PCDD) (Treated as 2,3,7,8-TCDD for HRA)TAC ●	1085 1086					4.0E-05	2/00	1.0E-08	10/00	3.8E+01 TAC	1.3E+05	8/86	1.3E+05 TAC	8/86	1
2,3,7,8-TETRACHLORODIBENZO-*P*-DIOXINTAC	1746-01-6					4.0E-05	2/00	1.0E-08	10/00	3.8E+01 TAC	1.3E+05	8/86	1.3E+05 TAC	8/86	1
1,2,3,7,8-PENTACHLORODIBENZO-*P*-DIOXIN	40321-76-4					4.0E-05	8/03	1.0E-08	8/03	3.8E+01	1.3E+05	8/03	1.3E+05	8/03	1
1,2,3,4,7,8-HEXACHLORODIBENZO-*P*-DIOXIN	39227-28-6					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
1,2,3,6,7,8-HEXACHLORODIBENZO-*P*-DIOXIN	57653-85-7					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
1,2,3,7,8,9-HEXACHLORODIBENZO-*P*-DIOXIN	19408-74-3					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-*P*-DIOXIN	35822-46-9					4.0E-03	2/00	1.0E-06	10/00	3.8E-01	1.3E+03	4/99	1.3E+03	10/00	1
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-*P*-DIOXIN	3268-87-9					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
POLYCHLORINATED DIBENZOFURANS (PCDF) TAC ● (Treated as 2,3,7,8-TCDD for HRA)	1080					4.0E-05	2/00	1.0E-08	10/00	3.8E+01 TAC	1.3E+05	8/86	1.3E+05 TAC	8/86	1
2,3,7,8-TETRACHLORODIBENZOFURAN	5120-73-19					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
1,2,3,7,8-PENTACHLORODIBENZOFURAN	57117-41-6					8.0E-04	2/00	2.0E-07	10/00	1.9E+00	6.5E+03	4/99	6.5E+03	10/00	1
2,3,4,7,8-PENTACHLORODIBENZOFURAN	57117-31-4					8.0E-05	2/00	2.0E-08	10/00	1.9E+01	6.5E+04	4/99	6.5E+04	10/00	1
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	70648-26-9					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1

Table last updated: February 9, 2009

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical▼ Abstract Number	Noncancer Effects								Cancer Risk					
		Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Inhalation Unit Risk (µg/m³)⁻¹ *	Inhalation Cancer Potency Factor (mg/kg-d)⁻¹ *	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	MWAF♣
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	57117-44-9					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	72918-21-9					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	60851-34-5					4.0E-04	2/00	1.0E-07	10/00	3.8E+00	1.3E+04	4/99	1.3E+04	10/00	1
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	67562-39-4					4.0E-03	2/00	1.0E-06	10/00	3.8E-01	1.3E+03	4/99	1.3E+03	10/00	1
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	55673-89-7					4.0E-03	2/00	1.0E-06	10/00	3.8E-01	1.3E+03	4/99	1.3E+03	10/00	1
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN	39001-02-0					4.0E-01	8/03	1.0E-04	8/03	3.8E-03	1.3E+01	8/03	1.3E+01	8/03	1
POLYCYCLIC AROMATIC HYDROCARBON (PAH) Φ [Treated as B(a)P for HRA]◆	1150 1151									1.1E-03	3.9E+00	4/99 [4/94]	1.2E+01	10/00 [4/94]	1
BENZ(A)ANTHRACENE◆	56-55-3									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
BENZO(A)PYRENE◆	50-32-8									1.1E-03	3.9E+00	4/99 [4/94]	1.2E+01	10/00 [4/94]	1
BENZO(B)FLUORANTHENE◆	205-99-2									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
BENZO(J)FLUORANTHENE◆	205-82-3									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
BENZO(K)FLUORANTHENE◆	207-08-9									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
CHRYSENE◆	218-01-9									1.1E-05	3.9E-02	4/99 [4/94]	1.2E-01	10/00 [4/94]	1
DIBENZ(A,H)ACRIDINE◆	226-36-8									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
DIBENZ(A,H)ANTHRACENE◆	53-70-3									1.2E-03	4.1E+00	4/99 [4/94]	4.1E+00	10/00 [4/94]	1
DIBENZ(A,J)ACRIDINE◆	224-42-0									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
DIBENZO(A,E)PYRENE◆	192-65-4									1.1E-03	3.9E+00	4/99 [4/94]	1.2E+01	10/00 [4/94]	1
DIBENZO(A,H)PYRENE◆	189-64-0									1.1E-02	3.9E+01	4/99 [4/94]	1.2E+02	10/00 [4/94]	1

Table 1

CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical▼ Abstract Number	Noncancer Effects: Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Cancer Risk: Inhalation Unit Risk (µg/m³)⁻¹ *	Inhalation Cancer Potency Factor (mg/kg-d)⁻¹ *	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	MWAF♣
DIBENZO(A,I)PYRENE◆	189-55-9									1.1E-02	3.9E+01	4/99 [4/94]	1.2E+02	10/00 [4/94]	1
DIBENZO(A,L)PYRENE◆	191-30-0									1.1E-02	3.9E+01	4/99 [4/94]	1.2E+02	10/00 [4/94]	1
7H-DIBENZO(C,G)CARBAZOLE◆	194-59-2									1.1E-03	3.9E+00	4/99 [4/94]	1.2E+01	10/00 [4/94]	1
7,12-DIMETHYLBENZ(A)ANTHRACENE ◆	57-97-6									7.1E-02	2.5E+02	4/99 [4/94]	2.5E+02	10/00 [4/94]	1
1,6-DINITROPYRENE◆	42397-64-8									1.1E-02	3.9E+01	4/99 [4/94]	1.2E+02	10/00 [4/94]	1
1,8-DINITROPYRENE◆	42397-65-9									1.1E-03	3.9E+00	4/99 [4/94]	1.2E+01	10/00 [4/94]	1
INDENO(1,2,3-C,D)PYRENE◆	193-39-5									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
3-METHYLCHOLANTHRENE◆	56-49-5									6.3E-03	2.2E+01	4/99 [4/94]	2.2E+01	10/00 [4/94]	1
5-METHYLCHRYSENE◆	3697-24-3									1.1E-03	3.9E+00	4/99 [4/94]	1.2E+01	10/00 [4/94]	1
NAPHTHALENE	91-20-3					9.0E+00	4/00			3.4E-05	1.2E-01	8/04			1
5-NITROACENAPHTHENE◆	602-87-9									3.7E-05	1.3E-01	4/99 [4/94]	1.3E-01	10/00 [4/94]	1
6-NITROCHRYSENE◆	7496-02-8									1.1E-02	3.9E+01	4/99 [4/94]	1.2E+02	10/00 [4/94]	1
2-NITROFLUORENE◆	607-57-8									1.1E-05	3.9E-02	4/99 [4/94]	1.2E-01	10/00 [4/94]	1
1-NITROPYRENE◆	5522-43-0									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
4-NITROPYRENE◆	57835-92-4									1.1E-04	3.9E-01	4/99 [4/94]	1.2E+00	10/00 [4/94]	1
POTASSIUM BROMATE.... ... (see Bromine & Compounds)															
1,3-PROPANE SULTONE	1120-71-4									6.9E-04	2.4E+00	4/99			1
PROPYLENE (PROPENE)	115-07-1					3.0E+03	4/00								1
PROPYLENE GLYCOL MONOMETHYL ETHER	107-98-2					7.0E+03	2/00								1
PROPYLENE OXIDE	75-56-9	3.1E+03	4/99			3.0E+01	2/00			3.7E-06	1.3E-02	4/99 [7/90]			1
SELENIUM AND COMPOUNDS	7782-49-2 [1170]					2.0E+01	12/01								1
HYDROGEN SELENIDE	7783-07-5	5.0E+00	4/99												1
Selenium sulfide	*7446-34-6*					*2.0E+01*	*12/01*								*1*

Table last updated: February 9, 2009

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical▼ Abstract Number	Noncancer Effects: Acute Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	8-Hour Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Inhalation (µg/m³)	Date◆ Value Reviewed [Added]	Chronic Oral (mg/kg-d)	Date◆ Value Reviewed [Added]	Cancer Risk: Inhalation Unit Risk (µg/m³)⁻¹ *	Inhalation Cancer Potency Factor (mg/kg-d)⁻¹ *	Date◆ Value Reviewed [Added]	Oral Slope Factor (mg/kg-d)⁻¹	Date◆ Value Reviewed [Added]	M✚ W A F
SILICA [CRYSTALLINE, RESPIRABLE]	1175					3.0E+00	2/05								1
SODIUM HYDROXIDE	1310-73-2	8.0E+00	4/99												1
STYRENE	100-42-5	2.1E+04	4/99			9.0E+02	4/00								1
SULFATES	9960	1.2E+02	4/99												1
SULFUR DIOXIDE	7446-09-5	6.6E+02	4/99[1/92]												1
SULFURIC ACID AND OLEUM	9961	1.2E+02	4/99			*1.0E+00*	*12/01*								1
SULFURIC ACID	*7664-93-9*	*1.2E+02*	*4/99*			1.0E+00	12/01								*1*
SULFUR TRIOXIDE	*7446-71-9*	*1.2E+02*	*4/99*			*1.0E+00*	*12/01*								*1*
OLEUM	*8014-95-7*	*1.2E+02*	*4/99*			*1.0E+00*	*12/01*								*1*
1,1,2,2-TETRACHLOROETHANE	79-34-5									5.8E-05	2.0E-01	4/99			1
TETRACHLOROPHENOLS ... (see Chlorophenols)															
2,4,5-TRICHLOROPHENOL ... (see Chlorophenols)															
2,4,6-TRICHLOROPHENOL ... (see Chlorophenols)															
THIOACETAMIDE	62-55-5									1.7E-03	6.1E+00	4/99			1
TOLUENE	108-88-3	3.7E+04	4/99			3.0E+02	4/00								1
Toluene diisocyantates	*26471-62-5*					*7.0E-02*	*1/01*			*1.1E-05*	*3.9E-02*	*4/99*			*1*
TOLUENE-2,4-DIISOCYANATE	584-84-9					7.0E-02	1/01			1.1E-05	3.9E-02	4/99			1
TOLUENE-2,6-DIISOCYANATE	91-08-7					7.0E-02	1/01			1.1E-05	3.9E-02	4/99			1
1,1,2-TRICHLOROETHANE (Vinyl trichloride)	79-00-5									1.6E-05	5.7E-02	4/99			1
TRICHLOROETHYLENE[TAC]	79-01-6					6.0E+02	4/00			2.0E-06 TAC	7.0E-03	10/90			1
TRIETHYLAMINE	121-44-8	2.8E+03	4/99			2.0E+02	9/02								1
URETHANE (Ethyl carbamate)	51-79-6									2.9E-04	1.0E+00	4/99 [7/90]			1
Vanadium Compounds	*N/A*														*1*
Vanadium (fume or dust)	*7440-62-2*	*3.0E+01*	*4/99*												*1*
VANADIUM PENTOXIDE	1314-62-1	3.0E+01	4/99												1
VINYL ACETATE	108-05-4					2.0E+02	12/01								1
VINYL CHLORIDE[TAC] (Chloroethylene)	75-01-4	1.8E+05	4/99							7.8E-05 TAC	2.7E-01	12/90			1
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)	75-35-4					7.0E+01	1/01								1

Table 1

CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Substance	Chemical Abstract Number ▼	Noncancer Effects								Cancer Risk					
		Acute Inhalation ($\mu g/m^3$)	Date Value Reviewed [Added] ◆	8-Hour Inhalation ($\mu g/m^3$)	Date Value Reviewed [Added] ◆	Chronic Inhalation ($\mu g/m^3$)	Date Value Reviewed [Added] ◆	Chronic Oral (mg/kg-d)	Date Value Reviewed [Added] ◆	Inhalation Unit Risk $(\mu g/m^3)^{-1}$ *	Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ *	Date Value Reviewed [Added] ◆	Oral Slope Factor $(mg/kg\text{-}d)^{-1}$	Date Value Reviewed [Added] ◆	M W A F ♣
XYLENES (mixed isomers)	1330-20-7	2.2E+04	4/99			7.0E+02	4/00								1
m-XYLENE	108-38-3	2.2E+04	4/99			7.0E+02	4/00								1
o-XYLENE	95-47-6	2.2E+04	4/99			7.0E+02	4/00								1
p-XYLENE	106-42-3	2.2E+04	4/99			7.0E+02	4/00								1

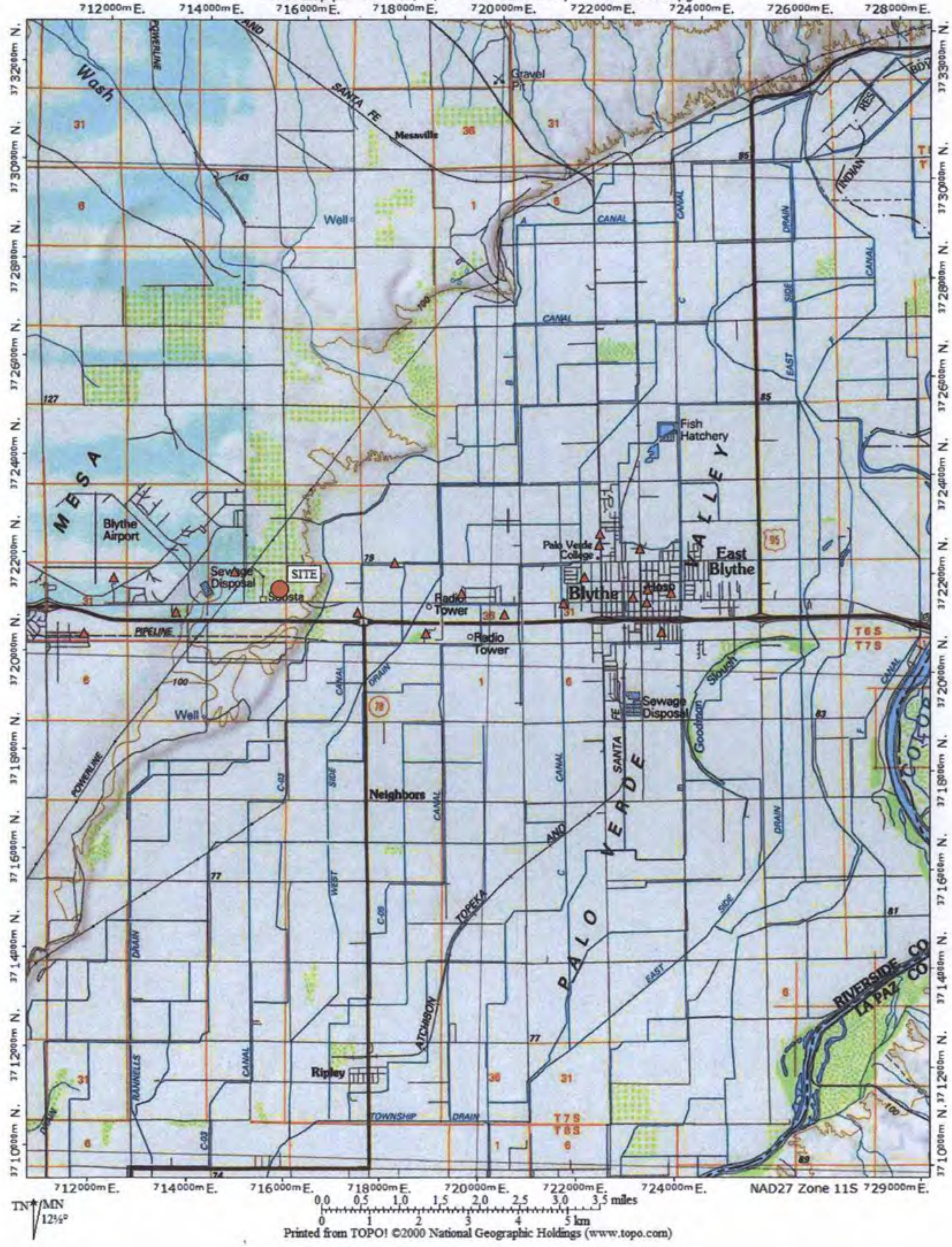
Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

Purpose:	The purpose of this reference table is to provide a quick list of all health values that have been approved by the Office of Environmental Health Hazard Assessment (OEHHA) and the Air Resources Board (ARB) for use in facility health risk assessments conducted for the AB 2588 Air Toxics Hot Spots Program. The OEHHA has developed and adopted new risk assessment guidelines that update and replace the California Air Pollution Control Officers Association's (CAPCOA) *Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines, October 1993.* The OEHHA has adopted four technical support documents for these guidelines, which can be found on their website (http://www.oehha.ca.gov/air/hot_spots/index.html). This table lists the OEHHA adopted inhalation and oral cancer slope factors, noncancer acute Reference Exposure Levels (RELs), and inhalation and oral noncancer chronic RELs. OEHHA is still in the process of adopting new health values. Therefore, new health values will periodically be added to, or deleted from, this table. Users of this table are advised to monitor the OEHHA website (www.oehha.ca.gov) for any updates to the health values. May 2008 update: The Air Resources Board adopted amendments to the AB 2588 Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines Regulation (Title 17, California Code of Regulations, Section 93300.5) on November 16, 2006. The amendments became effective on September 26, 2007, after approval from the Office of Administrative Law. Under the new amendments, the substances previously listed in Appendix A-I (*Substances For Which Emissions Must Be Quantified*) and Appendix F (*Criteria For Inputs For Risk Assessment Using Screening Air Dispersion Modeling*) of the ARB's *Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines (EICG) (July 1997)* have been removed from this table.
°	Substances written in *italics* do not have explicit OEHHA approved health values, but are included in this table to clarify applicability of OEHHA adopted heath effects values to individual or grouped substances listed in the *Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines*, Appendix A-I list of *"Substances For Which Emissions Must Be Quantified"*.
▼	Chemical Abstract Service Number (CAS): For chemical groupings and mixtures where a CAS number is not applicable, the 4-digit code used in the *Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines (EICG) Report* is listed. The 4-digit codes enclosed in brackets [ ] are codes that have been phased out, but may still appear on previously reported Hot Spots emissions. For information on the origin and use of the 4-digit code, see the EICG report.
◆	Date Value Reviewed [Added]: These columns list the date that the health value was last reviewed by OEHHA and the Scientific Review Panel, and/or approved for use in the AB 2588 Air Toxics Hot Spots Program. If the health value is unchanged since it was first approved for use in the Hot Spots Program, then the date that the value was first approved for use by CAPCOA is listed within the brackets [ ]. • April 1999 is listed for the cancer potency values and noncancer acute RELs, which have been adopted by the OEHHA as part of the AB 2588 Hot Spot Risk Assessment Guidelines. • February 2000, April 2000, January 2001, and December 2001 are listed for the first set of 22, the second set of 16, the third set of 22, and the fourth set of 12 noncancer chronic RELs, respectively. The chronic REL for carbon disulfide was adopted in May 2002. Chronic RELs for phosphine and triethylamine were adopted in September 2002. Chronic RELs for fluorides including hydrogen fluoride were adopted August 2003. Chronic REL for silica [crystalline respirable] was adopted February 2005. • October 2000 is listed for the oral chronic RELs and oral cancer slope factors. • Cancer potency value adopted for naphthalene in August 2004. The inhalation and oral cancer potency values for ethyl benzene were adopted in November 2007. • For the substances identified as Toxic Air Contaminants, the Air Resources Board hearing date is listed. The dates for acetaldehyde, benzo[a]pyrene, and methyl tertiary-butyl ether represent the dates the values were approved by the Scientific Review Panel. • On December 19, 2008, OEHHA adopted new acute, 8-hour, and chronic RELs for acetaldehyde, acrolein, arsenic, formaldehyde, manganese, and mercury. The most current health values can be found at: http://www.oehha.ca.gov/air/allrels.html. Note that the 8-hour RELs are not included in the HARP program. These health factors will be added after OEHHA approves the Guidelines Manual (Part V). Note: 1. OEHHA presents the new oral RELs in micrograms (µg/kg-d) and we converted them to milligrams (mg/kg-d) for consistency. 2. Acute RELs with longer averaging periods (i.e., 4-hour, 6-hour, and 7-hour) will now use the 1-hour averaging period. The affected chemicals are: arsenic & inorganic arsenic compounds, benzene, carbon disulfide, carbon tetrachloride, chloroform, ethylene glycol monoethyl ether, ethylene glycol monoethyl ether acetate, and ethylene glycol monomethyl ether. 3. At OEHHA's direction, the chronic oral REL for arsenic does not apply to arsine because arsine is a gas and not particle associated.
*	Inhalation cancer potency factor: The "unit risk factor" has been replaced in the new risk assessment algorithms by a factor called the "inhalation cancer potency factor". Inhalation cancer potency factors are expressed as units of inverse dose [i.e., $(mg/kg\text{-}day)^{-1}$]. They were derived from unit risk factors [units = $(ug/m^3)^{-1}$] by assuming that a receptor weighs 70 kilograms and breathes 20 cubic meters of air per day. The inhalation potency factor is used to calculate a potential inhalation cancer risk using the new risk assessment algorithms defined in the OEHHA, *Air Toxics Hot Spots Program; Part IV; Technical Support Document for Exposure Assessment and Stochastic Analysis (September 2000).*
♣	Molecular Weight Adjustment Factor: Molecular weight adjustment factors (MWAF) are only to be used when a toxic metal has a cancer potency factor. For most of the Hot Spots toxic metals, the OEHHA cancer potency factor applies to the weight of the toxic metal atom contained in the overall compound. Some of the Hot Spots compounds contain various elements along with the toxic metal atom (e.g., "Nickel hydroxide", CAS number 12054-48-7, has a formula of H_2NiO_2). Therefore, an adjustment to the reported pounds of the overall compound is needed before applying the OEHHA cancer potency factor for "Nickel and compounds" to such a compound. This ensures that the cancer potency factor is applied only to the fraction of the overall weight of the emissions that are associated with health effects of the metal. In other cases, the Hot Spots metals are already reported as the metal atom equivalent (e.g., CAS 7440-02-0, "Nickel"), and these cases do not use any further molecular weight adjustment. (Refer to Note [7] in Appendix A, List of Substances in the EICG Report for further information on how the emissions of various Hot Spots metal compounds are reported.) The appropriate molecular weight adjustment factors (MWAF) to be used along with the OEHHA cancer potency factors for Hot Spots metals can be found in the MWAF column of this table. So, for example, assume 100 pounds of "Nickel hydroxide" emissions are reported under CAS number 12054-48-7. To get the Nickel atom equivalent of these emissions, multiply by the listed MWAF (0.6332) for Nickel hydroxide: • 100 pounds x 0.6332 = 63.32 pounds of Nickel atom equivalent *This step should be completed prior to applying the OEHHA cancer potency factor for "Nickel and compounds" in a calculation for a prioritization score or risk assessment calculation.* (For more information see Chapter 8 of OEHHA's document, *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.*) Note: The value listed in the MWAF column for Asbestos is not a molecular weight adjustment. This is a conversion factor for adjusting mass to fibers or structures. See Appendix C of OEHHA's document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for more information on Asbestos, or see the EICG report for reporting guidance. Also see the Asbestos footnote (designated by the symbol ¤)

Table 1
CONSOLIDATED TABLE OF OEHHA/ARB APPROVED RISK ASSESSMENT HEALTH VALUES°

N/A	Not Applicable
TAC	Toxic Air Contaminant: The Air Resources Board has identified this substance as a Toxic Air Contaminant.
¤	Asbestos: The units for the Inhalation Cancer Potency factor for asbestos are (100 PCM fibers/m^3)$^{-1}$. A conversion factor of 100 fibers/0.003 µg can be multiplied by a receptor concentration of asbestos expressed in µg/m^3. Unless other information necessary to estimate the concentration (fibers/m^3) of asbestos at receptors of interest is available. A unit risk factor of 1.9 E 10^{-4} (µg/m^3)$^{-1}$ and an inhalation cancer potency factor of 2.2 E 10^{+2} (mg/kg BW * day)$^{-1}$ are available. For more information on asbestos quantity conversion factors, see Appendix C of OEHHA's *The Air Toxics Hot Spots Program Risk Assessment Guidelines; Part II; Technical Support Document for Describing Available Cancer Potency Factors*, and Appendix C of OEHHA's document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.*
Ø	Hexavalent Chromium: The oral cancer slope factor for chromium 6+ and compounds has been withdrawn by the Office of Environmental Health Hazard Assessment.
♫	Inorganic Lead: Inorganic Lead was identified by the Air Resources Board as a Toxic Air Contaminant in April 1997. Since information on noncancer health effects show no identified threshold, no Reference Exposure Level has been developed. The document, *Risk Management Guidelines for New, Modified, and Existing Sources of Lead, March 2001*, has been developed by ARB and OEHHA staff for assessing noncancer health impacts from sources of lead. See Appendix F of OEHHA's document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for an overview of how to evaluate noncancer impacts from exposure to lead using these risk management guidelines.
Φ	Polycyclic Aromatic Hydrocarbons (PAHs): These substances are PAH or PAH-derivatives that have OEHHA-developed Potency Equivalency Factors (PEFs) which were approved by the Scientific Review Panel in April 1994 (see ARB document entitled *Benzo[a]pyrene as a Toxic Air Contaminant*). PAH inhalation slope factors listed here have been adjusted by the PEFs. See Appendix G of OEHHA's document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for more information. See section 8.2.3 of OEHHA's *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for conducting health risks when total (unspeciated) PAHs are reported.
☼	Polychlorinated Biphenyls: (unspeciated mixtures) Lowest Risk: For use in cases where congeners with more than four chlorines comprise less than one-half percent of total polychlorinated biphenyls. High Risk: For use in cases where congeners with more than four chlorines do not comprise less than one-half percent of total polychlorinated biphenyls. Low Risk: This number would not ordinarily be used in the Hot Spots program. Chronic Oral: The chronic oral value is U.S. EPA's 1996 oral Reference Dose for Aroclor-1254.
ϖ	Polychlorinated Biphenyls (speciated): Values calculated using WHO_{97} TEF procedure. See OEHHA memo dated August 29, 2003.
•	Polychlorinated Dibenzo-*p*-dioxins and Polychlorinated Dibenzofurans (also referred to as chlorinated dioxins and dibenzofurans): The OEHHA has adopted the World Health Organization 1997 (WHO_{-97}) Toxicity Equivalency Factor scheme for evaluating the cancer risk due to exposure to samples containing mixtures of polychlorinated dibenzo-*p*-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) and determining cancer risks for a number of specific PCB congeners. See Appendix A of OEHHA's *Technical Support Document For Describing Available Cancer Potency Factors* for more information about the scheme. See Appendix E of OEHHA's *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for the methodology for calculating 2,3,7,8-equivalents for PCDD, PCDFs and a number of specific PCB congeners. See section 8.2.3 of OEHHA's *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for conducting health risks when total (unspeciated) chlorinated dioxins and furans are reported.
¶	Particulate Emissions from Diesel-Fueled Engines: The inhalation cancer potency factor and chronic REL were derived from whole diesel exhaust and should be used only for impacts from the inhalation pathway. The inhalation impacts from speciated emissions from diesel-fueled engines are already accounted for in the inhalation cancer potency factor and REL. However, at the discretion of the risk assessor, speciated emissions from diesel-fueled engines may be used to estimate acute noncancer health impacts or the contribution to cancer risk or chronic noncancer health impacts for the non-inhalation exposure pathway. See Appendix D of OEHHA's document *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* for more information.

Figure 5.2D-1
Sensitive Receptor Plot
(sensitive receptors are red triangles)



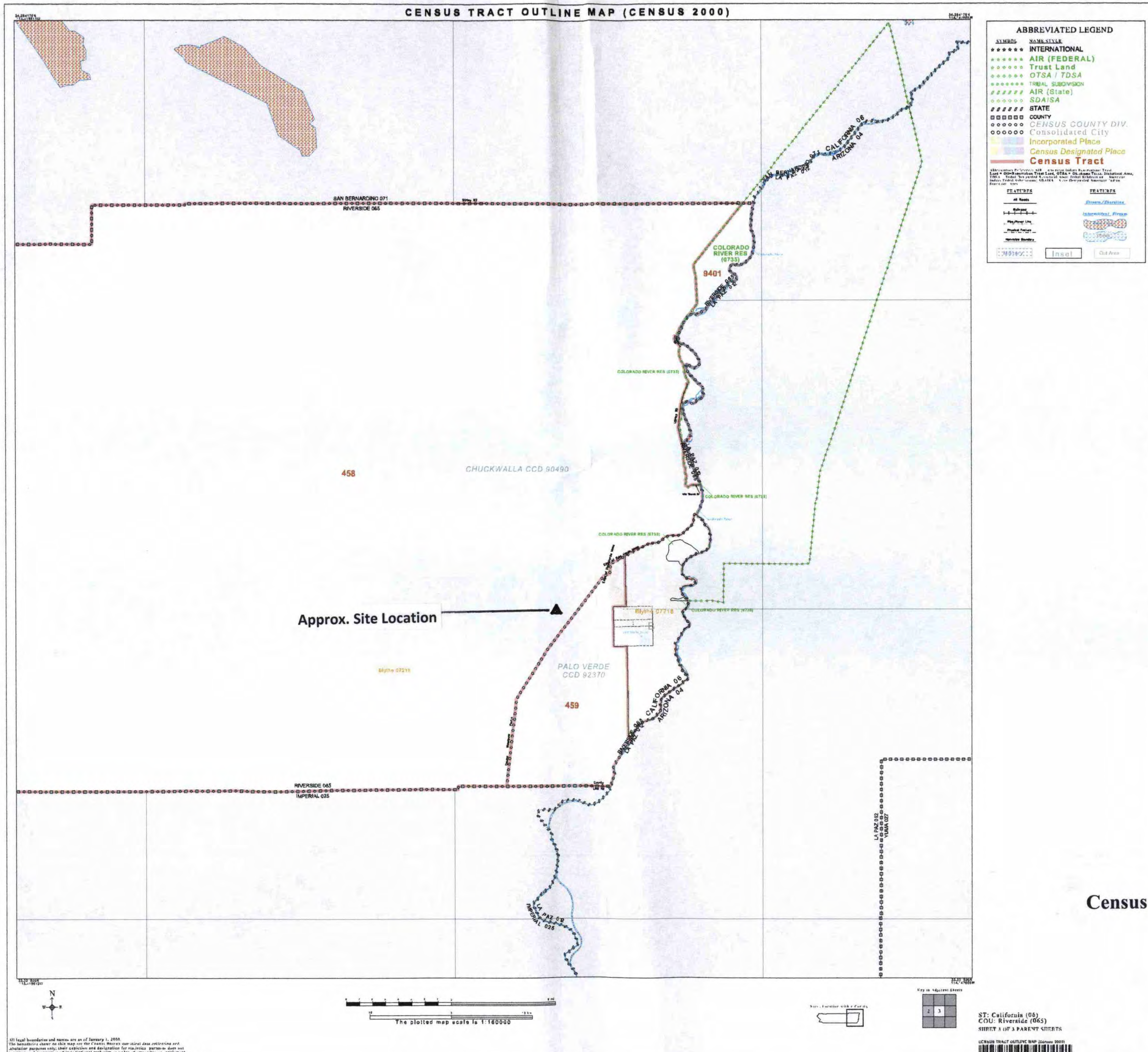
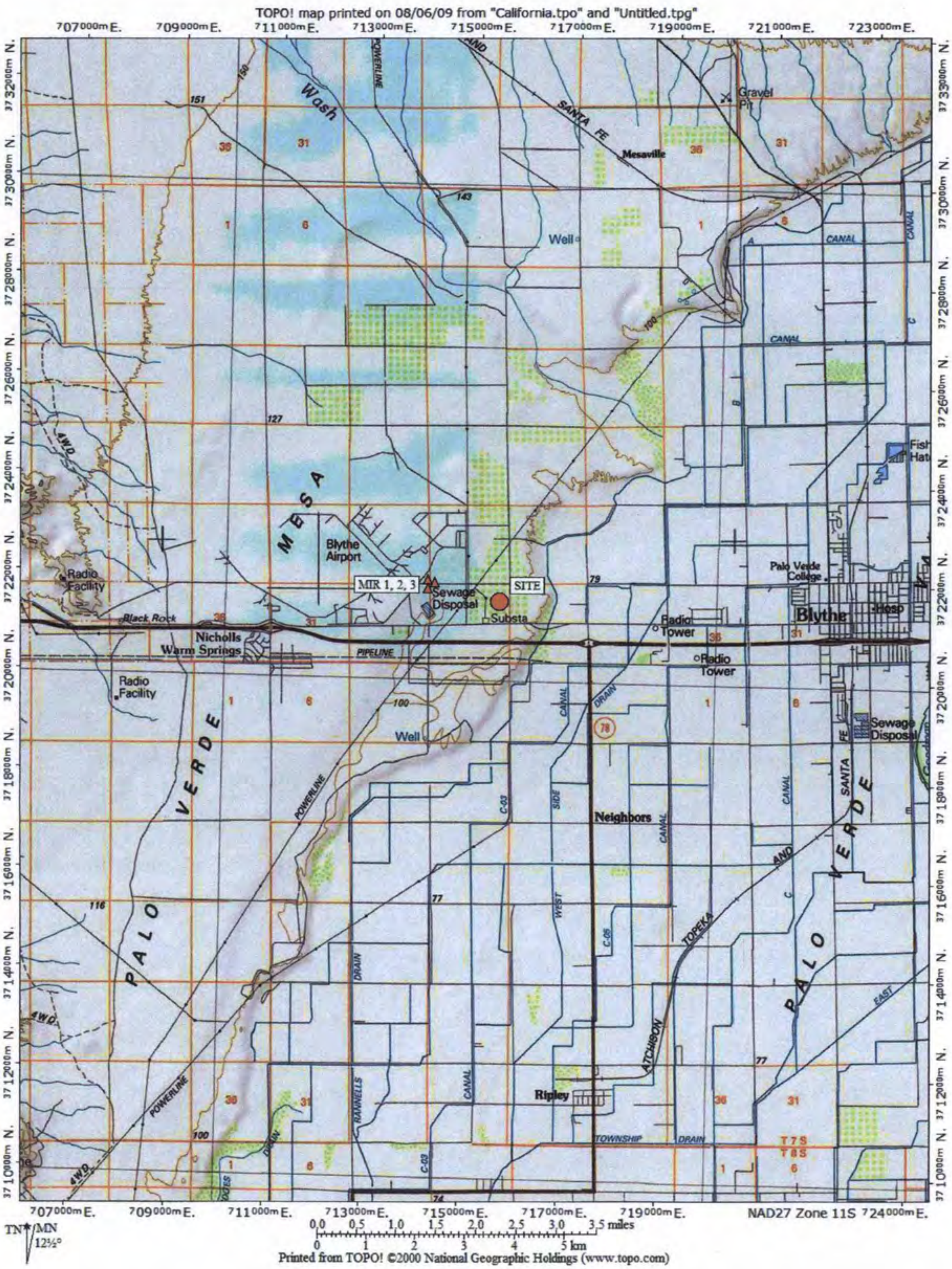


Figure 5.2D-2
Census Tracts in Project Region

Figure 5.2D-3
MIR Receptor Plot
(MIR receptors are red triangles)



APPENDIX 5.2E

Construction Emissions and Impact Analysis

APPENDIX 5.2-E

Construction Emissions and Impact Analysis

Construction Phases

Construction of BEP II is expected to last approximately 16 months. The construction will occur in the following four main phases:

- Site preparation;
- Foundation work;
- Construction/installation of major structures; and,
- Installation of major equipment.

The site is approximately 65 acres in size and is essentially flat. The site was initially graded and prepared as part of the original Blythe Energy Project. As such, the site will require only minimum grading and leveling prior to construction of the power block, cooling tower, and support structures. Site preparation includes finish grading, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction of the foundations and structures is expected to begin. Once the foundations and structures are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence.

Fugitive dust emissions from the construction of BEP II will result from:

- Dust entrained during site preparation and finish grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the Diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from Diesel-powered welding machines, electric generators, air compressors, and water pumps;
- Exhaust from pickup trucks and Diesel trucks used to transport workers and materials around the construction site;
- Exhaust from Diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and,
- Exhaust from automobiles used by workers to commute to the construction site.

To determine the potential worst-case daily construction impacts, exhaust and dust emission rates have been evaluated for each source of emissions. Worst-case daily dust emissions are expected to occur during the first 2-6 months of construction when site preparation occurs. The worst-case daily exhaust emissions are expected to occur during the middle of the construction schedule during the installation of the major mechanical equipment. Annual emissions are based on the average equipment mix during the 16 month construction period.

Available Mitigation Measures

The following mitigation measures are proposed to control fugitive dust and exhaust emissions from the Diesel heavy equipment used during construction of BEP II:

- The applicant will have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.

- All unpaved roads and disturbed areas in the project and laydown construction sites will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a schedule of approximately every 3 hours during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.

- Onsite vehicle speeds will be limited to 5 miles per hour on unpaved areas within the project construction site.

- The construction site entrance(s) will be posted with visible speed limit signs.

- All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.

- Gravel ramps will be provided at the tire cleaning area.

- All unpaved exits from the construction site will be graveled or treated to reduce track-out to public roadways.

- All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been provided.

- Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.

- All paved roads within the construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.

- The first 300 feet of any public roadway exiting the construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.

- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of two (2) feet will be required on all bulk materials transport.

- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed.

To mitigate exhaust emissions from construction equipment, the applicant is proposing the following:

- The applicant will work with the construction contractor to utilize to the extent feasible, EPA-ARB Tier 2/Tier 3 engine compliant equipment for equipment over 100 horsepower.

- Insure periodic maintenance and inspections per the manufacturers specifications.

- Reduce idling time through equipment and construction scheduling.

- Use California low sulfur diesel fuels (<=15 ppmw S).

Estimation of Emissions with Mitigation Measures

Tables 5.2E-1 through 5.2E-3 show the estimated daily and annual heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures. Detailed emission calculations are included in Table 5.2E-5.

Table 5.2E-1 Average Daily Onsite Emissions During Construction, pounds per day

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Construction Fugitive Dust	0	0	0	0	75.9/15.9
Equipment and Vehicle Exhaust	147.2	62.0	20.5	0.2	7.46/7.40
Total =	**147.2**	**62.0**	**20.5**	**0.2**	**85.0/23.9**

Table 5.2E-2 Average Annual Onsite Emissions During Construction, tons per year

	NO_x	CO	VOC	SO_x	PM10/PM2.5

Table 5.2E-2 Average Annual Onsite Emissions During Construction, tons per year

Construction Fugitive Dust	0	0	0	0	2.33/0.45
Equipment and Vehicle Exhaust	19.43	8.18	2.7	0.04	0.98/0.98
Total =	**19.43**	**8.18**	**2.7**	**0.04**	**3.51/1.5**

Table 5.2E-3 Annual Onsite Emissions During Construction, tons per construction period (16 months)

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Construction Fugitive Dust	0	0	0	0	3.1/0.6
Equipment and Vehicle Exhaust	25.9	10.9	3.6	0.05	1.31/1.30
Total =	**25.9**	**10.9**	**3.6**	**0.05**	**4.68/2.0**

Analysis of Ambient Impacts from Facility Construction

Ambient air quality impacts from emissions during the construction of BEP II were estimated using an air quality dispersion modeling analysis. The modeling analysis considers the construction site location, the surrounding topography, and the sources of emissions during construction, including vehicle and equipment exhaust emissions and fugitive dust.

Existing Ambient Levels

As with the modeling analysis of project operating impacts (Section 5.2), monitoring stations delineated in Section 5.2 were used to establish the ambient background levels for the construction impact modeling analysis. Table 5.2-17 showed the maximum concentrations of NO_x, SO_2, CO, PM2.5, and PM10 recorded for 2006 through 2008 at those monitoring stations.

Dispersion Model

As in the analysis of project operating impacts, the USEPA-approved model AERMOD (version 07026) was used to estimate ambient impacts from construction activities. A detailed discussion of the AERMOD dispersion model and the associated processing programs AERSURFACE, AERMET, and AERMAP is included in Section 5.2.6.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Combustion equipment exhaust emissions were modeled as 3.048 meter high point sources (exhaust parameters of 750 Kelvins, 64.681 m/s exit velocity, and 0.1524 meter stack diameter) placed at regular intervals around the construction area. Construction fugitive dust emissions were modeled as an area source covering the construction area with an effective plume height of 0.5 meters. Combustion and fugitive emissions were assumed to occur for 10 hours/day (8 AM to 6 PM) consistent with the expected period of onsite construction activities generating both exhaust emissions and fugitive dust. The construction impacts modeling analysis generally used the same modeling options, receptor locations, and meteorological data as used for the project operating impact analysis. To reduce run times for the area sources modeled for fugitive dust and the large number of point sources modeled for mobile combustion source equipment, the TOXICS keyword was used for modeling construction impacts. Also, since maximum impacts due to construction activities are expected to occur at or near the property boundary, only the downwash and fenceline receptor grids were used for modeling construction impacts. A detailed discussion of the receptor locations and meteorological data is included in Section 5.2.6. To determine the construction impacts on short-term ambient standards (24 hours and less), the average daily onsite construction emission levels shown in Table 5.2E-1 were used. For pollutants with annual average ambient standards, the annual onsite emission levels shown in Table 5.2E-2 were used.

Modeling Results

Based on the emission rates of NO_x, SO_2, CO, PM2.5, and PM10, the modeling options, receptor grids, and meteorological data, AERMOD calculates short-term and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, PM2.5, and PM10 spread over the estimated daily hours of operation. The annual impacts are based on the annual emission rates of these pollutants.

The annual average concentrations of NO_2 were computed following the revised USEPA guidance for computing these concentrations (August 9, 1995 Federal Register, 60 FR 40465). The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NO_x ratio.

The modeling analysis results are shown in Table 5.2E-4. Also included in the table are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Table 5.2E-4, modeled construction impacts for all pollutants and averaging times are expected to be below the most stringent state and Federal standards except for the 24-hour state PM10 standard. The maximum combined (modeled + background) impacts are greater than the state PM10 and Federal 24-hour PM2.5 standards because maximum background concentrations even in the absence of the modeled impacts due to construction emissions for BEP II already are close to or exceed these standards. Maximum combined (modeled + background) impacts for all other pollutants and averaging times are less than the applicable standards.

TABLE 5.2E-4 MODELED MAXIMUM CONSTRUCTION IMPACTS

Pollutant	Averaging Time	Maximum Construction Impacts (μg/m³)	Background (μg/m³)	Total Impact (μg/m³)	State Standards (μg/m³)	Federal Standards (μg/m³)
NO_2[a]	1-hour Annual	62.8 1.65	149 38.0	212 39.7	339 57	- 100
SO_2	1-hour 3-hour	0.064 0.051	47.2 31.2	47.3 31.3	655 -	- 1300

	24-hour Annual	0.013 0.005	13.1 2.7	13.1 2.7	105 -	365 80
CO	1-hour 8-hour	26.4 10.1	2530 1789	2556 1799	23,000 10,000	40,000 10,000
PM10	24-hour Annual[b]	60.8 1.95	88 31.0	149 33.0	50 20	150 -
PM2.5	24-hour Annual[b]	12.8 0.45	28 10.4	40.8 10.9	- 12	35 15.0

Notes:
[a]ARM applied for annual average, using national default 0.75 ratio.
[b]Annual Arithmetic Mean.

Again, standards are only exceeded for pollutants and averaging times where background concentrations already are nearly equal to or exceed the standards. BEP II construction impacts are not unusual in comparison to most construction sites; construction sites that use good dust suppression techniques and low-emitting vehicles typically would not be expected to cause exceedances of air quality standards. The input and output modeling files are being provided electronically to the appropriate agencies.

Attachment - Detailed Emission Calculations

Table 5.2E-5 Construction Emissions Calculations (13 pages)

Attachment 5.2E-1 BEP II Construction Support Data

Attachment 5.2E-1

BEP II Construction Support Data

Table 5.2E-5 Construction Emission Totals

Construction Activity	lbs/day						tons per const period						tons per year					
	NOx	CO	VOC	SOx	PM10	PM2.5	NOx	CO	VOC	SOx	PM10	PM2.5	NOx	CO	VOC	SOx	PM10	PM2.5
Main Site																		
Construction Equipment-Exhaust	147.2	62.0	20.5	0.2	7.46	7.40	25.9	10.9	3.60	0.05	1.31	1.30	19.43	8.18	2.70	0.04	0.98	0.98
Construction Site-Fugitive Dust	0.000	0.000	0.000	0.000	40.10	8.40	0.000	0.000	0.000	0.000	1.90	0.40	0.00	0.00	0.00	0.00	1.43	0.30
Construction Dust-Other	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Delivery-Vehicle Exhaust	2.90	0.80	0.20	0.003	0.13	0.13	0.51	0.14	0.04	0.001	0.020	0.020	0.38	0.11	0.03	0.00	0.02	0.02
Site Support-Vehicle Exhaust	0.110	1.240	0.110	0.001	0.011	0.010	0.020	0.220	0.020	0.000	0.002	0.002	0.02	0.17	0.02	0.00	0.00	0.00
Worker Travel-Vehicle Exhaust	2.58	25.7	2.10	0.023	0.21	0.21	0.45	4.50	0.40	0.004	0.037	0.037	0.34	3.38	0.30	0.00	0.03	0.03
Track Out-Fugitive Dust	0.000	0.000	0.000	0.000	0.93	0.160	0.000	0.000	0.000	0.000	0.15	0.03	0.00	0.00	0.00	0.00	0.11	0.02
Unpaved Roads-Fugitive Dust	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00
Paved Roads-Fugitive Dust	0.000	0.000	0.000	0.000	0.400	0.040	0.000	0.000	0.000	0.000	0.060	0.010	0.00	0.00	0.00	0.00	0.05	0.01
Offsite Linear Emissions are included in the above sector calculations, i.e., acreages, equipment types and use rates, schedules, etc.																		
TOTALS	**152.8**	**89.7**	**22.9**	**0.2**	**49.2**	**16.4**	**26.9**	**15.8**	**4.06**	**0.06**	**3.48**	**1.80**	**20.2**	**11.8**	**3.05**	**0.04**	**2.61**	**1.35**
Onsite Emissions for Modeling	*147.2*	*62*	*20.5*	*0.2*	*47.6*	*15.8*	*25.9*	*10.9*	*3.6*	*0.05*	*3.2*	*1.7*	*19.43*	*8.18*	*2.7*	*0.04*	*2.41*	*1.3*

Total Const Months: 16
Total Const Years: 1.33

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe II Energy Project

Assumptions:

1. The average diesel engine employed in construction equipment use consumes fuel at a rate of: 0.06 gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.

The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction emissions calculations.

2. Construction equipment exhaust emissions will be calculated on an annual basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Annual emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	220	hrs/month
	6	days/week		3520	hrs/const period
	22	days/month		352	days/const period
	16	months			

5. Anticipated Construction Start Year: 2010

Project supplied equipment list and use rates were consolidated into the following categories:
See Table *** for estimated HP values, use rates, etc.

Equipment Category	**Avg HP**	**# of Units Used for Project**	**Avg Use Rate Hrs/day**	**# of Days On Site (each)**	**Total Hrs/Day**	**Total Hp-Hrs per Day**	**Total Hrs per Const Period**	**Total Hp-Hrs per Const Period**
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	2069040
Crawler Tractors/Dozers	0	0	0	0	0	0	0	243572
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	229812
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	389400
Generators/Compressors	0	0	0	0	0	0	0	154000
Graders	0	0	0	0	0	0	0	130240
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0	0	0	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	918720
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	121792
Rough Terrain Forklifts	0	0	0	0	0	0	0	184800
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	2675200
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	217800
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0	0	0	0

*includes equipment and use rates for proposed offsite linears.

Estimated Const Period Hp-Hrs 7334376

Estimated Const Period Fuel Use 440063 gals

2010 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10
Bore/Drill Rigs/Pile Drivers	0	0.001400	0.000400	0.004700	0.000008	0.000200
Cement Mixers	0	0.003800	0.001400	0.006500	0.000009	0.000400
Industrial/Concrete Saws	0	0.006400	0.002500	0.006100	0.000008	0.000600
Cranes	0	0.001400	0.000500	0.004900	0.000005	0.000200
Crawler Tractors/Dozers	0	0.004300	0.001100	0.008500	0.000008	0.000500
Crushing/Processing Eq.	0	0.002500	0.000900	0.010200	0.000011	0.000300
Dump and Tender Trucks	0	0.001300	0.000400	0.002600	0.000004	0.000100
Excavators	0	0.003800	0.000800	0.006400	0.000007	0.000400
Forklifts/Aerial Lifts/Booms	0	0.002100	0.000600	0.003800	0.000004	0.000300
Generators/Compressors	0	0.005800	0.002200	0.006100	0.000008	0.000600
Graders	0	0.002000	0.000700	0.007200	0.000008	0.000300
Off Highway Tractors	0	0.004900	0.001300	0.010100	0.000008	0.000600
Off Highway Trucks	0	0.001500	0.000500	0.004600	0.000005	0.000200
Other Const. Eq.-Diesel	0	0.005900	0.002100	0.005600	0.000007	0.000500
Pavers	0	0.004400	0.001400	0.008100	0.000007	0.000700
Paving Eq./Surfacing Eq.	0	0.006600	0.002800	0.005300	0.000006	0.000600
Plate Compactors	0	0.001800	0.000300	0.002100	0.000004	0.000100
Rollers/Compactors	0	0.003500	0.001000	0.006200	0.000006	0.000500
Rough Terrain Forklifts	0	0.004200	0.000900	0.007400	0.000008	0.000400
Rubber Tired Dozers	0	0.003500	0.000700	0.006400	0.000005	0.000300
Rubber Tired Loaders	0	0.003600	0.000800	0.006600	0.000007	0.000400
Scrapers	0	0.002900	0.001000	0.009900	0.000009	0.000400
Signal Boards/Light Sets	0	0.002500	0.000500	0.003000	0.000006	0.000100
Skid Steer Loaders	0	0.005000	0.001600	0.004900	0.000007	0.000400
Tractors/Loaders/Backhoes	0	0.003000	0.000800	0.004700	0.000005	0.000400
Trenchers	0	0.004000	0.001300	0.007600	0.000006	0.000600
Welders	0	0.002300	0.000700	0.004100	0.000004	0.000400
Other Const. Eq.-Gasoline	0.0	0.003300	0.000900	0.006500	0.000006	0.000400

SCAQMD off-road emissions factor database, website, 12/2006. Load factor adjustments incorporated.
EFs are for equipment inventory year 2010.

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0
Cement Mixers	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0
Cranes	2897	1035	10138	10	414
Crawler Tractors/Dozers	1047	268	2070	2	122
Crushing/Processing Eq.	0	0	0	0	0
Dump and Tender Trucks	0	0	0	0	0
Excavators	873	184	1471	2	92
Forklifts/Aerial Lifts/Booms	818	234	1480	2	117
Generators/Compressors	893	339	939	1	92
Graders	260	91	938	1	39
Off Highway Tractors	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0
Other Const. Eq.-Diesel	5420	1929	5145	6	459
Pavers	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0
Plate Compactors	0	0	0	0	0
Rollers/Compactors	426	122	755	1	61
Rough Terrain Forklifts	776	166	1368	1	74
Rubber Tired Dozers	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0
Scrapers	7758	2675	26484	25	1070
Signal Boards/Light Sets	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0
Tractors/Loaders/Backhoes	653	174	1024	1	87
Trenchers	0	0	0	0	0
Welders	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	
lbs per const. period	21823	7217	51812	52	2627	2603.54	
tons per const. period	10.9	3.6	25.9	0.0	1.31	1.30	
Average lbs/day =	62.0	20.5	147.2	0.15	7.46	7.40	
Estimated Maximum lbs/day =	*108.8*	*36.0*	*258.3*	*0.3*	*13.1*	*13.0*	*note 3*
Average lbs/month =	1363.9	451.0	3238.2	3.3	164.20	162.72	
Average tons/year =	8.18	2.71	19.43	0.02	0.99	0.98	

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
CO_2 EF: CCAR General Protocol, June 2006, for CA-Low Sulfur Diesel combustion.

	CO2
lbs per const period	9663774
tons per const period	4832

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) I used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day. The methodology used in this analysis assumes that the estimated maximum day represents the ratio of the number of pieces of equipment on site on any day during the maximum month as compared to the number of pieces of equipment on site on any day during an average month.

CONSTRUCTION PHASE-Main Project Site Fugitive Dust Emissions

MRI Level 2 Analysis

Acres Subject to Construction Disturbance Activites:	76		
Max Acres Subject to Construction Disturbance Activites on any day:	15	***	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:	0.0144		
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):	0.21		
Activity Levels: Hrs/Day:	10		
Days/Wk:	6		
Days/Month:	22		
Const Period, Months:	16		1.3 years
Const Period, Days:	352		
Wet Season Adjustment (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)			
Mean # days/year with rain >= 0.01 inch:	30		
Mean # months/yr with rain >= 0.01 inch:	1		
Adjusted Const Period, Months:	14.67		
Adjusted Const Period, Days:	312		
Controls for Fugitive Dust:			
Proposed watering schedule is eve	3.2	Hours	

SCAQMD Mitigation Measures, Table XI-A, 4/07

3.2 hour watering interval yields 61% control of PM10/PM2.5

Speed control of onsite const traffic to <=15 mph = 44% control

Calculated % control based on mitigations propose	78	% control
Conservative control % used for emissions estimate	78	% control
	0.22	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.048	0.010
tons/period	0.697	0.146
Max lbs/day	4.3	0.907

Cut and Fill Data:

Total cu/yds:		91000	***
10^3 cu/yds:		91	
MRI PM10 emissions factor, tons/1000 cu.yds:		0.059	
PM10 uncontrolled emissions, tons/period:		5.37	
Cut and Fill Activity Period, months:		3.0	
Cut and Fill Activity Period, days:		66.0	
PM10 Controlled Emissions:	tons/period	1.18	
PM2.5 Controlled Emisisons:	tons/period	0.25	
PM10 Controlled Emissions:	tons/month	0.39	
PM2.5 Controlled Emisisons:	tons/month	0.08	
PM10 Controlled Emissions:	max lbs/day	35.8	
PM2.5 Controlled Emisisons:	max lbs/day	7.5	

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**1.9**	**0.4**
tons/month	**0.4**	**0.1**
max lbs/day	**40.1**	**8.4**

Ref: MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.

MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.

For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.

*** includes surface area and trench cut and fill for proposed offsite linears.

PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic)

Length of Paved Road used for/by Construction Access		0.3	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		5	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.24	g/m2 (range 0.03 - 400 g/m2)
Particle size multiplier factors:	PM10	0.023	lb/VMT
	PM2.5	0.0034	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		25	mph (range 10-55 mph)
Number of vehicles per day:		227	VMT/day: 68.1
			VMT/montl 1498.2
Number of construction work days per month:		22	VMT/perioc 21978.59
	Total vehicles per n	4994	
Number of construction work months:		14.67	after wet season adjustment*
	Total vehicles per const per:	73261.98	

	PM10	PM2.5	
Calc 1	0.183	0.183	
Calc 2	1.505	1.505	
Calc 3	0.006	0.0006	lb/VMT

Emissions	PM10	PM2.5
lbs/day	0.40	0.04
lbs/month	8.80	0.87
lbs/period	129.16	12.71
tons/period	0.06	0.01

* see main const dust site page for this value
EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.

*** Note: fugitive roadway emissions from construction traffic are based on the use of a 0.2 mile section of the proposed site and emergency access road (paved) which connects to Hobson Way (paved). Allocation of emissions from the project traffic will be based on a 0.3 mile roundtrip adjacent to the project site, with trackout emissions allocated to the remaining 0.11 miles.

CONSTRUCTION PHASE - Truck Delivery and Site Support Vehicle Emissions

Ref: MDAB, Emfac 2007, V2.3, Nov 2006
On-Road Heavy Duty Diesels (1966-2010)

Avg # deliveries/day:	12.0	
Avg Haul Distance (miles)	7	see note below
VMT/Day:	84.0	
Work days/yr:	264	
Total Const Work Days:	352	
Total # of Deliveries:	4224	

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Emissions Factors (lbs/vmt)	0.03422	0.009532	0.002411	0.00004	0.001556	4.04823	
Daily Emissions (lbs)	**2.874**	**0.801**	**0.203**	**0.003**	**0.131**	**340.051**	**0.130**
Tons per Const Period	0.506	0.141	0.036	0.001	0.023	59.849	0.023

Site Support Vehicle Emissions

Total # of vehicles:	10
# of Pickups (gas):	7
# of Pickups (diesel):	3
Avg. pickup daily vmt:	20
Total Gas VMT:	140
Total Diesel VMT:	60

NOx	CO	VOC	SOx	PM10	CO2			PM2.5
0.000791	0.008821	0.000769	0.000009	0.000075	0.825741	lbs/vmt*	gasoline	
0.000006	0.000003	0.000001	0.000001	0.000001	0.001446	lbs/vmt*	diesel	
0.1107	**1.2349**	**0.1077**	**0.0013**	**0.0105**	**115.6037**	**lbs/day**	**gasoline**	**0.010479**
0.0004	**0.0002**	**0.0001**	**0.0001**	**0.0001**	**0.0868**	**lbs/day**	**diesel**	**0.0001**
0.0195	0.2173	0.0189	0.0002	0.0018	20.3463	**tons/period**	**gasoline**	0.0018
0.0001	0.0000	0.0000	0.0000	0.0000	0.0153	**tons/period**	**diesel**	0.0000

Ref: MDAB, Emfac 2007, V2.3, Nov 2006
LDPs (gas and diesel), 1966-2010

Avg haul distance: one way distance from eastern edge of the Blythe urban area.
These trucks will not be dedicated to the site, so backhaul distances are not included.

CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.

It should be noted that these emissions are not necessarily new emissions to the regional air shed. A significant portion of the truck services will be derived from the existing regional truck services vehicle pool, and as such these truck emissions would most likely be involved in deliveries in the area regardless of whether or not the proposed facility is constructed. As such, a major portion of the above estimated emissions would not be considered as additions to the air shed.

CONSTRUCTION PHASE - Worker Travel - Emissions

Ref: MDAB, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1966-2010)
LDP/LDT Weighted Avg Efs

Max # of Workers/Day:	387	
Avg # of Workers/Day:	232	
Avg Occupancy/Vehicle:	1.2	
Round Trips/Day:	193	
Avg Roundtrip Distance:	12	miles
VMT/Day:	2320	
VMT/Const Period:	816640	
Total Const Days:	352	

Emissions Factors (lbs/VMT)						
NOx	CO	VOC	SOx	PM10	CO2	
0.00111	0.01108	0.00092	0.00001	0.00009	0.91102	
Avg. Daily Emissions (lbs)						
NOx	**CO**	**VOC**	**SOx**	**PM10**		**PM2.5**
2.575	**25.706**	**2.134**	**0.023**	**0.209**	**2113.566**	**0.208**
Tons per Const Period						
0.4532	**4.5242**	**0.3757**	**0.0041**	**0.0367**	**371.9877**	**0.0367**

It should be noted that these emissions are not necessarily new emissions to the regional air shed. A significant portion of the workers will be derived from the existing work force pool in the urban regional area, and as such these workers would most likely be involved in projects in the area regardless of whether or not the proposed facility is constructed. As such, a major portion of the above estimated emissions would not be considered as additions to the air shed.

CONSTRUCTION PHASE - Trackout Emissions

Paved Road Length (miles):	0.11	estimated roundtrip trackout distance				
Daily # of Vehicles:	227					
Avg Vehicle Weight (tons):	5.0			PM10	PM2.5*	
Total Unadjusted VMT/day	25.0			0.207		
Particle Size Multipliers	PM10			1.505		
lb/VMT	0.023			0.001	0.0001	lb/VMT
C factor, lb/VMT	0.00047			**0.931**	0.1573	**lbs/day**
Road Sfc Silt Loading (g/m^2):	0.28			**0.010**	0.0017	**tons/month**
# of Active Trackout Points:	1			**0.15**	0.0254	**tons/period**
Added Trackout Miles:	PM10					
Trackout VMT/day:	1362		*Default Silt Load Values for Paved Road Types*			
Final Adjusted VMT/day	1387			Freeway	0.02 g/m2	
Final Adjusted VMT/month	30513			Arterial	0.036 g/m2	
Final Adjusted VMT/period	447631			Collector	0.036 g/m2	
Construction days/month:	22.0			Local	0.28 g/m2	
Construction months/period:	14.7			Rural	1.6 g/m2	
Control Applied to Trackout:	Sweeping and Cleaning (Water washing)					
Control Efficiency, %	90	0.9	Release Factor =		0.1	

* PM2.5 fraction of PM10 assumed to be 0.169 (CARB CEIDARS updated fraction values) for paved roads.

EPA, AP-42, Section 13.2.1, Proposed revisions dated 9/2008.
Use silt loading factor from default values for road type if no site specific data is available.
Trackout effects approximately 300 ft of roadway arriving and departing from the site access point.

CO2e Emissions Estimates

Total CO2 emisisons from diesel combustion:	4891.9	tons/period
Total CO2 emissions from gasoline combustion:	338.3	tons/period
Approximate methane fraction of CO2 for diesel combustion:	0.000051	
Approximate N2O fraction of CO2 for diesel combustion:	0.000032	
Approximate methane fraction of CO2 for gasoline combustion:	0.000213	
Approximate N2O fraction of CO2 for gasoline combustion:	0.000113	
Estimated methane from diesel combustion:	0.249487	tons/period
Estimated N2O from diesel combustion:	0.156541	tons/period
Estimated methane from gasoline combustion:	0.072058	tons/period
Estimated N2O from diesel combustion:	0.038228	tons/period
Estimated methane CO2e from diesel combustion:	5.239225	tons/period
Estimated N2O CO2e from diesel combustion:	48.52765	tons/period
Estimated methane CO2e from gasoline combustion:	1.513216	tons/period
Estimated N2O CO2e from gasoline combustion:	11.85065	tons/period
Total CO2e emissions from construction	**5297**	**tons/period**
	4768	***metric tons/period***

CCAR General Protocol, June 2006, Version 2.1.
IPCC SAR values for methane and N2O.

Average Vehicle Weight Estimate for Construction Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles
Passenger Cars	2	193	0.850
LD Pickups	3	10	0.044
MD Pickups	4	0	0.000
HD Loaded*	40	12	0.053
HD Unloaded*	20	12	0.053
Buses	0	0	0.000
		227	1.000

Weighted Avg Vehicle Weight, tons : 5.0

* Ref: Liberty Energy XXIII DEIR, City of Banning, CA., Aspen Environmental Group, June 2

Attachment 5.2E-1

BEP II Construction Support Data

Equipment Use Rates

	Vehicle/Equipment	Engine Type	Power Rating (hp)	Hours Per Day	Truck Months (1) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Total	Total Onsite Hrs	Total HP-Hrs	EQ. Category
Site	Cat 637 scrapers	diesel	950	8	4	4	4								1	1	1	1			16.00	2816	2675200	22
	Cat D8 bulldozer	diesel	338	8	1	1	1								1						4.00	704	237952	5
	Cat 14 Graders	diesel	185	4	2	2	2								1	1					8.00	704	130240	11
	4 ton forklifts	diesel	50	6	2	2	2	3	3	3	3	3	2	2	1	1	1	1	1	1	31.00	4092	204600	9
	Hydraulic Excavator 1/2 ton	diesel	20	6	2	2	2														6.00	792	15840	8
	55 ton Hyd. Roughterr	diesel	350	8	1	1	1														3.00	528	184800	19
	30 ton crane	diesel	185	6								2	1	1	1	1					6.00	792	146520	4
	155 ton crawler crane	diesel	250	6	1	1	1	1	1	1	1	1	2		1						11.00	1452	363000	4
	230 ton crane	diesel	350	6				1	1	1	1	1									5.00	660	231000	4
	500 ton crane	diesel	570	6						1	1			1	1						4.00	528	300960	4
	90 ton crane	diesel	220	6				1	1	1	1	1									5.00	660	145200	4
	65 ton crane	diesel	200	6				1	1	1	1	1	2	1	1	1	1	1	1	1	14.00	1848	369600	4
	60 ton crane	diesel	195	6				1	1	1	1	1	1	1	1						8.00	1056	205920	4
	450 ton truck crane	diesel	530	6				1	1	1	1										4.00	528	279840	4
	Genie lifts	diesel	20	6				2	2	1	1	8	8	8	8	8	8	8	4	4	70.00	9240	184800	9
	2 ton roller	diesel	20	4				1	1	1	1	1	1	1	1						8.00	704	14080	18
	10 ton roller	diesel	153	4				1	1	1	1	1	1	1	1						8.00	704	107712	18
	John Deer 644 loader	diesel	150	6				1	1	1	1	2	1	1	1	1	1				11.00	1452	217800	25
	Cat D4 bulldozer	diesel	80	4				1	1	1	1	1	1	1	1						8.00	704	56320	5
	15,000 lb excavator	diesel	55	6				1	1	1	1	1									5.00	660	36300	8
	30,000 lb excavator	diesel	110	6				1	1	1	1	1									5.00	660	72600	8
	Water trucks	diesel	180	8	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	29.00	5104	918720	14
	Light plants	diesel	50	4		4	4	4	4	3	3	7	2	2	2						35.00	3080	154000	10
	45,000 lb excavator	diesel	138	4									2	2							4.00	352	48576	8
	100,000 lb excavator	diesel	321	4									1	1							2.00	176	56496	8
1 truck month = one truck/vehicle on site for one month.					15	19	19	23	23	22	22	34	27	25	25	16	14	12	7	7				
1 month = 22 work days				avg	19																			
				ratio	1.75484																			

ID #	EQ. Category	ID #	EQ. Category
1	Bore/Drill Rigs/Pile Drivers	16	Paving Eq./Surfacing Eq.
2	Cement Mixers	17	Plate Compactors
3	Industrial/Concrete Saws	18	Rollers/Compactors
4	Cranes	19	Rough Terrain Forklifts
5	Crawler Tractors/Dozers	20	Rubber Tired Dozers
6	Crushing/Processing Eq.	21	Rubber Tired Loaders
7	Dump and Tender Trucks	22	Scrapers
8	Excavators	23	Signal Boards/Light Sets
9	Forklifts/Aerial Lifts/Booms	24	Skid Steer Loaders
10	Generators/Compressors	25	Tractors/Loaders/Backhoes
11	Graders	26	Trenchers
12	Off Highway Tractors	27	Welders
13	Off Highway Trucks	28	Site Support-Gasoline
14	Other Const. Eq.-Diesel	29	Site Support-Diesel
15	Pavers	30	Other Const. Eq.-Gasoline

APPENDIX 5.2F

Evaluation of Best Available Control Technology

APPENDIX 5.2F

Evaluation of Best Available Control Technology

Turbine/HRSGs

To evaluate BACT for the proposed turbine, the guidelines for large combined or cogeneration cycle gas turbines (> 50 MW) as delineated in the District, state, and federal BACT listings were reviewed. The relevant BACT determinations for this analysis are shown in Tables 5.2F-1 and 5.2F-2.

TABLE 5.2F-1 BACT DATA FOR COGENERATION/COMBINED CYCLE GAS TURBINES (CARB)

Pollutant	BACT	Typical Technology
Nitrogen oxides (NO_x)	5 ppm dry @ 15% O_2, 1 or 3 hr avg	1. SCR + DLN, low NOx burners (HRSG) or, 2. SCR + water or steam injection, low NOx burners (HRSG)
Sulfur dioxide (SO_2)	Natural gas fuel	PUC regulated gas (SoCal Gas System)
Carbon monoxide (CO)	6 ppm dry @ 15% O_2, 1 or 3 hr avg	Catalytic oxidation
VOC	2 ppm dry @ 15% O_2	Catalytic oxidation
TSP/$PM_{10/2.5}$	Natural gas fuel	PUC regulated gas

Ref: CARB Power Plant Guidance for BACT, July 1999.

TABLE 5.2F-2 BACT DATA RANGE FOR COGENERATION/COMBINED CYCLE GAS TURBINES

Pollutant	BACT	Typical Technology
Nitrogen oxides (NO_x)	2.0 ppm dry @ 15% O_2, 1 or 3 hr avg	1. SCR + DLN, low NOx burners (HRSG) or, 2. SCR + water or steam injection low NOx burners (HRSG)
Sulfur dioxide (SO_2)	Natural gas fuel	PUC regulated gas
		<=0.25 gr S/100 scf long term
		<=0.75 gr S/100scf short term
Carbon monoxide (CO)	3.0-6.0 ppm dry @ 15% O_2, 1 or 3 hr avg	Catalytic oxidation
VOC	1.0 ppm dry @ 15% O_2 No Duct Firing	Catalytic oxidation
	2.0 ppm dry @ 15% O_2 With Duct Firing	Catalytic oxidation
$PM_{10/2.5}$	Natural gas fuel	PUC regulated gas

Ref: Recent BACT decisions by SCAQMD and other California air districts.

BACT as proposed for the turbines/HRSGs is presented in Section 5.2, Table 5.2-4. The BACT values proposed are consistent with the values noted in Tables 5.2F-1 and 5.2F-2 above, and these values meet the BACT requirements of the MDAQMD.

Cooling Tower BACT

The new cooling tower cells will be equipped with high efficiency drift eliminators achieving BACT in the range of 0.0005-0.0006% drift. This proposed BACT level has not changed from the original Blythe II project determination.

Auxiliary Boiler

The proposed aux boiler is rated at 60 mmbtu/hr (HHV), and will be used for a maximum of 24 hours per day, and 1500 hours per year. The aux boiler will be fired exclusively on natural gas. The boiler will be equipped with low NOx burners, and will employ good combustion practices. Exhaust concentrations of NOx and CO will be limited to 9 and 50 ppmvd at 3% O2 respectively. VOC emissions will be controlled to a level of 5 ppmvd, SOx emissions will be limited to 0.00233 lbs/mmbtu, while PM10 emissions are estimated to be 0.0045 lbs/mmbtu (HHV). These emissions levels meet the MDAQMD BACT limits for limited use small boilers firing clean fuels such as natural gas.

Fire Pump Engine

The fire pump engine will be fired exclusively on California certified ultra low sulfur diesel fuel, and will meet all the emissions standards as specified in; (1) CARB ATCM, (2) EPA/CARB Tier III, and (3) NSPS Subpart IIII. Due to the low use rate of the engine for testing and maintenance, as well as its intended use for emergency fire protection, the engine meets the current BACT requirements of the MDAQMD.

APPENDIX 5.2G

Offset Listing-Mitigation Strategy

APPENDIX 5.2G

Offset Listing-Mitigation Strategy

The MDAQMD maintains a listing of its current ERC bank for public review and inspection. The ERC bank listing can be obtained from the AQMD's website, and is not included herein. The BEP II project, pursuant to the MDAQMD NSR rule is required to purchase or acquire sufficient emission reduction credits to offset the proposed project emissions due to its proposed status as a major modification to a major source. NSR rule required amounts of ERCs are delineated in Table 5.2G-1

TABLE 5.2G-1 MDAQMD EMISSIONS MITIGATION REQUIRED BY BEP II
(tons/yr)

	$PM_{10}/PM_{2.5}$	VOC	NO_x	SO_x	CO[1]
Total Emissions PTE*	61.0	51.85	168.16	11.77	150.7
Rule 1303 Offset Thresholds	15	25	25	25	100
Rule 1305 Offset Ratios Required			1.0 to 1.0		
Total Emission Credits Required to Mitigate BEP II Project Emissions Per District NSR Rules (offset ratio applied per Rule 1305)	61.0	51.85	168.16	0	0

* Values derived from Section 5.2, Table 5.2-9.

1 CO mitigation is not required due to attainment status of District.

<u>BEPII Proposed Mitigation Program</u>

BEPII is proposing the following mitigation strategy:

- BEPII is proposing to offset or mitigate <u>only</u> the emissions increases for the BEPII project as delineated in this application. BEPII is no longer responsible for providing mitigation for the original Blythe Energy Project, as BEPI is now owned and operated by Florida Power and Light.
- Use of existing ERC certificates held or owned by BEPII, derived from the MDAQMD emissions bank.
- For any emissions not mitigated under bullet two above, BEPII will purchase offsets from the MDAQMD bank, or will generate new offsets pursuant to the MDAQMD rules, or through participation in qualifying district emissions reduction programs, i.e., such as the Carl Moyer program, etc.

Confidential filings made by BEP II in April 2003 indicate that up to 250 tpy of NOx ERCs would be used from MDAQMD Certificate Number 0047 (Galati 2003a). These NOx ERCs were created by reducing emissions from numerous large natural-gas fired engines operated by Southern California Gas Company (SoCal Gas) near Blythe. The surplus NOx ERCs (81.84 tpy) would be used to offset VOC emissions through an interpollutant trade ratio of 1:1. Staff stated acceptance that the proposed trade of NOx ERCs for VOC emissions at an interpollutant ratio of 1-to-1 is acceptable because reductions of NOx are usually more valuable for ozone management than reductions of VOC.

The PM10 ERCs would come from the Colorado River Indian Tribe (CRIT), which agreed to allow the applicant to pave Lost Lake Road, Colorado River Road, and Roadrunner Alley (Galati 2003a). Approximately 9,280 linear feet (1.75 miles) of total roadways were identified by the agreement. This agreement was established in December 2002 and was set to terminate in 2003; however, the agreement is still valid. The MDAQMD indicates that 126 tpy of PM10 offsets will be obtained by BEP II through this agreement.

APPENDIX 5.2H

Cumulative Impacts Analysis Protocol

APPENDIX 5.2H

Cumulative Impacts Analysis Protocol

Potential cumulative air quality impacts that might be expected to occur resulting from BEP II Project and other reasonably foreseeable projects are both regional and localized in nature. These cumulative impacts will be evaluated as follows.

Regional Impacts

Regional air quality impacts are possible for pollutants such as ozone, which involve photochemical processes that can take hours to occur. BEP II is proposing to supply emissions mitigation per Appendix 5.2G. Additional mitigation for other pollutants may be required by the CEC.

Although the relative importance of VOC and NO_x emissions in ozone formation differs from region to region, and from day to day, most air pollution control plans in California require roughly equivalent controls (on a ton per year basis) for these two pollutants. The change in emissions of the sum of these pollutants, equally weighted, will be used to provide a reasonable estimate of the impact of BEP II on ozone levels. The net change in emissions of ozone precursors from BEP II will be compared with emissions from all sources within the Mohave Desert Air Basin (Table 5.2H-1).

Table 5.2H-1 Estimated Mohave Desert Air Basin Emissions Inventory for 2008 (tons/day)

Source Category	TOG	ROG	CO	NOx	SOx	PM10	PM2.5
Total Stationary Sources	63.8	16.0	27.7	78.8	7.6	46.2	22.0
Total Area Sources	35.1	15.8	25.6	2.2	0.1	141.5	21.3
Total Mobile Sources	67.4	61.1	378.3	191.5	1.2	11 .9	10.5
Total Natural Sources	48.3	39.4	94.9	2.8	0.9	9.6	8.1
Air Basin Total (tons/day)	214.6	132.3	526.5	275.3	9.8	209.2	61.9
Air Basin Total (tons/yr)	78329	48290	192173	100485	3577	76358	22594

Source: CARB, 8/2009.

Air quality impacts of fine particulate, PM_{10} and/or $PM_{2.5}$, have the potential to be either regional or localized in nature. On a regional basis, an analysis similar to that proposed above for ozone will be performed, looking at the three pollutants that can form PM_{10} in the atmosphere, i.e., VOC, SO_x, and NO_x as well as at directly emitted particulate matter. MDAQMD regulations require offsets to be provided for PM_{10}, NOx, SOx, and VOC emissions from the project, i.e., the net increase in emissions must be mitigated.

As in the case of ozone precursors, emissions of $PM_{10/2.5}$ precursors are expected to have approximately equivalent ambient impacts in forming $PM_{10/2.5}$, per ton of emissions on a regional basis. Table 5.2H-2 provides the comparison of emissions of the criteria pollutants from BEP II with emissions from all sources within Mohave Desert Air Basin as a whole.

Table 5.2H-2 Comparison of BEP II Project Emissions to Estimated Inventory for 2008

Category	TOG	ROG[1]	CO	NOx	SOx	PM10	PM2.5
BEP II Emissions (tons/yr)[2]	-	51.85	150.7	168.16	11.77	61.0	61.0
MD Air Basin Total (tons/yr)	78329	48290	192173	100485	3577	76358	22594
BEP II % of Air Basin Total (basis Tons/yr)	-	**0.107**	**0.078**	**0.167**	**0.329**	**0.080**	**0.270**

[1] BEP II VOC emissions compared to inventory ROG emissions.

[2] Revised BEPII emissions for the project. Values account for emissions increases and decreases as compared to the original BEPII project.

Localized Impacts

Localized impacts from BEP II could result from emissions of carbon monoxide, oxides of nitrogen, sulfur oxides, and directly emitted PM_{10}. A dispersion modeling analysis of potential cumulative air quality impacts will be performed for all four of these pollutants.

In evaluating the potential cumulative localized impacts of BEP II in conjunction with the impacts of existing facilities and facilities not yet in operation but that are reasonably foreseeable, a potential impact area in which cumulative localized impacts could occur was identified as an area with a radius of 8 miles around the plant site. Based on the results of the proposed air quality modeling analyses described above, "significant" air quality impacts, as that term is defined in federal air quality modeling guidelines, will be determined. If the project's impacts do not exceed the significance levels, no cumulative impacts will be expected to occur, and no further analysis will be required. Otherwise, in order to ensure that other projects that might have significant cumulative impacts in conjunction with BEP II are identified, a search area with a radius of 8 miles beyond the project's impact area will be used for the cumulative impacts analysis. Within this search area, three categories of projects with emissions sources will be used as criteria for identification:

- Projects that have been in operation for a sufficient time period, and whose emissions are included in the overall background air quality assessment.
- Projects which recently began operations whose emissions may not be reflected in the ambient monitoring background data.
- Projects for which air pollution permits to construct have not been issued, but that are reasonably foreseeable.

The applicable inclusion dates for each of the above source categories will be discussed and approved by the AQMD staff. The requested source listings will incorporate these dates. Projects that are existing, and that have been in operation such that their emissions are reflected in the ambient air quality data that has been used to represent background concentrations require no further analysis. The cumulative impacts analysis adds the modeled impacts of selected facilities to the maximum measured background air quality levels, thus ensuring that these existing projects are taken into account.

Projects for which air pollution permits to construct have been issued but that were not operational will be identified through a request of permit records from the SCAQMD. The search will be requested to be performed at two levels. For permits that are considered "major modifications" (i.e., emissions increases greater than 40 tons/year of NO_x or SO_2, 25 tons/year of total suspended particulate, 15 tons/year of PM_{10}), a region within 8 miles of the proposed project site will be evaluated. For projects that had smaller emissions changes, but still greater than 15 tons/year, a region within 8 miles of the proposed project site will also evaluated. Projects that satisfy either of these criteria and that had a permit to construct issued after the applicable inclusion date, will be included in the cumulative air quality impacts analysis. The inclusion date, as noted above, will be selected based on the typical length of time a permit to construct is valid and typical project construction times, to ensure that projects that are not reflected in the current ambient air quality data are included in the analysis. Projects for which the emissions change was smaller than 15 tons/year will be assumed to be *de minimus*, and will not be included in the dispersion modeling analysis.

A list of projects within the project region meeting the above noted criteria will be requested from the MDAQMD staff.

Given the potentially wide geographic area over which the dispersion modeling analysis is to be performed, the Aermod model will be used to evaluate cumulative localized air quality impacts. The detailed modeling procedures, Aermod options, and meteorological data used in the cumulative impacts dispersion analysis were the same as those described in Section 5.2. The receptor grid will be spaced at 100 meters and cover the area in which the detailed modeling analysis (described above) indicates that the project will have impacts that may exceed any significance levels.

Cumulative Impacts Dispersion Modeling

The dispersion modeling analysis of cumulative localized air quality impacts for the proposed project will be evaluated in combination with other reasonably foreseeable projects and air quality levels attributable to existing emission sources, and the impacts were compared to state or federal air quality standards for significant impact. As discussed above, the highest second-highest modeled concentrations will be used to demonstrate compliance with standards based on short-term averaging periods (24 hours or less).

Supporting information to be used in the analysis includes the following:

- 2008 estimated emissions inventory for Mohave Desert Air Basin (Table 5.2H-1);
- List of projects resulting from the screening analysis of permit files by the MDAQMD;
- Table delineating location data of sources included in the cumulative air quality impacts dispersion modeling analysis;
- Stack parameters for sources included in the cumulative air quality impacts dispersion modeling analysis; and
- Output files for the dispersion modeling analysis.

APPENDIX 5.2I

Air District Permitting Application Forms

APPENDIX 5.2-I

Air District Permitting Application Forms

This appendix contains the applicable air district permitting application forms for the identified devices and/or processes subject to district permitting jurisdiction. These application forms in conjunction with Volumes I and II of the AFC (specifically the Project Description Section, the Air Quality Section, and the Public Health Section) constitute the facility's application for an Authority/Permit to Construct pursuant to MDAQMD Rule 1306.

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
(760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov
Eldon Heaston
Executive Director

APPLICATION FOR COMBUSTION TURBINE

Page 1 of 2: please type or print

REMIT $226.00 WITH THIS DOCUMENT ($129.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): CAITHNESS BLYTHE II, LLC	1a. Federal Tax ID No.: 52-2315574
2. Mailing/Billing Address (for above company name): 565 FIFTH AVE, 29TH FLOOR, NEW YORK, NY 10017	
3. Facility or Business License Name (for equipment location): Blythe Energy Project - Phase II	
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 5050 W. Hobsonway, Blythe, CA 92225	Facility UTM or Lat/Long: 470696, 3874280

5. Contact Name/Title: ROBERT LOOPER	Email Address: rlooper@spellc.com	Phone/Fax Nos.: 208.331.1898 / 208.343.1218

6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:

COMBUSTION TURBINE #1

7. Application is for:
[X] New Construction [ ] Modification* [ ] Change of Owner*

For modification or change of owner:
*Current Permit Number: ____________

8. Type of Organization (check one):
[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. Distances (feet and direction to closest): SEE AFC FOR DETIALED DATA

________ Fenceline ________ Residence ________ Business ________ School

10. General Nature of Business: ELECTRICAL POWER PRODUCTION	11. Principal Product: ELECTRICITY

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7 7	52	5820

14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? [ ] Yes [X] No

15. Signature of Responsible Official:	Official Title: Senior Vice President	
Typed or Printed Name of Responsible Official: ROBERT LOOPER	Phone Number: 208.331.1898	Date Signed: 8.28.09

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
EXTERNAL COMBUSTION APPLICATION, continued

16. INFORMATION ON EQUIPMENT:

☐ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☒ Other, specify: TURBINE

Manufacturer: SIEMENS

Model No.: SGT6-5000F Serial No.: TBD

Maximum heat input rating (use Higher Heating Value): 2019.6 MMBtu/hr or kW

Burner Manufacturer: SIEMENS Burner Model No.: TBD

Number of burners: ______ Burner max heat input rating: ______ MMBtu/hr or kW

Percent excess air (or n/a): ______ Operating temps (C or F): ______ Av. ______ Max

Specify Primary Fuel (*attach fuel analysis for these fuels specifying HHV and sulfur content):

☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke*

☐ Digester Gas* ☐ Landfill Gas* ☐ Refinery Gas* ☐ Other,* specify: ______

Max hourly primary fuel usage: 2.0682 Fuel units (ft^3, gal, etc.): MMSCF

If secondary fuel is proposed, specify: ______ Max hourly usage: ______

Feedstock type and max process rate (specify units): ______

Unit Lat/Long or UTM Coordinates: SEE AFC APPENDIX 5.2B

Max annual hours: 5820 Exhaust Stack Height (feet): 130 Inside Diameter (inches): 258

17. EMISSION CONTROLS: Check all that apply:

☒ Low NOx Burner ☐ Oxygen Trim ☐ Flue or Exhaust Gas Recirculation (FGR or EGR)

☒ Oxidation Catalyst ☒ Selective Catalytic Reduction (SCR) ☐ Selective Non-Catalytic Reduction (SNCR)

☐ Afterburner ☐ ESP ☐ Baghouse ☐ Other - Please specify: ______

18. MAX EMISSION RATES (CONTROLLED):

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	SEE APPENDIX 5.2A	
Oxides of Sulfur (SOx)	SEE APPENDIX 5.2A	
Carbon Monoxide (CO)	SEE APPENDIX 5.2A	
Total Particulates (TSP or PM30)	SEE APPENDIX 5.2A	
Coarse Respirable Particulates (PM10)	SEE APPENDIX 5.2A	
Fine Respirable Particulates (PM2.5)	SEE APPENDIX 5.2A	
Total Organics (TOG)	SEE APPENDIX 5.2A	
Volatile Organic Compounds (VOC, ROG or NMOG)	SEE APPENDIX 5.2A	

19. DRYERS ONLY Check one:

☐ Centrifugal ☐ Chip ☐ Fluidized Bed ☐ Rotary ☐ Spray ☐ Other, specify:

20. FURNACE ONLY Check one:

☐ Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐ Forge ☐ Pot

☐ Holding ☐ Heat Treating ☐ Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

21. OVEN ONLY Check one:

☐ Bakery ☐ Baking ☐ Curing ☐ Drying ☐ Fluidized Bed ☐ Stripping ☐ Solder Reflow

☐ Roasting, specify type: ______ Firing Method: ☐ Direct ☐ Indirect

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT www.mdaqmd.ca.gov
14306 Park Avenue, Victorville, CA 92392-2310 *Eldon Heaston*
(760) 245-1661 Facsimile: (760) 245-2022 Executive Director

APPLICATION FOR COMBUSTION TURBINE

Page 1 of 2: please type or print REMIT $226.00 WITH THIS DOCUMENT ($129.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): CAITHNESS BLYTHE II, LLC	1a. Federal Tax ID No.: 52-2315574
2. Mailing/Billing Address (for above company name): 565 FIFTH AVE, 29TH FLOOR, NEW YORK, NY 10017	
3. Facility or Business License Name (for equipment location): Blythe Energy Project - Phase II	
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 5050 W. Hobsonway, Blythe, CA 92225	Facility UTM or Lat/Long: 470696, 3874280

5. Contact Name/Title:	Email Address:	Phone/Fax Nos.:
ROBERT LOOPER	rlooper@spellc.com	208.331.1898 / 208.343.1218

6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:

COMBUSTION TURBINE #2

7. Application is for:
[X] New Construction [ ] Modification* [ ] Change of Owner*

For modification or change of owner:
*Current Permit Number: ____________

8. Type of Organization (check one):
[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. Distances (feet and direction to closest): SEE AFC FOR DETIALED DATA

______ Fenceline	______ Residence	______ Business	______ School

10. General Nature of Business:	11. Principal Product:
ELECTRICAL POWER PRODUCTION	ELECTRICITY

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7 7	52	5820

14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? [ ] Yes [X] No

15. Signature of Responsible Official:	Official Title:	
[signature]	Senior Vice President	
Typed or Printed Name of Responsible Official:	Phone Number:	Date Signed:
ROBERT LOOPER	208.331.1898	8.28.09

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
EXTERNAL COMBUSTION APPLICATION, continued

16. INFORMATION ON EQUIPMENT:

☐ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☒ Other, specify: TURBINE

Manufacturer: SIEMENS

Model No.: SGT6-5000F Serial No.: TBD

Maximum heat input rating (use Higher Heating Value): 2019.6 MMBtu/hr or kW

Burner Manufacturer: SIEMENS Burner Model No.: TBD

Number of burners: ______ Burner max heat input rating: ______ MMBtu/hr or kW

Percent excess air (or n/a): ______ Operating temps (C or F): ______ Av. ______ Max

Specify Primary Fuel (*attach fuel analysis for these fuels specifying HHV and sulfur content):

☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke*

☐ Digester Gas* ☐ Landfill Gas* ☐ Refinery Gas* ☐ Other,* specify: ______

Max hourly primary fuel usage: 2.0682 Fuel units (ft^3, gal, etc.): MMSCF

If secondary fuel is proposed, specify: ______ Max hourly usage: ______

Feedstock type and max process rate (specify units): ______

Unit Lat/Long or UTM Coordinates: SEE AFC APPENDIX 5.2B

Max annual hours: 5820 Exhaust Stack Height (feet): 130 Inside Diameter (inches): 258

17. EMISSION CONTROLS: Check all that apply:

☒ Low NOx Burner ☐ Oxygen Trim ☐ Flue or Exhaust Gas Recirculation (FGR or EGR)

☒ Oxidation Catalyst ☒ Selective Catalytic Reduction (SCR) ☐ Selective Non-Catalytic Reduction (SNCR)

☐ Afterburner ☐ ESP ☐ Baghouse ☐ Other - Please specify: ______

18. MAX EMISSION RATES (CONTROLLED):

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	SEE APPENDIX 5.2A	
Oxides of Sulfur (SOx)	SEE APPENDIX 5.2A	
Carbon Monoxide (CO)	SEE APPENDIX 5.2A	
Total Particulates (TSP or PM30)	SEE APPENDIX 5.2A	
Coarse Respirable Particulates (PM10)	SEE APPENDIX 5.2A	
Fine Respirable Particulates (PM2.5)	SEE APPENDIX 5.2A	
Total Organics (TOG)	SEE APPENDIX 5.2A	
Volatile Organic Compounds (VOC, ROG or NMOG)	SEE APPENDIX 5.2A	

19. DRYERS ONLY Check one:

☐ Centrifugal ☐ Chip ☐ Fluidized Bed ☐ Rotary ☐ Spray ☐ Other, specify:

20. FURNACE ONLY Check one:

☐ Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐ Forge ☐ Pot

☐ Holding ☐ Heat Treating ☐ Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

21. OVEN ONLY Check one:

☐ Bakery ☐ Baking ☐ Curing ☐ Drying ☐ Fluidized Bed ☐ Stripping ☐ Solder Reflow

☐ Roasting, specify type: ______ Firing Method: ☐ Direct ☐ Indirect

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT www.mdaqmd.ca.gov
14306 Park Avenue, Victorville, CA 92392-2310 *Eldon Heaston*
(760) 245-1661 Facsimile: (760) 245-2022 Executive Director

APPLICATION FOR EXTERNAL COMBUSTION ENGINE (BOILER, ETC.) ONLY

Page 1 of 2: please type or print REMIT $226.00 WITH THIS DOCUMENT ($129.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): CAITHNESS BLYTHE II, LLC	1a. Federal Tax ID No.: 52-2315574
2. Mailing/Billing Address (for above company name): 565 FIFTH AVE, 29TH FLOOR, NEW YORK, NY 10017	
3. Facility or Business License Name (for equipment location): Blythe Energy Project - Phase II	
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 5050 W. Hobsonway, Blythe, CA 92225	Facility UTM or Lat/Long: 470696, 3874280

5. Contact Name/Title:	Email Address:	Phone/Fax Nos.:
ROBERT LOOPER	rlooper@spellc.com	208.331.1898 / 208.343.1218

6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:

HRSG Boiler #1

7. Application is for:
[X] New Construction [ ] Modification* [ ] Change of Owner*

For modification or change of owner:
*Current Permit Number: ________

8. Type of Organization (check one):
[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. Distances (feet and direction to closest): SEE AFC FOR DETIALED DATA

______ Fenceline ______ Residence ______ Business ______ School

10. General Nature of Business:	11. Principal Product:
ELECTRICAL POWER PRODUCTION	ELECTRICITY

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7 7	52	2200

14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? [ ] Yes [X] No

15. Signature of Responsible Official:	Official Title:	
	Senior Vice President	
Typed or Printed Name of Responsible Official:	**Phone Number:**	**Date Signed:**
ROBERT LOOPER	208.331.1898	8.28.09

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
EXTERNAL COMBUSTION APPLICATION, continued

16. INFORMATION ON EQUIPMENT:

[x] Boiler [ ] Dryer [ ] Furnace [ ] Heater [ ] Kiln [ ] Oven [ ] Other, specify: ____

Manufacturer: TBD

Model No.: TBD Serial No.: TBD

Maximum heat input rating (use Higher Heating Value): 221.6 MMBtu/hr or kW

Burner Manufacturer: TBD Burner Model No.: TBD

Number of burners: ____ Burner max heat input rating: ____ MMBtu/hr or kW

Percent excess air (or n/a): ____ Operating temps (C or F): ____ Av. ____ Max

Specify Primary Fuel (*attach fuel analysis for these fuels specifying HHV and sulfur content):

[X] Natural Gas [ ] LPG (Propane) [ ] CARB Diesel [ ] Coal* [ ] Petroleum Coke*

[ ] Digester Gas* [ ] Landfill Gas* [ ] Refinery Gas* [ ] Other,* specify: ____

Max hourly primary fuel usage: 0.2112 Fuel units (ft^3, gal, etc.): MMSCF

If secondary fuel is proposed, specify: ____ Max hourly usage: ____

Feedstock type and max process rate (specify units): ____

Unit Lat/Long or UTM Coordinates: SEE AFC APPENDIX 5.2B

Max annual hours: 2200 Exhaust Stack Height (feet): 130 Inside Diameter (inches): 258

17. EMISSION CONTROLS: Check all that apply:

[X] Low NOx Burner [ ] Oxygen Trim [ ] Flue or Exhaust Gas Recirculation (FGR or EGR)

[X] Oxidation Catalyst [X] Selective Catalytic Reduction (SCR) [ ] Selective Non-Catalytic Reduction (SNCR)

[ ] Afterburner [ ] ESP [ ] Baghouse [ ] Other - Please specify: ____

18. MAX EMISSION RATES (CONTROLLED):

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	SEE APPENDIX 5.2A	
Oxides of Sulfur (SOx)	SEE APPENDIX 5.2A	
Carbon Monoxide (CO)	SEE APPENDIX 5.2A	
Total Particulates (TSP or PM30)	SEE APPENDIX 5.2A	
Coarse Respirable Particulates (PM10)	SEE APPENDIX 5.2A	
Fine Respirable Particulates (PM2.5)	SEE APPENDIX 5.2A	
Total Organics (TOG)	SEE APPENDIX 5.2A	
Volatile Organic Compounds (VOC, ROG or NMOG)	SEE APPENDIX 5.2A	

19. DRYERS ONLY Check one:

[ ] Centrifugal [ ] Chip [ ] Fluidized Bed [ ] Rotary [ ] Spray [ ] Other, specify:

20. FURNACE ONLY Check one:

[ ] Annealing [ ] Burnoff [ ] Calcining [ ] Crucible [ ] Cupola [ ] Diffusion [ ] Electric [ ] Forge [ ] Pot

[ ] Holding [ ] Heat Treating [ ] Melting [ ] Reverbatory [ ] Rotary [ ] Sweating [ ] Oxide Growth

21. OVEN ONLY Check one:

[ ] Bakery [ ] Baking [ ] Curing [ ] Drying [ ] Fluidized Bed [ ] Stripping [ ] Solder Reflow

[ ] Roasting, specify type: ____ Firing Method: [ ] Direct [ ] Indirect

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT www.mdaqmd.ca.gov
14306 Park Avenue, Victorville, CA 92392-2310 *Eldon Heaston*
(760) 245-1661 Facsimile: (760) 245-2022 Executive Director

APPLICATION FOR EXTERNAL COMBUSTION ENGINE (BOILER, ETC.) ONLY

Page 1 of 2: please type or print REMIT $226.00 WITH THIS DOCUMENT ($129.00 FOR CHANGE OF OWNER)

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3. Facility or Business License Name (for equipment location): Blythe Energy Project - Phase II	
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 5050 W. Hobsonway, Blythe, CA 92225	Facility UTM or Lat/Long: 470696, 3874280

5. Contact Name/Title:	Email Address:	Phone/Fax Nos.:
ROBERT LOOPER	rlooper@spellc.com	208.331.1898 / 208.343.1218

6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:

HRSG Boiler #2

7. Application is for: [X] New Construction [ ] Modification* [ ] Change of Owner*

For modification or change of owner: *Current Permit Number: ____________

8. Type of Organization (check one): [ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. Distances (feet and direction to closest): SEE AFC FOR DETIALED DATA

____________ Fenceline ____________ Residence ____________ Business ____________ School

10. General Nature of Business:	11. Principal Product:
ELECTRICAL POWER PRODUCTION	ELECTRICITY

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24 7	7	52	2200

14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? [ ] Yes [x] No

15. Signature of Responsible Official:	Official Title:	
	Senior Vice President	
Typed or Printed Name of Responsible Official:	**Phone Number:**	**Date Signed:**
ROBERT LOOPER	208.331.1898	8.28.09

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
EXTERNAL COMBUSTION APPLICATION, continued

16. INFORMATION ON EQUIPMENT:

[x] Boiler [ ] Dryer [ ] Furnace [ ] Heater [ ] Kiln [ ] Oven [ ] Other, specify: ______

Manufacturer: TBD

Model No.: TBD Serial No.: TBD

Maximum heat input rating (use Higher Heating Value): 221.6 MMBtu/hr or kW

Burner Manufacturer: TBD Burner Model No.: TBD

Number of burners: ______ Burner max heat input rating: ______ MMBtu/hr or kW

Percent excess air (or n/a): ______ Operating temps (C or F): ______ Av. ______ Max

Specify Primary Fuel (*attach fuel analysis for these fuels specifying HHV and sulfur content):

[X] Natural Gas [ ] LPG (Propane) [ ] CARB Diesel [ ] Coal* [ ] Petroleum Coke*

[ ] Digester Gas* [ ] Landfill Gas* [ ] Refinery Gas* [ ] Other,* specify: ______

Max hourly primary fuel usage: 0.2112 Fuel units (ft^3, gal, etc.): MMSCF

If secondary fuel is proposed, specify: ______ Max hourly usage: ______

Feedstock type and max process rate (specify units): ______

Unit Lat/Long or UTM Coordinates: SEE AFC APPENDIX 5.2B

Max annual hours: 2200 Exhaust Stack Height (feet): 130 Inside Diameter (inches): 258

17. EMISSION CONTROLS: Check all that apply:

[X] Low NOx Burner [ ] Oxygen Trim [ ] Flue or Exhaust Gas Recirculation (FGR or EGR)

[X] Oxidation Catalyst [X] Selective Catalytic Reduction (SCR) [ ] Selective Non-Catalytic Reduction (SNCR)

[ ] Afterburner [ ] ESP [ ] Baghouse [ ] Other - Please specify: ______

18. MAX EMISSION RATES (CONTROLLED):

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	SEE APPENDIX 5.2A	
Oxides of Sulfur (SOx)	SEE APPENDIX 5.2A	
Carbon Monoxide (CO)	SEE APPENDIX 5.2A	
Total Particulates (TSP or PM30)	SEE APPENDIX 5.2A	
Coarse Respirable Particulates (PM10)	SEE APPENDIX 5.2A	
Fine Respirable Particulates (PM2.5)	SEE APPENDIX 5.2A	
Total Organics (TOG)	SEE APPENDIX 5.2A	
Volatile Organic Compounds (VOC, ROG or NMOG)	SEE APPENDIX 5.2A	

19. DRYERS ONLY Check one:

[ ] Centrifugal [ ] Chip [ ] Fluidized Bed [ ] Rotary [ ] Spray [ ] Other, specify:

20. FURNACE ONLY Check one:

[ ] Annealing [ ] Burnoff [ ] Calcining [ ] Crucible [ ] Cupola [ ] Diffusion [ ] Electric [ ] Forge [ ] Pot

[ ] Holding [ ] Heat Treating [ ] Melting [ ] Reverbatory [ ] Rotary [ ] Sweating [ ] Oxide Growth

21. OVEN ONLY Check one:

[ ] Bakery [ ] Baking [ ] Curing [ ] Drying [ ] Fluidized Bed [ ] Stripping [ ] Solder Reflow

[ ] Roasting, specify type: ______ Firing Method: [ ] Direct [ ] Indirect

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14306 Park Avenue, Victorville, CA 92392-2310 *Eldon Heaston*
(760) 245-1661 Facsimile: (760) 245-2022 Executive Director

APPLICATION FOR EXTERNAL COMBUSTION ENGINE (BOILER, ETC.) ONLY

Page 1 of 2: please type or print REMIT $226.00 WITH THIS DOCUMENT ($129.00 FOR CHANGE OF OWNER)

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3. Facility or Business License Name (for equipment location): Blythe Energy Project - Phase II	
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 5050 W. Hobsonway, Blythe, CA 92225	Facility UTM or Lat/Long: 470696, 3874280
5. Contact Name/Title: ROBERT LOOPER	Email Address: rlooper@spellc.com — Phone/Fax Nos.: 208.331.1898 / 208.343.1218
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: **Auxiliary Boiler for Flex-Start**	
7. Application is for: [x] New Construction [ ] Modification* [ ] Change of Owner*	For modification or change of owner: *Current Permit Number: ______
8. Type of Organization (check one): [ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency	
9. Distances (feet and direction to closest): SEE AFC AIR QUALITY SECTION AND APPENDICES — ______ Fenceline ______ Residence ______ Business ______ School	
10. General Nature of Business: ELECTRIC POWER PRODUCTION	11. Principal Product: ELECTRICITY
12. Facility Annual Throughput by Quarters (percent): 25 % Jan-Mar; 25 % Apr-Jun; 25 % Jul-Sep; 25 % Oct-Dec	13. Facility Operating Hours: 24 Hrs/Day; 7 Days/Wk; 52 Wks/Yr; 1500 Total Hrs/Yr
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? [ ] Yes [x] No	
15. Signature of Responsible Official: Robert Looper	Official Title: Senior Vice President
Typed or Printed Name of Responsible Official: ROBERT LOOPER	Phone Number: 208.331.1898 — Date Signed: 8.28.09

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
EXTERNAL COMBUSTION APPLICATION, continued

16. INFORMATION ON EQUIPMENT: SEE AFC APPENDIX 5.2A FOR DETAILED DATA

[x] Boiler [ ] Dryer [ ] Furnace [ ] Heater [ ] Kiln [ ] Oven [ ] Other, specify: ______

Manufacturer: TBD

Model No.: TBD Serial No.: TBD

Maximum heat input rating (use Higher Heating Value): 60 MMBtu/hr or kW

Burner Manufacturer: TBD Burner Model No.: ______

Number of burners: ______ Burner max heat input rating: ______ MMBtu/hr or kW

Percent excess air (or n/a): ______ Operating temps (C or F): ______ Av. ______ Max

Specify Primary Fuel (*attach fuel analysis for these fuels specifying HHV and sulfur content):

[x] Natural Gas [ ] LPG (Propane) [ ] CARB Diesel [ ] Coal* [ ] Petroleum Coke*

[ ] Digester Gas* [ ] Landfill Gas* [ ] Refinery Gas* [ ] Other,* specify: ______

Max hourly primary fuel usage: 0.0572 Fuel units (ft^3, gal, etc.): MMSCF

If secondary fuel is proposed, specify: ______ Max hourly usage: ______

Feedstock type and max process rate (specify units): ______

Unit Lat/Long or UTM Coordinates: ______

Max annual hours: 1500 Exhaust Stack Height (feet): 60 Inside Diameter (inches): 42

17. EMISSION CONTROLS: Check all that apply:

[x] Low NOx Burner [x] Oxygen Trim [ ] Flue or Exhaust Gas Recirculation (FGR or EGR)

[ ] Oxidation Catalyst [ ] Selective Catalytic Reduction (SCR) [ ] Selective Non-Catalytic Reduction (SNCR)

[ ] Afterburner [ ] ESP [ ] Baghouse [ ] Other - Please specify: ______

18. MAX EMISSION RATES (CONTROLLED):

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	SEE AFC	0.55
Oxides of Sulfur (SOx)		0.14
Carbon Monoxide (CO)		1.85
Total Particulates (TSP or PM30)		0.27
Coarse Respirable Particulates (PM10)		0.27
Fine Respirable Particulates (PM2.5)		0.27
Total Organics (TOG)		0.11
Volatile Organic Compounds (VOC, ROG or NMOG)		0.11

19. DRYERS ONLY Check one:

[ ] Centrifugal [ ] Chip [ ] Fluidized Bed [ ] Rotary [ ] Spray [ ] Other, specify:

20. FURNACE ONLY Check one:

[ ] Annealing [ ] Burnoff [ ] Calcining [ ] Crucible [ ] Cupola [ ] Diffusion [ ] Electric [ ] Forge [ ] Pot

[ ] Holding [ ] Heat Treating [ ] Melting [ ] Reverbatory [ ] Rotary [ ] Sweating [ ] Oxide Growth

21. OVEN ONLY Check one:

[ ] Bakery [ ] Baking [ ] Curing [ ] Drying [ ] Fluidized Bed [ ] Stripping [ ] Solder Reflow

[ ] Roasting, specify type: ______ Firing Method: [ ] Direct [ ] Indirect

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
(760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov
Eldon Heaston
Executive Director

APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY

Page 1 of 2: please type or print
REMIT $226.00 WITH THIS DOCUMENT ($129.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): CAITHNESS BLYTHE II, LLC	1a. Federal Tax ID No.: 52-2315574
2. Mailing/Billing Address (for above company name): 565 FIFTH AVE, 29TH FLOOR, NEW YORK, NY 10017	
3. Facility or Business License Name (for equipment location): Blythe Energy Project - Phase II	
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 5050 W. Hobsonway, Blythe, CA 92225	Facility UTM or Lat/Long: 470696, 3874280

5. Contact Name/Title: ROBERT LOOPER	Email Address: rlooper@spellc.com	Phone/Fax Nos.: 208.331.1898 / 208.343.1218

6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:

Fire Pump Engine

7. Application is for:
[X] New Construction [ ] Modification* [ ] Change of Owner*

For modification or change of owner:
*Current Permit Number: ______________

8. Type of Organization (check one):
[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. Distances (feet and direction to closest): SEE AFC APPENDICES FOR DETAILED DATA

______ Fenceline ______ Residence ______ Business ______ School

10. General Nature of Business: ELECTRIC POWER PRODUCTION	11. Principal Product: ELECTRICITY

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Operating Hours of IC Engine:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
1	1	52	52

14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? [ ] Yes [X] No

15. Signature of Responsible Official: *Robert Looper* (signature)	Official Title: Senior Vice President	
Typed or Printed Name of Responsible Official: ROBERT LOOPER	Phone Number: 208.331.1898	Date Signed: 8.28.09

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
I.C.E. APPLICATION, continued

16. INFORMATION ON I.C.E.:

Manufacturer: CLARKE

Model No.: JW6H-UFAD80 Serial No.: N/A

Number of Cylinders: 6 Year of Manufacture: TBD

Rating: 303 BHP Speed: ~1800 RPM

I.C.E. is? [x] New [ ] Existing Date Installed (MM/YYYY): ______

Prime [ ] Standby [ ] Emergency [x] Portable (Yes or No)?: NO

CARB engine certification: Family: U-R-004-0361 Certification EO#: ______

Is this engine included in a Demand Response plan?: Yes [ ] No [x]

Type of Fuel(s): Natural Gas [ ] Digester Gas [ ] Ethanol [ ] Landfill Gas [ ]
Propane [ ] CARB Diesel [x] Methanol [ ] Other: ______

Max fuel usage per hour: 20 Fuel units (ft^3, gal, etc.): GALLONS

Engine Lat/Long or UTM Coordinates: ______

Exhaust Stack Height (feet): 30 Inside Diameter (inches): 5.2 Y/N: Vertical? Y Capped? N

Is this I.C.E. (select all that apply): SEE APPENDIX 5.2A FOR DETAILED DATA

Direct Injected? [ ] After Cooled? [ ]
Turbo Charged? [ ] Inter Cooled? [ ]
Timing Retarded? [ ] Other - Please specify: ______

17. EMISSION RATES:

Pollutant	at Max.Load	Units	Origin of Emission Rate data: Manufacturer	or Source Test
Oxides of Nitrogen (NOx)	1.74	LBS/HR	x	
Oxides of Sulfur (SOx)	0.0042	LBS/HR	x	
Carbon Monoxide (CO)	0.56	LBS/HR	x	
Particulates (PM10)	0.07	LBS/HR	x	
Total Hydrocarbons (VOC)	0.07	LBS/HR	x	

18. EMISSION CONTROL EQUIPMENT: Add on emission control equipment? [ ] Yes [x] No

If yes: Manufacturer: ______ Model No.:
Serial No.: ______ *CARB EO#: ______

Type: SCR: [ ] Particulate Trap*: [ ] Ammonia Injection: [ ] Water Injection: [ ]
Non-S CR: [ ] Exhaust Gas Recirc*: [ ] Oxidation Catalyst*: [ ]

Other - Please specify: ______

19. INFORMATION OF ITEM BEING POWERED: This I.C.E. is used to power:

Electrical Generator [ ] Compressor [ ] Pump [ ]
Paint Spray Gun [ ] Conveyor or Drive [ ] Fire Pump [x]

Other - Please specify: ______

Manufacturer: ______

Model No.: Serial No.: ______

Type, Size or Rating: ______

APPENDIX 5.9

Public Health References

APPENDIX 5.9

Public Health References

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