# 8.1 AIR QUALITY

## 8.1.1 INTRODUCTION

This section provides an assessment of the potential risks to human health that are associated with the airborne emissions of criteria pollutants (i.e., emissions for which either National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) have been established) from normal operations of the proposed Kings River Conservation District Community Power Plant (KRCD CPP).

While addressing the potential impacts that can result from KRCD CPP criteria pollutant emissions, this section also discusses the potential for cumulative impacts along with proposed mitigation measures. This discussion is based on an estimate of KRCD CPP potential air emissions during construction and its various operating scenarios (e.g., normal operation, startup and shutdown, commissioning) as well as the subsequent results of a Air Quality Impact Analysis (AQIA or air dispersion modeling), which provides an estimate of the potential impacts to air quality through the release of criteria emissions from the KRCD CPP combustion turbines (CTs), evaporative cooling tower and other ancillary equipment.

Also included in this section is a discussion of the federal, state and local laws, ordinances, regulations and standards (LORS) that are applicable to the proposed KRCD CPP. The applicable regulatory agencies are identified along with contact information. A list of the permits required and a schedule for obtaining these permits is also provided.

The assessment of impacts from airborne emissions of non-criteria pollutants is presented in Section 8.7, Public Health. Similarly, a discussion of potential impacts due to an accidental (emergency) release of acutely hazardous materials (i.e., aqueous ammonia) stored and used on-site in provided in Section 8.8, Hazardous Materials.

## 8.1.2 AFFECTED ENVIRONMENT

### *8.1.2.1 Project Site Area*

KRCD is proposing to develop the KRCD CPP, a nominal 565 megawatt (MW) natural gas-fired combined cycle base load power plant. The plant will be located near the City of Parlier, in Fresno County, and within the service territory of KRCD on an approximately 32-acre parcel. Approximately 15 acres of a 40-acre parcel to the immediate south of the project site will be used for temporary staging and parking during project construction. The KRCD CPP will be arranged with two trains of combustion turbine generators (CTGs) and heat recovery steam generators (HRSGs) connected to one steam turbine generator (STG) (two-on-one

configuration). The two (2) advanced natural gas-fired turbines will be "F" class units supplied by either General Electric (GE) or Siemens.

The plant will be equipped with dry low nitrogen oxide (NOx) combustors designed for natural gas fuel only and will include inlet-air evaporative cooling to enhance plant power output during higher ambient temperatures. The HRSG's will produce steam at three pressures. The exhaust from the steam turbine discharges into a surface condenser operating under vacuum. The steam is condensed by circulating cooling water, which rejects the heat to a mechanical draft cooling tower. Dry low NOx combustors in the CTs are followed by selective catalytic reduction (SCR) in the HRSG's to control NOx stack emissions. The HRSG's will also include an oxidation catalyst to reduce the concentrations of carbon monoxide (CO) and volatile organic compounds (VOCs) in the exhaust gases exiting the stack.

The plant will include a zero liquid discharge (ZLD) system that will purify and recycle process water, minimize water consumption and eliminate process wastewater discharge. The plant will also include water storage tanks for makeup water supply and fire protection.

Fuel for the KRCD CPP will be natural gas supplied from a new approximately 26-mile long 20-inch underground pipeline interconnection to the Southern California Gas Company (SCG) Line 7000 near the City of Visalia, California. The gas pipeline closely follows existing road right-of-way corridors and be primarily located in public right of way.

Electric transmission for the KRCD CPP will be provided by a new interconnection from the plant site to the Pacific Gas and Electric Company (PG&E) McCall Substation located on the west side of Leonard Avenue and north of Manning Avenue. A new approximately five mile-long 230-kilovolt (kV) radial transmission line will connect the KRCD CPP to McCall Substation. The transmission line will cross both private property and the public right of way.

The primary source of process makeup water for the KRCD CPP will be recycled water delivered by new underground pipeline interconnections to the Parlier Wastewater Treatment Plant (WWTP) and the Sanger WWTP effluent percolation and evaporation ponds located on Lincoln Avenue (i.e., Lincoln Ponds). The Parlier WWTP is located adjacent to the north of the plant site, and the interconnection will be located at the northern plant site boundary. The proposed interconnection to the Sanger Lincoln ponds is approximately five miles north and will be located primarily along existing roadways. Currently, two options are being considered for the water pipeline interconnection to Lincoln Ponds (i.e., Water Supply Pipeline Option 1 and Option 2). Up to four new shallow wells recovering percolated effluent will provide a back-up cooling water supply.

Potable water for domestic use will be supplied by a new groundwater well to be installed on the project site. There is no offsite linear associated with the potable water supply. Domestic wastewater will be discharged to the Parlier WWTP. The sewer interconnection is located on the northern boundary of the project site with no offsite linear.

#### *8.1.2.2 Sensitive Receptors*

The KRCD CPP is located in an area currently zoned for agriculture. The area is predominately used for agricultural purposes (vineyards). Surrounding land uses include agricultural land to the west and north/northwest. The parcel south of the site (15-acres of which will be utilized for construction staging) is primarily vacant with a few structures and rural dwellings. To the east of the site is the County of Fresno Southeast Regional Disposal Site, which is currently closed. The City of Parlier WWTP is adjacent to the north.

An identification of sensitive receptors (including schools, places of worship, hospitals and emergency-response facilities, day-care, medical, and long-term health care facilities) was completed within a six mile radius of the project site by Environmental Data Resources, Inc. (EDR). The EDR report identified 76 sensitive receptors within the six-mile radius. This report is included as Appendix 8.8-1 in Section 8.8, Hazardous Materials.

The nearest operating school is Indianola Elementary School, located at 11524 East Dinuba Avenue and approximately one-half mile from the project site. The other sensitive receptors located within approximately one to two miles of the project site are included below in Table 8.1-1. Figure 8.8-1 in Section 8.8, Hazardous Materials, identifies those receptors located within an approximate one-mile radius of the project site. The closest hospitals to the project site are the Selma District Hospital and the Selma Community Hospital, which are both located approximately two miles from the project site.

**Table 8.1-1**
**Sensitive Receptors Located Within 1 to 2 Mile of the Project Site**
**KRCD CPP**

| Receptor Name | Address | Type | Distance from KRCD CPP project site |
|---|---|---|---|
| Fruitvale School* | South Bethel Avenue<br>Parlier, CA | Historical Resource | 0.2 miles |
| Indianola Elementary School | 11524 East Dinuba Avenue<br>Selma, CA | School | 0.47 miles |
| Parlier Child Care Center & Infant Center | Not reported<br>Parlier, CA | Daycare facility | 1.53 miles |

**Table 8.1-1**
**Sensitive Receptors Located Within 1 to 2 Mile of the Project Site**
**KRCD CPP**

| Receptor Name | Address | Type | Distance from KRCD CPP project site |
|---|---|---|---|
| Abraham Lincoln Middle School | 1239 Nelson Boulevard<br>Selma, CA | School | 1.57 miles |
| John C. Martinez Elementary School | 13174 East Parlier Avenue<br>Parlier, CA | School | 1.83 miles |
| Mendocino School | Part of John C. Martinez Elementary School site<br>Parlier, CA | School | 1.9 miles |
| La Colonia Headstart | 8770 S. Mendocino Avenue<br>Parlier, CA | Daycare facility | 1.9 miles |
| Alice's Wonderland | Not reported<br>Selma, CA | Daycare facility | 1.93 miles |

* School is non-operational and is marked by a historic building.
Source: EDR, 2006

### *8.1.2.3 Topography*

The KRCD CPP will be located near the City of Parlier, in Fresno County. The project vicinity is within the flat San Joaquin Valley. The base elevation in the area immediately surrounding the project site is approximately 327 feet above sea level (FASL). The San Joaquin Valley is bordered by the Coast Ranges to the west, the Sierra Nevada to the east, and the Tehachapi Mountains to the south.

### *8.1.2.4 Climate and Meteorology*

The climate of the San Joaquin Valley includes hot, dry summers and mild winters. The hottest days generally occur in July. The 30-year average temperature for July is 81 degrees Fahrenheit (°F). The average maximum daily temperature is 99°F. The coldest temperatures occur in December. The 30-year average temperature for December is 45°F, with average maximum daily temperatures around 53°F. Rainfall typically occurs during November through April. A dense fog, known as a Tule fog is a frequent wintertime occurrence. Precipitation can be variable from year to year, but is generally around 11 inches.

Winds within the San Joaquin Valley generally fall into four categories, up valley (northerly winds flowing through the Sacramento Delta) down valley/drainage (southerly winds flowing into the Sacramento Delta), southerly, and northerly (no marine air). These flow patterns are summarized in Figure 1 of Appendix 8.1-1. Annual and quarterly wind roses, geographical representations of wind flow, for the 1989 data from Fresno Airport can be found in Figures 2

through 6 of Appendix 8.1-1. The winds are predominantly from the northwest all year. Southwesterly winds show a secondary predominance during the rainy season. Annually, calm winds occurred 11 percent of the time.

Temperature inversions are a frequent occurrence in Fresno. A temperature inversion occurs when temperature increases with height, instead of the typical decrease in temperature with height. An increase in temperature with height creates a stable atmosphere, which limits the vertical mixing of the air and can contribute to elevated pollution concentrations. Annually, inversions have been measured 99 percent of the time at 5:00 am, 89 percent of the time at 10:00 am, and 57 percent of the time at 3:00 pm (California Air Resources Board (CARB), 1990).

#### *8.1.2.5 Air Quality Standards*

Air quality standards have been developed to protect the public health and welfare. The federal Clean Air Act (CAA) established the NAAQS for several criteria pollutants, including ozone (O3), nitrogen dioxide (NO2), CO, sulfur dioxide (SO2), particulate matter ten micrograms (µm) diameter and smaller (PM10), particulate matter 2.5 µm diameter and smaller (PM2.5), and lead (Pb).

**Ozone**

O3 is formed at ground level by a chemical reaction between NOx and VOCs in the presence of sunlight and heat. Sources of O3 include motor vehicles, industrial sources, gasoline vapors, and chemical solvents. Health effects associated with elevated O3 levels include breathing difficulties and lung damage (CARB, 2001).

**Nitrogen Dioxide**

NO2 is formed when fuels are burned at high temperatures. NOx (i.e., NO2 + NO) are major components in O3 formation and react to form nitrate particles and acid aerosols. Motor vehicles make up almost half of NOx emissions, with electric utilities comprising approximately 25 percent of NOx emissions. NOx can also contribute to respiratory problems (United States Environmental Protection Agency (USEPA), 2003a).

**Carbon Monoxide**

CO is formed when the carbon in fuel is not burned completely. The majority of CO emissions come from mobile sources, both on-road vehicles (cars, trucks, etc.) and off-road vehicles (construction equipment, airplanes, etc.). Industrial processes, including power generation contribute a much smaller percentage of the total CO emissions (USEPA, 2003b). Carbon monoxide is most serious for people with heart disease and can contribute to other cardiovascular

problems. Higher levels of CO can cause headaches, nausea, and reduced mental alertness (USEPA, 2003b; CARB, 2001).

**Sulfur Dioxide**

SO2 is formed when fuels containing sulfur are burned, gasoline is extracted from oil, or metals are extracted from ore. Approximately two-thirds of all SO2 emissions originate from electric utilities (USEPA, 2003c), especially those that burn coal and oil. Natural gas contains very low amounts of sulfur; consequently SO2 emissions from natural-gas fired power plants are low. Health effects from high SO2 concentrations include difficulty breathing and over time can cause respiratory illness and aggravate existing heart problems. Additionally, SO2 can cause decay of building materials and paints. Chemical reactions of SO2 and NO2 can form acid rain, which can damage vegetation, lakes, and streams. Formation of sulfate particles caused by chemical reactions of SO2 can contribute to visibility impairment (USEPA, 2003c).

**Fine Particulates (PM10 and PM2.5)**

Particulate is the term for particles found in the air. Some particles are directly emitted into the air, such as those emitted from motor vehicle exhaust, agricultural tilling, industrial sources, wood burning, or wind-blown dust. Other particles are formed from chemical reactions when burning fuels react with sunlight and water vapor. Damage from particulate matter (PM) includes respiratory health effects, visibility impairment, and atmospheric deposition onto the soil, water, or structures (USEPA, 2003d).

**Lead**

Pb is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of lead emissions to the air today. People, animals, and fish are mainly exposed to lead by breathing and ingesting it in food, water, soil, or dust. Lead accumulates in the blood, bones, muscles, and fat. Infants and young children are especially sensitive to even low levels of lead (USEPA, 2007).

**Classification of KRCD CPP Site Area**

The KRCD CPP is located within the San Joaquin Valley Air Pollution Control District (SJVAPCD), in a region that has been classified as non-attainment of the O3 and PM2.5 NAAQS. The USEPA recently designated the San Joaquin Valley as attainment of PM10 NAAQS (Federal Register, 2006). The KRCD CPP project area is in attainment or unclassified (with the latter being equivalent to attainment) for the remaining NAAQS.

The CAAQS, which are more stringent than the NAAQS, have also been established. The KRCD CPP project area is in non-attainment of the CAAQS for O3, PM10, and PM2.5. A summary of the NAAQS and CAAQS can be found in Table 8.1-2.

**Table 8.1-2**
**Regulatory Standards and Significance Levels - NAAQS, CAAQS, and PSD**
**KRCD CPP**

| Pollutant | Averaging Period | SER (tons per year) | All Areas | | Class II Areas | | Class I Areas | | Significant Monitoring Concentrations (µg/m3) |
|---|---|---|---|---|---|---|---|---|---|
| | | | NAAQS (µg/m3 (ppm) | CAAQS (µg/m3 (ppm) | PSD Increment (µg/m3) | SIL (µg/m3) | PSD Increment (µg/m3) | USEPA SIL (µg/m3) | |
| O3 | 1-hour | | -- | 180 (0.09) | | | | | |
| | 8-hour | | 157 (0.08) | 137 (0.070) | | | | | |
| NO2 | Annual | 40 | 100 (0.053) | 55 (0.03) | 25 | 1 | 2.5 | 0.1 | 14 |
| | 1-hour | | -- | 338 (0.18) | | | | | |
| SO2 | Annual | 40 | 80 (0.030) | -- | 20 | 1 | 2 | 0.1 | |
| | 24-hour | | 365 (0.14) | 105 (0.04) | 91 | 5 | 5 | 0.2 | 13 |
| | 3-hour | | 1300 (0.5) | -- | 512 | 25 | 25 | 1.0 | |
| | 1-hour | | -- | 655 (0.25) | | | | | |
| PM10 | Annual | 15 | -- | 20 | 17 | 1 | 4 | 0.2 | |
| | 24-hour | | 150 | 50 | 30 | 5 | 8 | 0.3 | 10 |
| PM2.5 | Annual | | 15 | 12 | | | | | |
| | 24-hour | | 35 | -- | | | | | |
| CO | 8-hour | 100 | 10000 (9) | 10000 (9.0) | | 500 | | | 575 |
| | 1-hour | | 40000 (35) | 23000 (20) | | 2000 | | | |
| Pb | Calendar Quarter | 0.6 | 1.5 | -- | | | | | 0.1 |
| | 30-day | | -- | 1.5 | | | | | |
| Visibility Reducing Particles | 8-hour | | -- | * | | | | | |
| Sulfates | 24-hour | | -- | 25 | | | | | |

**Table 8.1-2**
**Regulatory Standards and Significance Levels - NAAQS, CAAQS, and PSD**
**KRCD CPP**

| Pollutant | Averaging Period | SER (tons per year) | All Areas | | Class II Areas | | Class I Areas | | Significant Monitoring Concentrations (µg/m3) |
|---|---|---|---|---|---|---|---|---|---|
| | | | NAAQS (µg/m3 (ppm) | CAAQS (µg/m3 (ppm) | PSD Increment (µg/m3) | SIL (µg/m3) | PSD Increment (µg/m3) | USEPA SIL (µg/m3) | |
| Hydrogen sulfide | Annual | 10 | -- | | | | | | |
| | 1-hour | | -- | 42 | | | | | 0.2 |
| Vinyl Chloride | 24-hour | | -- | 26 (0.01) | | | | | |
| Fluorides | Annual | 3 | | | | | | | |
| | 24-hour | | | | | | | | 0.25 |
| Sulfuric Acid Mist | Annual | 7 | | | | | | | |
| | 1-hour | | | | | | | | 0.2 |
| Total reduced sulfur | Annual | 10 | | | | | | | |
| | 1-hour | | | | | | | | |
| Reduced sulfur compounds | Annual | 10 | | | | | | | |
| | 1-hour | | | | | | | | 10 |

*Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more due to particles when relative humidity is less than 70 percent.

Acronyms: SER = Significant Emission Rate
NAAQS = National Ambient Air Quality Standards
CAAQS = California Ambient Air Quality Standards
PSD = Prevention of Significant Deterioration
SIL = Significant Impact Level
µg/m3 = micrograms per cubic meter
ppm = parts per million

### *8.1.2.6 Existing Air Quality*

Air quality data near the KRCD CPP project site is presented in Table 8.1-3. The KRCD CPP site is located approximately 3.5 miles west-southwest of the Parlier air quality monitoring site. The KRCD CPP and monitoring sites are both rural sites in agricultural areas.

Data collected at the Parlier monitoring site include NO2 and O3. Air Quality data are available on the CARB website at: http://www.arb.ca.gov/adam/welcome.html and the USEPA website at: http://www.epa.gov/air/data/reports.html for the years 2003-2005.

CO, SO2, PM10, PM2.5 and Pb are not measured at the Parlier monitor. Other monitoring sites have collected air quality data that will be representative or conservative of conditions at the KRCD CPP project site.

CO data from the Fresno-Drummond station will be used as a conservative representation of the KRCD CPP site. This Fresno monitor is located 14 miles northwest of the KRCD CPP in the southern portion of Fresno in an urban setting, so CO concentrations from this site will be expected to be a conservative measure of CO background concentrations at the KRCD CPP.

Background SO2 concentrations are available in 2003 from two sites in Fresno, at Fremont School and Mobile. The other most recent SO2 data were collected in Bakersfield in 1999-2001. Data from all of these sites provides a conservative estimates of the existing SO2 concentrations in the KRCD CPP area. On the CARB Community Health Air Pollution System (CHAPIS) website at: http://www.arb.ca.gov/gismo/chapis_v01_6_1_04/, SO2 emissions (based on the 2001 emissions inventory) were greater in the cities of Fresno and Bakersfield than around Parlier. Site monitoring data were obtained from the CARB CD "California Ambient Air Quality Data 1980-2004" and the USEPA air data website.

PM10 data measured at the Fresno-Drummond station over the years 2003-2005 will be used to conservatively represent background PM10 concentrations for the KRCD CPP site area. Sources of particulate emissions will be greater around the Fresno-Drummond monitoring site than the KRCD CPP site (as seen on the CARB CHAPIS website). Appendix 8.1-2, Air Dispersion Modeling Protocol, includes figures which show the emissions inventory information from CHAPIS.

PM2.5 data from 2003-2005 are available from the Fresno-Hamilton/Winery and Fresno-First Street stations. Based on data for PM10 presented on the CHAPIS website, either of these sites will be a conservative representation of the background PM2.5 data at the KRCD CPP project site.

Quarterly and 24-hour Pb data are available at the Fresno-First Street monitor for the years 2000 – 2002.

**Table 8.1-3**
**Baseline Air Quality (Pollutant Concentrations) in the Project Region**
**KRCD CPP**

| | | Parlier | | | Fresno Drummond | | | Fresno First Street | | | | | | Fresno Hamilton | | | Bakersfield | | | Fresno Fremont | Fresno Mobile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pollutant** | **Averaging Time** | **2003** | **2004** | **2005** | **2003** | **2004** | **2005** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2003** | **2004** | **2005** | **1999** | **2000** | **2001** | **2003** | **2003** |
| O3 | 1-hour<br>8-hour | .152<br>.116 | .120<br>.090 | .125<br>.100 | | | | | | | | | | | | | | | | | |
| NO2 | 1-hr<br>Annual | .051<br>.012 | .052<br>.011 | .063<br>.011 | | | | | | | | | | | | | | | | | |
| CO | 1-hour<br>8-hour | | | | 3.6<br>2.6 | 3.5<br>2.7 | 2.8<br>2.3 | | | | | | | | | | | | | | |
| SO2 | 1-hour<br>24-hour<br>Annual | | | | | | | | | | | | | | | | .011<br>.006<br>.003 | .019<br>.003<br>.002 | .030<br>.005<br>.002 | .009<br>.004<br>.002 | .019<br>.004<br>.001 |
| PM10 | 24-hour (State)<br>24-hour (National)<br>Annual (State)<br>Annual (National) | | | | 93<br>92<br>44.0<br>43.4 | 79<br>79<br>40.5<br>40.0 | 106<br>102<br>39.1<br>38.7 | | | | | | | | | | | | | | |
| PM2.5 | 24-hour<br>Annual (National)<br>Annual (State) | | | | | | | | | | 63<br>17.7<br>17.7 | 71<br>16.4<br>16.8 | 86<br>16.9<br>19.7 | 52.2<br>17.9<br>17.8 | 66.1<br>17.0<br>17.0 | 79.0<br>17.0<br>16.9 | | | | | |
| Pb | 24-hour<br>Quarterly | | | | | | | .02<br>.01 | .02<br>.01 | .02<br>.01 | | | | | | | | | | | |

[1] Concentration units are ppm for O3, NO2, CO, and SO2 and µg/m3 for PM10, PM2.5 and Pb
Source: CARB. California Ambient Air Quality Data 1980-2004, PTSD-06-021-CD. January 2006.
CARB. http://www.arb.ca.gov/adam/welcome.html. Retrieved July 31, 2006

### 8.1.3 ENVIRONMENTAL CONSEQUENCES

#### *8.1.3.1 Significance Criteria and Methodology*

As noted in Table 8.1-2, the assessment of potential impacts to air quality from KRCD CPP criteria pollutants involves a number of significance criteria. These include NAAQS and CAAQS, Significant Emissions Rates (SERs), Prevention of Significant Deterioration (PSD) Significant Impact Levels (SILs) & increments as well as Significant Monitoring Concentrations. KRCD CPP emissions and resulting air quality impacts are compared with these significance criteria using the methodology described below in the AQIA sections to determine whether KRCD CPP projected impacts will be significant.

#### *8.1.3.2 Construction Impacts*

**Emissions Rates – Construction**

Air emissions resulting from KRCD CPP construction phase were estimated to serve as a basis for the construction emissions impact assessment. The emissions estimates for construction include equipment exhaust from construction equipment, delivery vehicles and worker travel as well as fugitive dust from windblown erosion and the movement of vehicles on the construction site. These construction emissions estimates are included in Appendix 8.1-3, Construction Phase Emissions and Impacts.

**Construction – Impacts**

Based on the potential emissions calculated for the construction phase, air dispersion modeling of construction impacts was performed using USEPA Industrial Source Complex Short Term (ISCST3 version 02035) air dispersion model. Construction activities will be relatively short in duration and the results of the modeling analysis indicate that KRCD CPP impacts from construction activities occur primarily near the project site. Detailed information regarding construction impacts may be found in Appendix 8.1-3, Construction Phase Emissions and Impacts.

#### *8.1.3.3 Operational Impacts*

**Criteria Pollutant Emissions**

The KRCD CPP will use natural gas as the only fuel from its CT prime movers. Table 8.1-4 provides the anticipated natural gas fuel composition. Emissions of criteria pollutants from the KRCD CPP CTs include NOx, CO, VOCs, PM10, PM2.5 and SO2, which are products of natural gas combustion. Relatively smaller amounts of these emissions also result natural gas firing in the auxiliary boiler and emergency generator, and low sulfur fuel oil firing in the diesel fire pump. The KRCD CPP evaporative cooling tower will produce relatively small amounts of PM10 and PM2.5 emissions. The cooling tower's PM emissions result from solids being carried away from the towers as part of their drift, i.e., un-evaporated water.

The emissions of NOx and CO from CTs can be large, if uncontrolled. However, the KRCD CPP CTs will use SCR and an oxidation catalyst to minimize emissions of NOx and CO, respectively. The oxidation catalyst will also serve to reduce VOC emissions as well. These emissions control systems were determined as Best Available Control Technology (BACT). Table 8.1-5 provides a summary of BACT for the CTs. The BACT limits for other KRCD CPP equipment are shown in Table 8.1-6, and a more detailed discussion of the BACT evaluation process is provided in Appendix 8.1-4, BACT Analysis.

**Table 8.1-4**
**Natural Gas Fuel Composition**
**KRCD CPP**

| Methane | Ethane | Propane | I_Butane | N_Butane | I_Pentane | N_Pentane | C6 | Nitrogen gas | Carbon Dioxide |
|---|---|---|---|---|---|---|---|---|---|
| 94.67% | 2.68% | 0.59% | 0.09% | 0.09% | 0.03% | 0.02% | 0.02% | 0.55% | 1.26% |

Notes:
1. Sulfur content reported as varying from 0.042 to 0.322 grains/100 standard cubic feet (scf). However, for emission calculations the KRCD CPP assumes approximately 0.3 grains/100 scf. Energy content = 1,032 million British thermal units per standard cubic feet higher heating value BTU/scf (HHV).
2. Specific Gravity = 0.592
3. Data provided by SCG for its Pixley Station (1/1/06-11/20/06)

**Table 8.1-5**
**Summary of Proposed BACT for CTs**
**KRCD CPP**

| Constituent | Proposed BACT | Proposed Emission Limitation[1] | |
|---|---|---|---|
| | | GE | Siemens |
| NOx | Dry low NOx with SCR | 2.0 ppm averaged over 3 hrs[2] | 2.0 ppm averaged over 3 hrs[2] |
| CO | Oxidation Catalyst | 2.0 ppm averaged over 3 hrs[2] | 2.0 ppm averaged over 3 hrs[2] |
| VOCs | Oxidation Catalyst | 2.0 ppm averaged over 3 hrs[2] | 2.0 ppm averaged over 3 hrs[2] |
| PM10 | Use of Natural Gas Fuel | 9.0 lbs/hr | 10.0 lbs/hr |
| SO2 | Use of Natural Gas Fuel | 1.5 lbs/hr[3] | 1.7 lbs/hr[3] |

Notes:
1. Not to apply during periods of startup and shutdown.
2. Ppm dry volume referenced at 15% oxygen; Ammonia slip is limited to no more than 5 ppm.
3. Based on a fuel sulfur content of 0.30 grains/100 scf.

Acronyms: ppm = parts per million
Lbs/hr – pounds per hour

| Table 8.1-6<br>Summary of Proposed BACT for Ancillary Equipment<br>KRCD CPP | | | | |
|---|---|---|---|---|
| **Proposed BACT/ Emissions Limitation** | | | | |
| **Constituent** | **Auxiliary Boiler** | **Emergency Generator** | **Diesel Fire Pump** | **Cooling Tower** |
| NOx | 9 ppm[1] | 1.0 g/bhp-hr | 6.9 g/bhp-hr | NA |
| CO | NA | NA | NA | NA |
| VOCs | Natural Gas Fuel | 1.0 g/bhp-hr | Positive Crankcase Ventilation[2] | NA |
| PM10 | Natural Gas Fuel | Natural Gas Fuel | 0.4 g/bhp-hr[3] | 0.0005% Cooling Tower Drift |
| SO2 | NA | NA | Low sulfur fuel[4] | NA |

Notes:
1. 9 parts per million dry volume (ppmvd) referenced at 3% oxygen.
2. Provided this does not void an Underwriter Laboratories certification.
3. Assumes that Toxic BACT is not triggered.
4. If available very low sulfur fuel will be used.

Acronyms: g/bhp-hr = grams per break horsepower hour

**Criteria Pollutant Emissions Rates - Operations**

Three operating modes need to be considered when determining worst-case emissions levels: normal or steady-state operations (under a number of ambient conditions and operating modes); startup/shutdown mode; and the initial commissioning period. While the sections below provide an overview of KRCD CPP air emissions during operations, more detail in presented in Appendix 8.1-5, Operations Phase Emissions.

**Steady-State**

For projects of this type, normal operations focus primarily on full load operation with occasional partial load operating levels. Performance data for both the GE and Siemens CT project options were developed to encompass the KRCD CPP's minimum, maximum and annual average ambient conditions. The following five full-load ambient/operational scenarios were used as the basis for ensuring that KRCD CPP overall range of possible emissions rates were considered for the assessment of possible impacts:

- Scenario A – 26F/60% Relative Humidity (RH), Fogger-Off, Steam Injection-Off;
- Scenario B – 63F/40% RH, Fogger-On, Steam Injection-Off;
- Scenario C – 63F/40% RH, Fogger-Off, Steam Injection-Off;
- Scenario D – 103F/20.1% RH, Fogger-On, Steam Injection-On; and

- Scenario E – 103F/20.1% RH, Fogger-Off, Steam Injection-Off.

The fogger represents the CT air inlet evaporative cooling system, which is used as needed to cool the CTs incoming air for increased CT output, and the steam injection is used for enhanced output as well.

A sixth ambient/operational scenario (F) was developed for CT partial load operation, which although not common, may occur from time to time.[1] The partial load ambient/operational scenario was:

- Scenario F – 63F/40% RH, Fogger-Off, Steam Injection-Off

Appendix 8.1-5 contains emissions rates tables (for both the GE and Siemens options) for each of the five full-load ambient/operational scenarios as well as the partial load scenario.

**Startup/Shutdown**

During startup and shutdown sequences the emissions rates of some CT pollutants are higher than in the steady-state operating mode. Therefore, impacts from startup and shutdown operations are assessed along with those due to steady-state operation. In general these higher startup and shutdown emissions rates result because the emissions control equipment cannot function immediately upon startup or continue to function through the full shutdown period.

For both the GE and Siemens options, startup sequences are divided into three categories: cold, warm and hot. Emissions tables for cold, warm and hot startups as well as shutdowns are provided in Appendix 8.1-5. As cold startups assume a prior shutdown of more than 64 hours and the KRCD CPP will not be off-line for this amount of time[2], only hot and warm startup sequences were used in the impact assessment.

**Commissioning Period**

Commissioning emissions rates, which will occur within the first month or two of KRCD CPP operations, are shown in Appendix 8.1-5. These must be factored into the assessment of worst case emissions, as during this one-time commissioning period, CT emissions control equipment (i.e., the SCR and oxidation catalyst) will not be operational at all times. Subsequent first year impacts need not account for commissioning emissions, since the allowable steady-state

[1] For the GE option, CT partial load operation can occur down to as low as approximately 50% of full load; for the Siemens option, partial load goes down to approximately 60% of full load. In either case CT partial load operation will involve only one of the two CTs at partial load with the second CT either off or at full load. Rather than run both CTs at partial load, a single CT will be used in full load mode, as this is more efficient.

[2] If the KRCD CPP is off-line for more than 64 hours, the auxiliary boiler will maintain a warm/hot standby status.

operating hours of the KRCD CPP will be reduced to the extent that commissioning emissions occur.

**Maximum Emissions Rates – Operations**

Maximum emissions rates tables were developed for the full load steady-state, startup/shutdown, commissioning and partial load steady-state emissions profiles and cross-referenced to each of the applicable impact assessment averaging times (i.e., the 1-hour, 3-hour, 8-hour, 24-hour & annual averaging periods). These maximum emissions rates tables, which serve as the basis for the AQIA described below in Section 8.1.3.4 are provided in Appendix 8.1-5.

**Greenhouse Gas Emissions**

Emissions of greenhouse gases (GHGs) from human activities, including power generation, and the impact of these emissions with respect to the global warming phenomenon are an issue of increasing concern. California has an existing program in place to voluntarily inventory GHG emissions and has recently enacted legislation that requires the development of an Emissions Performance Standard (EPS) for CO2 emissions from power generation facilities, which supply power to California markets.

The GHG emissions from natural gas-fired combined-cycle power generation facilities such as the KRCD CPP are almost completely in the form of CO2. Although relatively small, additional sources of GHGs include dinitrogen oxide also known as nitrous oxide (N2O) and methane (CH4) from the combustion process. An additional source of GHG emissions from power plants is sulfur hexafluoride (SF6) gas, which can leak from high voltage circuit breakers. Although no federal limitations exist for GHG emissions from power plants, in December 2006 and in accordance with the requirements of California Senate Bill (SB) 1368, the California Public Utilities Commission (CPUC) issued a proposed decision to promulgate an interim GHG EPS to limit CO2 emissions from new power plants that provide long term (i.e., contracts of five years or more) base load power to end users in California. SB 1368 requires that by June 30, 2007, the CEC adopt a GHG EPS for long-term base load generation commitments made by local publicly owned electric utilities and that such adoption be made in consultation with the CPUC and CARB (i.e., consistent with EPS already developed by the CPUC and/or CARB).

The CPUC EPS is no more than 1,100 pounds (lbs) of CO2 per megawatt hour (MWhr). As shown in Tables 8.1-7 and 8.1-8, the KRCD CPP's emissions rates of CO2 from the CTs will be in the range of 800 to 850 lbs per MWhr. This range is significantly less than the applicable CO2 emissions performance standard, which is likely to be adopted by the CEC. Tables 8.1-7 and 8.1-8, also provide estimates of the GHG emissions rates from the KRCD CPP's other combustion sources.

**Table 8.1-7**
**Greenhouse Gas Emissions Rates – GE Option**
**KRCD CPP**

| | One CT | Both CTs | Auxiliary Boiler | Emergency Generator | Diesel Fire Pump | Circuit Breakers | Totals |
|---|---|---|---|---|---|---|---|
| **CO2** | | | | | | | |
| Emissions Rate (lbs/hr) | 218,888[1] | 437,776 | 7,204[2] | 1,416[3] | 395[4] | NA | 446,791[5] |
| Emissions Rate (lbs/MWhr) | 835.6[6] | 835.6[6] | NA | NA | NA | NA | |
| **N2O** | | | | | | | |
| Emissions Rate (lbs/hr) | 5.6[7] | 11.2 | 0.04[8] | 0.008[9] | 0.002[9] | NA | 11.25[5] |
| **CH4** | | | | | | | |
| Emissions Rate (lbs/hr) | 16.0[10] | 32.0 | 0.14[11] | 0.03[9] | NA | NA | 32.17[5] |
| **SF6** | | | | | | | |
| Emissions Rate (lbs/hr) | NA | NA | NA | NA | NA | 6.16E-04[12] | 6.16E-04 |

Notes:

1. CO2 emissions rate for the CTs is based on estimated project performance data for the 26°F ambient temperature case, as this scenario results in the highest emissions rate.
2. CO2 emissions rate for the auxiliary boiler is based on an emissions factor of 120,000 lbs per million standard cubic feet (MMscf) (approximately 117.6 lbs per million British thermal units (MMBtu)) and fuel input of 61.23 MMBtu/hr. The emissions factor is from Table 1.4-2 of AP-42 (5th Edition).
3. CO2 emissions rate for the natural gas-fired emergency generator is based on an emissions factor of 110 lbs/MMBtu and fuel input of 12.87 MMBtu/hr. The emissions factor is from Table 3.2-2 of AP-42 (5th Edition).
4. CO2 emissions rate for the diesel fire pump is based on an emissions factor of 164 lbs/MMBtu and fuel input of 2.4083 MMBtu/hr. The emissions factor is from Table 3.3-1 of AP-42 (5th Edition).
5. Totals are based on maximum hourly emissions. On an annual basis hourly emissions will be less because the CTs will produce lower emissions on an average annual basis.
6. Based on the 103°F ambient case, as this scenario provides the highest lbs/MW-hr emissions rate.
7. N2O emissions rate for the CTs is based on an emissions factor of 0.003 lbs/MMBtu and a maximum fuel input of 1,852 MMBtu/hr. The emissions factor is from Table 3.1-2a of AP-42 (5th Edition).
8. N2O emissions rate for the auxiliary boiler is based on an emissions factor of 0.64 lbs/MMscf (approximately 6.27E-04 lbs/MMBtu) and fuel input of 61.23 MMBtu/hr. The emissions factor is from Table 1.4-2 of AP-42 (5th Edition).
9. Based on a ratio of the emergency generator or diesel fire pump fuel input to the auxiliary boiler fuel input.
10. CH4 emissions rate for the CTs is based on an emissions factor of 8.6E-03 lbs/MMBtu and a maximum fuel input of 1,852 MMBtu/hr. The emissions factor is from Table 3.1-2a of AP-42 (5th Edition).
11. CH4 emissions rate for the auxiliary boiler is based on an emissions factor of 2.3 lbs/MMscf (approximately 2.3E-03 lbs/MMBtu) and fuel input of 61.23 MMBtu/hr. The emissions factor is from Table 1.4-2 of AP-42 (5th Edition).
12. SF6 emissions rate is based on five 230kV switchyard breakers, each containing 90 lbs of SF6 and three generation breakers, each containing 30 lbs of SF6. The annual leakage rate is assumed as 1%, although 0.5% is likely to be more realistic.

**Table 8.1-8**
**Greenhouse Gas Emissions Rates – Siemens Option**
**KRCD CPP**

| | One CT | Both CTs | Auxiliary Boiler | Emergency Generator | Diesel Fire Pump | Circuit Breakers | Totals |
|---|---|---|---|---|---|---|---|
| **CO2** | | | | | | | |
| Emissions Rate (lbs/hr) | 246,657[1] | 493,314 | 7,204[2] | 1,416[3] | 395[4] | NA | 502,329[5] |
| Emissions Rate (lbs/MWhr) | 823.7[6] | 823.7[6] | NA | NA | NA | NA | |
| **N2O** | | | | | | | |
| Emissions Rate (lbs/hr) | 6.3[7] | 12.6 | 0.04[8] | 0.008[9] | 0.002[9] | NA | 12.65[5] |
| **CH4** | | | | | | | |
| Emissions Rate (lbs/hr) | 18.0[10] | 36.0 | 0.14[11] | 0.03[9] | NA | NA | 36.17[5] |
| **SF6** | | | | | | | |
| Emissions Rate (lbs/hr) | NA | NA | NA | NA | NA | 6.16E-04[12] | 6.16E-04 |

Notes:

1. CO2 emissions rate for the CTs is based on estimated project performance data for the 26°F ambient temperature case, as this scenario results in the highest emissions rate.
2. CO2 emissions rate for the auxiliary boiler is based on an emissions factor of 120,000 lbs/MMscf (approximately 117.6 lbs/MMBtu) and fuel input of 61.23 MMBtu/hr. The emissions factor is from Table 1.4-2 of AP-42 (5th Edition).
3. CO2 emissions rate for the natural gas-fired emergency generator is based on an emissions factor of 110 lbs/MMBtu and fuel input of 12.87 MMBtu/hr. The emissions factor is from Table 3.2-2 of AP-42 (5th Edition).
4. CO2 emissions rate for the diesel fire pump is based on an emissions factor of 164 lbs/MMBtu and fuel input of 2.4083 MMBtu/hr. The emissions factor is from Table 3.3-1 of AP-42 (5th Edition).
5. Totals are based on maximum hourly emissions. On an annual basis hourly emissions will be less because the CTs will produce lower emissions on an average annual basis.
6. Based on the 103°F ambient case, as this scenario provides the highest lbs/MW-hr emissions rate.
7. N2O emissions rate for the CTs is based on an emissions factor of 0.003 lbs/MMBtu and a maximum fuel input of 2,087.5 MMBtu/hr. The emissions factor is from Table 3.1-2a of AP-42 (5th Edition).
8. N2O emissions rate for the auxiliary boiler is based on an emissions factor of 0.64 lbs/MMscf (approximately 6.27E-04 lbs/MMBtu) and fuel input of 61.23 MMBtu/hr. The emissions factor is from Table 1.4-2 of AP-42 (5th Edition).
9. Based on a ratio of the emergency generator or diesel fire pump fuel input to the auxiliary boiler fuel input.
10. CH4 emissions rate for the CTs is based on an emissions factor of 8.6E-03 lbs/MMBtu and a maximum fuel input of 2,087.5 MMBtu/hr. The emissions factor is from Table 3.1-2a of AP-42 (5th Edition).
11. CH4 emissions rate for the auxiliary boiler is based on an emissions factor of 2.3 lbs/MMscf (approximately 2.3E-03 lbs/MMBtu) and fuel input of 61.23 MMBtu/hr. The emissions factor is from Table 1.4-2 of AP-42 (5th Edition).
12. SF6 emissions rate is based on five 230kV switchyard breakers, each containing 90 lbs of SF6 and three generation breakers, each containing 30 lbs of SF6. The annual leakage rate is assumed as 1%, although 0.5% is likely to be more realistic.

### *8.1.3.4 Air Quality Impact Analysis - Approach*

**Analysis Methodology**

A modeling protocol was submitted to the SJVAPCD and CEC for review on September 11, 2006. The protocol was revised based on comments received and is included as Appendix 8.1-2.

**Ambient Air Quality Standards**

The impacts of KRCD CPP emissions on air quality concentrations were calculated using the USEPA ISCST3 version 02035 air dispersion model. The ISCST3 model is a straight-line, steady-state Gaussian dispersion model, capable of calculating pollution concentrations from several different types of sources. The stack plume concentrations will be highest along the centerline of the plume, and decrease towards the plume edges. The ISCST3 model calculates concentrations through the plume including numerous factors, e.g., atmospheric stability, wind speed, terrain, nearby buildings, downwind distance. Required inputs to this model include stack parameters (for stack sources these include locations, stack heights, exit velocities, diameters, exit temperatures), emission rates, modeling options, receptor information, and meteorological data.

The modeling included emissions from the two CTs, one auxiliary boiler, an eight-cell cooling tower, a natural-gas-fired emergency generator, and a diesel fire pump. Since the CTs may be supplied by either Siemens or GE, air quality modeling analyzed both options. As discussed previously in this section, the CT's five normal operational scenarios as well as a partial load scenario were included in the modeling. The stack parameters for the other pieces of equipment will remain the same throughout the year.

Stack parameters input to the ISCST3 model for the different modeling scenarios are listed in Table 8.1-9.

**Table 8.1-9**
**Stack Parameters**
**KRCD CPP**

| Scenario | Source | Height Meters | Stack Diameter Meters | Exit Velocity Meters Per Second | Temperature °Kelvin |
|---|---|---|---|---|---|
| | Auxiliary Boiler | 30.48 | 1.07 | 10.31 | 435.9 |
| | Cooling Tower (per cell) | 24.38 | 7.92 | 15.07 | 300.4 |
| | Emergency Generator | 13.72 | 0.45 | 34.05 | 803.2 |
| | Diesel Fire Pump | 13.72 | 0.13 | 45.51 | 755.4 |
| **Siemens** | | | | | |
| A | CT | 45.72 | 5.49 | 23.70 | 363.7 |
| B | CT | 45.72 | 5.49 | 22.52 | 362.0 |
| C | CT | 45.72 | 5.49 | 21.97 | 360.9 |

| Table 8.1-9<br>Stack Parameters<br>KRCD CPP | | | | | |
|---|---|---|---|---|---|
| **Scenario** | **Source** | **Height Meters** | **Stack Diameter Meters** | **Exit Velocity Meters Per Second** | **Temperature °Kelvin** |
| D | CT | 45.72 | 5.49 | 22.28 | 359.8 |
| E | CT | 45.72 | 5.49 | 19.78 | 360.4 |
| F | CT | 45.72 | 5.49 | 15.74 | 358.7 |
| **GE** | | | | | |
| A | CT | 45.72 | 5.49 | 21.33 | 360.9 |
| B | CT | 45.72 | 5.49 | 20.34 | 360.9 |
| C | CT | 45.72 | 5.49 | 19.85 | 359.8 |
| D | CT | 45.72 | 5.49 | 20.32 | 359.3 |
| E | CT | 45.72 | 5.49 | 17.98 | 359.3 |
| F | CT | 45.72 | 5.49 | 13.16 | 355.4 |

The ISCST3 model was run using the default regulatory mode. The modeling analysis included downwash calculations. Downwash building height and width dimensions were computed using the USEPA Building Profile Input Program (version 95086). The buildings and corresponding input file are contained in Appendix 8.1-6, Air Dispersion Modeling Data.

In accordance with USEPA Modeling Guidelines, an analysis of surrounding land use was conducted in order to determine whether urban or rural dispersion coefficients should be used in the modeling. The land-use typing scheme developed by Auer (Journal of Applied Meteorology 17:636-643) was applied to areas within three kilometers (km) of the project site. According to USEPA guidance, if more than 50 percent of this area falls within Auer land use types I1, I2, C1, R2, and R3, then urban coefficients should be used. Otherwise, rural coefficients should be used. Existing Geographic Information System (GIS) data was used to evaluate the Land Use Land Cover data. The analysis showed that 91 percent of the area has rural classifications. Therefore, the use of rural dispersion coefficients is appropriate.

Receptors were spaced at 25 meter increments along the KRCD CPP fence line. Receptor data for the remaining off-site receptors were obtained from Digital Elevation Model (DEM) data. These data have 30 meter spacing. Initial runs included spacing of 30 meters out at least 200 meters from the project site, 90 meters out to five km from the project site and 240 meter spacing from five km to ten km from the project site. The terrain within ten km of the source is essentially flat. The base height at the project site is 327 feet; the maximum terrain height is 367 feet and is located approximately 8.5-10 km to the northeast of the KRCD CPP. The terrain slopes gradually downward from the project site toward the southwest to a minimum terrain elevation of 262 feet. Based on the results of initial modeling runs, receptors were spaced at

30 meter increments surrounding the locations of maximum impacts. Appendix 8.1-6 provides figures, which illustrates the receptor locations used as input to the ISCST3 model.

The SJVAPCD provided meteorological data from Fresno airport from 1989 for the air quality analysis. The SJVAPCD has approved the use of this data set for air quality modeling.

The one-hour concentrations of NO2, for those cases that included the CTs as well as ancillary equipment, were computed following the revised USEPA guidance for computing these concentrations (August 9, 1995 60 Federal Register 40465). The ISC_ OLM model was used to calculate one-hour NO2 impacts under those circumstances. Concurrent O3 data (from 1989) were provided by the SJVAPCD from the Fresno Drummond Street monitoring station (SJVAPCD, 2003). Based on preliminary modeling with ISCST3, the maximum impacts will occur near the project site fence line. Consequently the ISC_OLM model incorporated a refined grid (30 meter spacing) surrounding the project site.

A sample ISCST3 input file is included in Appendix 8.1-6. Electronic versions of all modeling inputs are being provided under separate cover due to their size.

**Fumigation Analysis**

Fumigation occurs when a stable layer of air is above the stack release height and unstable air is below. Under these circumstances, the plume can be mixed downward and potentially cause a high ground-level concentration.

The USEPA SCREEN3 model was used to calculate fumigation impacts. Stack parameters for the enveloping range of operating scenarios were input to the model. The fumigation modeling results are summarized in the AQIA Results section.

**Prevention of Significant Deterioration Class I Analyses**

The PSD Class I analysis addresses the impacts to national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value that have been specifically identified as Class I areas. Several Class I areas are located near the KRCD CPP project site. The Class I areas within approximately 200 km from the project site are found in Table 8.1-10.

| Table 8.1-10<br>Class I Wilderness Areas within 200 km from Project Site<br>KRCD CPP | |
|---|---|
| **Wilderness Area** | **Distance and Direction from Source** |
| Kings Canyon National Park | 55.7 km east north-east |
| Sequoia National Park | 59.7 km east north-east |
| John Muir Wilderness Area | 70.0 km north-east |
| Kaiser Wilderness Area | 76.5 km north north-east |
| Ansel Adams Wilderness Area | 92.7 km north north-east |
| Yosemite National Park | 100.7 km north |
| Dome land Wilderness Area | 131.9 km south-east |
| Pinnacles Wilderness Area | 142.6 km west |
| Hoover Wilderness Area | 161.6 km north |
| Ventana Wilderness Area | 162.0 km west south-west |
| Emigrant Wilderness Area | 163.0 km north |
| San Rafael Wilderness Area | 180.4 km south south-west |
| Mokelumne Wilderness Area | 213.7 km north |

The impacts assessed for PSD Class I analyses include increment consumption and Air Quality Related Values (AQRVs). Analyzed AQRVs included visibility and deposition. PSD Class I increments have been established for NO2, SO2, and PM10. The KRCD CPP emissions of SO2 fall below the significant emission rate of 40 tons per year for SO2, so further analysis of SO2 increment consumption is not required. However, SO2 emissions are included in the calculation of visibility and deposition impacts.

The ISCST3 model is not appropriate for air quality modeling beyond distances of 50 km. Instead, the USEPA-approved CALPUFF long-range transport model is the appropriate model to calculate increment consumption, visibility, and deposition impacts for the applicable the Class I areas, all of which are located more than 50 km from the KRCD CPP.

The CALPUFF model (version 5.711a) was run in a screening mode (CALPUFF-lite). Meteorological data for the screening mode requires the same information as ISCST but precipitation data are also needed. As recommended by USEPA guidelines from the Interagency Workgroup on Air Quality Modeling (IWAQM) (USEPA, 1998), five years of meteorological data were input to the analysis. Surface data from Fresno Airport from 1986-1990 (SAMSON format) were compiled in the CPRAMMET preprocessor with concurrent upper air data from Oakland Airport. Also following IWAQM guidelines, polar receptor rings were generated for each Class I area, each ring at a distance equal to the closest distance of each Class I area, with 2-degree spacing along each ring.

Additional emissions data were input to CALPUFF for sulfates (SO4), condensable PM, and filterable PM. Based on guidance provided by the National Park Service (2006), for CTs, when

SO4 emissions are not known, one third of the SO2 emissions, corrected for molecular weight, are categorized as SO4. Twenty five percent of the emitted PM10 was assumed to be filterable (elemental carbon (EC)), and 75 percent will be considered condensable. Sulfate emissions are subtracted from the condensable portion to determine secondary organic aerosol (SOA). These assumptions also were applied to the auxiliary boiler.

Emission rates used for visibility and 24-hour increment consumption analyses were based on 24-hour emission rates from the KRCD CPP, while annual emission rates were used for deposition and annual increment analyses. Preliminary modeling showed that CALPUFF-lite results were impacted more by the magnitude of the emissions than differences in stack parameters, consequently the CTs' Scenario A was used in the short-term CALPUFF analyses, since this scenario provided the largest NOx emissions.

Calculation of PM10 increment consumption included the sum of PM10, SO4 mass (multiplied by 1.375 to convert to ammonium sulfate) and NO3 mass (multiplied by 1.29 to convert to convert to ammonium nitrate). Total deposition is calculated as the sum of wet and dry components of nitrogen (N) or sulfur (S) deposition. Nitrogen deposition is calculated as the sum of SO4 (multiplied by 0.292 to convert ammonium sulfate to N), NOx (multiplied by 0.304 to convert NO2 to N), nitric acid (HNO3) (multiplied by 0.222 to convert HNO3 to N), and NO3 (multiplied by 0.452 to convert ammonium nitrate to N). S deposition is calculated as the sum of SO2 (multiplied by 0.500 to convert SO2 to S) and SO4 (multiplied by 0.333 to convert SO4 to S). These conversions were made within the POSTUTIL program, which adjusts the concentrations, wet deposition fluxes, and dry deposition fluxes calculated within CALPUFF.

Monthly background O3 data are required input to CALPUFF. Where available, observed O3 data were input to CALPUFF, otherwise the default value of 80 parts per billion (ppb) was used. Monthly O3 data were calculated from the most recent five years of available O3 data measured at Yosemite National Park, Sequoia National Park, and Pinnacles Wilderness (http://12.45.109.6/pls/portal/data_request.mainplot).

Monthly RH adjustment factors are used in the visibility analysis as part of the CALPUFF post-processor program CALPOST. These data, which were obtained from the USEPA (2003) document, *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Program,* are summarized in Appendix 8.1-6, Air Dispersion Modeling Data.

### *8.1.3.5 Air Quality Impact Analysis - Results*

**Air Quality Impact Analysis, Prevention of Significant Deterioration Class II & Fumigation Results**

Tables 8.1-11 and 8.1-12 summarize the modeling results from the ISCST3 and fumigation modeling of the CTs. Table 8.1-11 presents the predicted concentrations for the Siemens CT's and other sources for various operating scenarios and averaging times. Table 8.1-12 shows the concentrations for each pollutant under the various operating scenarios and averaging times for the GE CT's and other sources. The emissions data for the various operational cases referenced in Tables 8.1-11 and 8.1-12 can be found in Appendix 8.1-5, Operations Phase Emissions.

**Table 8.1-11**
**Predicted Concentrations From Siemen's CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| **Case 1a ( 1-hour maximum normal)[1]** | | | | | | |
| NOx (ug/m3) | 134.4 | 134.4 | 134.4 | 134.4 | 134.4 | 134.4 |
| UTM location, x, y, z (meters) | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 |
| CO (ug/m3) | 460.4 | 460.4 | 460.4 | 460.4 | 460.4 | 460.4 |
| UTM location, x, y, z (meters) | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 |
| SO2 (ug/m3) | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 |
| UTM location, x, y, z (meters) | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 |
| **Case 1b (1-hour commissioning)[2]** | | | | | | |
| NOx (ug/m3) | 52.0 | 54.6 | 56.1 | 56.0 | 64.1 | 90.7 |
| UTM location, x, y, z (meters) | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052700, 101 | 270300, 4052700, 101 |
| CO (ug/m3) | 107.0 | 112.4 | 115.3 | 115.3 | 131.8 | 186.6 |
| UTM location, x, y, z (meters) | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052700, 101 | 270300, 4052700, 101 |

**Table 8.1-11**
**Predicted Concentrations From Siemen's CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| SO2 (ug/m3) | 0.44 | 0.46 | 0.47 | 0.47 | 0.54 | 0.77 |
| UTM location, x, y, z (meters) | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052640, 100 | 270300, 4052700, 101 | 270300, 4052700, 101 |
| **Case 1c (1-hour partial load)[3]** | | | | | | |
| NOx (ug/m3) | -- | -- | -- | -- | -- | 134.4 |
| UTM location, x, y, z (meters) | | | | | | 270060, 4052730, 99 |
| CO (ug/m3) | -- | -- | -- | -- | -- | 460.3 |
| UTM location, x, y, z (meters) | | | | | | 269730, 4052850, 99 |
| SO2 (ug/m3) | -- | -- | -- | -- | -- | 7.4 |
| UTM location, x, y, z (meters) | | | | | | 270330, 4052700, 101 |
| **Case 3a (8-hour maximum normal)[4]** | | | | | | |
| CO (ug/m3) | 36.7 | 39.0 | 40.3 | 40.2 | 44.2 | 56.3 |
| UTM location, x, y, z (meters) | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 |
| **Case 3b (8-hour commissioning)[2]** | | | | | | |
| CO (ug/m3) | -- | -- | -- | -- | -- | 87.5 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| **Case 3c (8-hour partial load)[5]** | | | | | | |
| CO (ug/m3) | -- | -- | -- | -- | -- | 13.9 |
| UTM location, x, y, z (meters) | | | | | | 269777.19, 4052851.25, 99.7 |
| **Case 3d (8-hour auxiliary boiler)** | | | | | | |
| CO (ug/m3) | 29.4 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| **Case 4a (24-hour maximum normal)[6]** | | | | | | |
| PM10 (ug/m3) | 0.93 | 0.98 | 1.15 | 1.02 | 1.39 | 1.83 |
| UTM location, x, y, | 270270, | 270270, | 270270, | 270270, | 270270, | 270270, |

**Table 8.1-11**
**Predicted Concentrations From Siemen's CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| z (meters) | 4052610, 100 | 4052610, 100 | 4052640, 100 | 4052640, 100 | 4052640, 100 | 4052640, 100 |
| PM2.5 (ug/m3) | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| UTM location, x, y, z (meters) | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 |
| SO2 (ug/m3) | 0.17 | 0.18 | 0.21 | 0.18 | 0.25 | 0.32 |
| UTM location, x, y, z (meters) | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 |
| **Case 4b (24-hour commissioning)[7]** | | | | | | |
| PM10 (ug/m3) | -- | -- | -- | -- | -- | 1.01 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052610, 100 |
| PM2.5 (ug/m3) | -- | -- | -- | -- | -- | 0.09 |
| UTM location, x, y, z (meters) | | | | | | 270330, 4052700, 101 |
| SO2 (ug/m3) | -- | -- | -- | -- | -- | 0.17 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| **Case 4c (24-hour partial load)[8]** | | | | | | |
| PM10 (ug/m3) | -- | -- | -- | -- | -- | 1.43 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| PM2.5 (ug/m3) | -- | -- | -- | -- | -- | 0.09 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052610, 100 |
| SO2 (ug/m3) | -- | -- | -- | -- | -- | 0.25 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| **Case 4d (24-hour auxiliary boiler)** | | | | | | |
| PM10 (ug/m3) | 2.95 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, | | | | | |

**Table 8.1-11**
**Predicted Concentrations From Siemen's CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| | 99 | | | | | |
| PM2.5 (ug/m3) | 0.10 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| SO2 (ug/m3) | 0.24 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| **Case 5 (annual impacts)[9]** | | | | | | |
| NOx (ug/m3) | | 0.20 | | | | |
| UTM location, x, y, z (meters) | | 270180, 4052700, 100 | | | | |
| PM10 (ug/m3) | | 0.11 | | | | |
| UTM location, x, y, z (meters) | | 270270, 4052640, 100 | | | | |
| PM2.5 (ug/m3) | | 0.008 | | | | |
| UTM location, x, y, z (meters) | | 271530, 4051710, 101 | | | | |
| SO2 (ug/m3) | | 0.02 | | | | |
| UTM location, x, y, z (meters) | | 270270, 4052640, 100 | | | | |
| **Fumigation (1 hour)[10]** | | | | | | |
| NOx (ug/m3) | 54.2 | | | | | 72.6 |
| Distance downwind (meters) | 17,667 | | | | | 14,231 |
| CO (ug/m3) | 111.4 | | | | | 149.3 |
| Distance downwind (meters) | 17,667 | | | | | 14,231 |
| SO2 (ug/m3) | 0.5 | | | | | 0.6 |
| Distance downwind (meters) | 17,667 | | | | | 14,231 |

Notes:
1 Two Siemens CTs, auxiliary boiler, natural gas emergency generator. For SO2 and NO2 impacts, fire pump included instead of emergency generator, because screening analyses show that SO2 and NO2 impacts are higher from fire pump. Cooling tower emissions are PM only.
2 Estimates during commission assumes operations of one turbine.

**Table 8.1-11**
**Predicted Concentrations From Siemen's CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|

3 One CT runs partial load Scenario F, another CT runs in steady state, Scenario B. Includes auxiliary boiler and natural gas emergency generator (for CO) or auxiliary boiler and diesel fire pump (for NOx and SO2). Higher impacts occur when the southern CT is run under Scenario F and the northern CT is run under Scenario B.
4 Siemens CTs, 3-hour auxiliary boiler, 30 minutes natural gas emergency generator.
5 One CT runs partial load Scenario F, another CT runs in steady state, Scenario B. Includes auxiliary boiler (three hours) and natural gas emergency. Higher impacts occur when the southern CT is run under Scenario F and the northern CT is run under Scenario B.
6 CTs, four hours auxiliary boiler, 24 hours cooling tower, 30 minutes diesel fire pump. PM10, SO2, and PM2.5 impacts higher from fire pump than emergency generator.
7 Commissioning runs one turbine, 24 hours cooling tower.
8 One turbine partial load Scenario F, one turbine steady state, Scenario B, four hours auxiliary boiler, 24 hours cooling tower, 30 minutes diesel fire pump.
9 8760 hours CTs, 2315 hours auxiliary boiler, 8760 hours cooling tower, 26 hours natural gas emergency generator, 26 hours fire pump.
10 Two CTs.

**Acronyms:**
UTM = Universal Transverse Mercator

**Table 8.1-12**
**Predicted Concentrations From GE CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| **Case 1a ( 1-hour maximum normal)[1]** | | | | | | |
| NOx (ug/m3) | 134.4 | 134.4 | 134.4 | 134.4 | 134.4 | 134.4 |
| UTM location, x, y, z (meters) | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 | 270060, 4052730, 99 |
| CO (ug/m3) | 460.4 | 460.4 | 460.4 | 460.4 | 460.4 | 460.4 |
| UTM location, x, y, z (meters) | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 | 269730, 4052850, 99 |
| SO2 (ug/m3) | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 |
| UTM location, x, y, z (meters) | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 | 270090, 4052700, 99 |
| **Case 1b (1-hour commissioning)[2]** | | | | | | |
| NOx (ug/m3) | 50.7 | 54.0 | 56.7 | 54.8 | 66.5 | 107.2 |
| UTM location, x, y, z (meters) | 270300, 4052640, 100 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270155.84, 4052729, 99.7 |
| CO (ug/m3) | 104.4 | 111.2 | 116.8 | 112.7 | 136.9 | 220.5 |

**Table 8.1-12**
**Predicted Concentrations From GE CTs Under Various Operating Scenarios**
**KRCD CPP**

| | **Scenario A** | **Scenario B** | **Scenario C** | **Scenario D** | **Scenario E** | **Scenario F** |
|---|---|---|---|---|---|---|
| UTM location, x, y, z (meters) | 270300, 4052640, 100 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270155.84, 4052729, 99.7 |
| SO2 (ug/m3) | 0.44 | 0.46 | 0.49 | 0.47 | 0.57 | 0.92 |
| UTM location, x, y, z (meters) | 270300, 4052640, 100 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270300, 4052700, 101 | 270155.84, 4052729, 99.7 |
| **Case 1c (1-hour partial load)[3]** | | | | | | |
| NOx (ug/m3) | -- | -- | -- | -- | -- | 134.4 |
| UTM location, x, y, z (meters) | | | | | | 270060, 4052730, 99 |
| CO (ug/m3) | -- | -- | -- | -- | -- | 460.3 |
| UTM location, x, y, z (meters) | | | | | | 269730, 4052850, 99 |
| SO2 (ug/m3) | -- | -- | -- | -- | -- | 7.4 |
| UTM location, x, y, z (meters) | | | | | | 270090, 4052700, 99 |
| **Case 3a (8-hour maximum normal)[4]** | | | | | | |
| CO (ug/m3) | 40.5 | 42.0 | 43.3 | 42.7 | 47.4 | 73.7 |
| UTM location, x, y, z (meters) | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 | 270270, 4052610, 100 |

**Table 8.1-12**
**Predicted Concentrations From GE CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| **Case 3b (8-hour commissioning)[2]** | | | | | | |
| CO (ug/m3) | -- | -- | -- | -- | -- | 104.0 |
| UTM location, x, y, z (meters) | | | | | | 270180, 4052670, 100 |
| **Case 3c (8-hour partial load)[5]** | | | | | | |
| CO (ug/m3) | -- | -- | -- | -- | -- | 13.9 |
| UTM location, x, y, z (meters) | | | | | | 269777.19, 4052851.25, 99.7 |
| **Case 3d (8-hour auxiliary boiler)** | | | | | | |
| CO (ug/m3) | 29.4 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| **Case 4a (24-hour maximum normal)[6]** | | | | | | |
| PM10 (ug/m3) | 1.10 | 1.25 | 1.29 | 1.27 | 1.50 | 2.13 |
| UTM location, x, y, z (meters) | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 |
| PM2.5 (ug/m3) | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| UTM location, x, y, z (meters) | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 | 270330, 4052700, 101 |
| SO2 (ug/m3) | 0.19 | 0.22 | 0.23 | 0.22 | 0.26 | 0.37 |
| UTM location, x, y, z (meters) | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 | 270270, 4052640, 100 |
| **Case 4b (24-hour commissioning)[7]** | | | | | | |
| PM10 (ug/m3) | -- | -- | -- | -- | -- | 1.19 |
| UTM location, x, y, z (meters) | | | | | | 270210, 4052640, 100 |

**Table 8.1-12**
**Predicted Concentrations From GE CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| PM2.5 (ug/m3) | -- | -- | -- | -- | -- | 0.08 |
| UTM location, x, y, z (meters) | | | | | | 270330, 4052700, 101 |
| SO2 (ug/m3) | -- | -- | -- | -- | -- | 0.20 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| **Case 4c (24-hour partial load)[8]** | | | | | | |
| PM10 (ug/m3) | -- | -- | -- | -- | -- | 1.73 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| PM2.5 (ug/m3) | -- | -- | -- | -- | -- | 0.10 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052610, 100 |
| SO2 (ug/m3) | -- | -- | -- | -- | -- | 0.33 |
| UTM location, x, y, z (meters) | | | | | | 270270, 4052640, 100 |
| **Case 4d (24-hour auxiliary boiler)** | | | | | | |
| PM10 (ug/m3) | 2.95 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| PM2.5 (ug/m3) | 0.10 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| SO2 (ug/m3) | 0.24 | | | | | |
| UTM location, x, y, z (meters) | 270000, 4052670, 99 | | | | | |
| **Case 5 (annual impacts)[9]** | | | | | | |
| NOx (ug/m3) | | 0.27 | | | | |
| UTM location, x, y, z (meters) | | 270270, 4052640, 100 | | | | |
| PM10 (ug/m3) | | 0.16 | | | | |

**Table 8.1-12**
**Predicted Concentrations From GE CTs Under Various Operating Scenarios**
**KRCD CPP**

| | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E | Scenario F |
|---|---|---|---|---|---|---|
| UTM location, x, y, z (meters) | | 270270, 4052640, 100 | | | | |
| PM2.5 (ug/m3) | | 0.010 | | | | |
| UTM location, x, y, z (meters) | | 270270, 4052640, 100 | | | | |
| SO2 (ug/m3) | | 0.03 | | | | |
| UTM location, x, y, z (meters) | | 270270, 4052640, 100 | | | | |
| **Fumigation (1 hour)[10]** | | | | | | |
| NOx (ug/m3) | 59.0 | | | | | 83.8 |
| Distance downwind (meters) | 16,582 | | | | | 12,803 |
| CO (ug/m3) | 121.4 | | | | | 172.3 |
| Distance downwind (meters) | 16,582 | | | | | 12,803 |
| SO2 (ug/m3) | 0.5 | | | | | 0.7 |
| Distance downwind (meters) | 16,582 | | | | | 12,803 |

Notes:

1 Two GE CTs, auxiliary boiler, natural gas emergency generator. For SO2 and NO2 impacts, fire pump included instead of emergency generator, because screening analyses show that SO2 and NO2 impacts are higher from fire pump. Cooling tower emissions are PM only.

2 Estimates during commission assumes operations of one turbine.

3 One CT runs partial load Scenario F, another CT runs in steady state, Scenario B. Includes auxiliary boiler and natural gas emergency generator (for CO) or auxiliary boiler and diesel fire pump (for NOx and SO2). Higher impacts occur when the southern CT is run under Scenario F and the northern CT is run under Scenario B.

4 GE CTs, 3-hour auxiliary boiler, 30 minutes natural gas emergency generator.

5 One CT runs partial load Scenario F, another CT runs in steady state, Scenario B. Includes auxiliary boiler (three hours) and natural gas emergency. Higher impacts occur when the southern CT is run under Scenario F and the northern CT is run under Scenario B.

6 CTs, four hours auxiliary boiler, 24 hours cooling tower, 30 minutes diesel fire pump. PM10, SO2, and PM2.5 impacts higher from fire pump than emergency generator.

7 Commissioning runs one turbine, 24 hours cooling tower.

8 One turbine partial load Scenario F, one turbine steady state, Scenario B, four hours auxiliary boiler, 24 hours cooling tower, 30 minutes diesel fire pump.

9 8760 hours CTs, 2315 hours auxiliary boiler, 8760 hours cooling tower, 26 hours natural gas emergency generator, 26 hours fire pump.

10 Two CTs.

Table 8.1-13 summarizes the maximum impacts from either the Siemens or GE CTs, including the highest measured background concentration for the most recent three years of data. The analysis shows that KRCD CPP impacts will be below applicable USEPA significance levels for all pollutants and thus will not be expected to cause or contribute to any violations of any ambient air quality standards (AAQS). As can be seen in Figures A8.1-6-15 through A8.1-6-26 in Appendix 8.1-6, Air Dispersion Modeling Data, the maximum impacts occur close (within 150 meters) to the project site fence line.

The KRCD CPP is in an area that is designated as Class II for USEPA PSD regulations. Since the KRCD CPP impacts will be below the SIL's listed in Table 8.1-13, no additional increment analysis or cumulative analysis is needed for those pollutants (i.e., NO2 annual, CO, SO2, PM10, and PM2.5).

**Impacts at the Indianola Elementary School**

Table 8.1-14 presents KRCD CPP impacts at the Indianola Elementary School located at 11524 East Dinuba Avenue. As the information in this table demonstrates, no significant impacts result at this location.

**Table 8.1-13**
**Total Project Impacts**
**KRCD CPP**

| Pollutant | Averaging Period | Significance Level ($\mu g/m^3$)[1] | Concentration ($\mu g/m^3$) | UTM East (meters) | UTM North (meters) | Elevation meters) | Background Concentration ($\mu g/m^3$) | Total Impacts ($\mu g/m^3$) | CAAQS ($\mu g/m^3$) | NAAQS ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| NO2 | 1 | -- | 134.4 | 270060 | 4052730 | 99 | 118 | 252 | 338 | -- |
| | Annual | 1.0 | 0.27 | 270270 | 4052640 | 100 | 23 | 23 | 55 | 100 |
| CO | 1 | 2000 | 460.4 | 269730 | 4052850 | 99 | 4114 | 4574 | 23,000 | 40,000 |
| | 8 | 500 | 104.0 | 270180 | 4052670 | 100 | 3086 | 3190 | 10,000 | 10,000 |
| SO2 | 1 | -- | 7.7 | 270090 | 4052700 | 99 | 78 | 86 | 650 | -- |
| | 3[2] | 25 | 7.7 | 270090 | 4052700 | 99 | 78 | 86 | -- | 1300 |
| | 24 | 5 | 0.4 | 270270 | 4052640 | 100 | 16 | 16 | 105 | 365 |
| | Annual | 1 | 0.03 | 270270 | 4052640 | 100 | 8 | 8 | -- | 80 |
| PM10 | 24 | 5.0 | 3.0 | 270000 | 4052670 | 99 | 106 | 109 | 50 | 150 |
| | Annual | 1.0 | 0.2 | 270270 | 4052640 | 100 | 44 | 44 | 20 | -- |
| PM2.5 | 24 | -- | 0.3 | 270330 | 4052700 | 101 | 86 | 86 | -- | 35 |
| | Annual | -- | 0.01 | 270270 | 4052640 | 100 | 20 | 20 | 12 | 15 |
| Lead[3] | 30-day | -- | 0.005 | 270090 | 4052700 | 99 | 0.02 | 0.02 | 1.5 | -- |
| | Calendar quarter | -- | 0.005 | 270090 | 4052700 | 99 | 0.01 | 0.01 | -- | 1.5 |

1. Significance levels have not been established for the 1-hour NOx, 1-hour SO2 or PM2.5 standards.
2. Conservatively assumed that the 3-hour SO2 concentration is the same as the 1-hour SO2 concentration.
3. Conservatively assumed that 24-hour lead impacts represent 30-day and calendar quarter lead impacts and that the diesel fire pump and auxiliary boiler run for 24-hours/day. 30-day background concentration represented by 24-hour measured background concentration.

**Table 8.1-14**
**Total Project Impacts at Indianola Elementary School**
**KRCD CPP**

| Pollutant | Averaging Period | Significance Level (µg/m³) | Concentration (µg/m³) | | Background Concentration (µg/m³) | Total Worst-Case Impacts (µg/m³) | CAAQS (µg/m³) | NAAQS (µg/m³) |
|---|---|---|---|---|---|---|---|---|
| | | | GE | Siemens | | | | |
| NO2 | 1 | -- | 28.4 | 28.3 | 118 | 146 | 338 | -- |
| | Annual | 1.0 | 0.01 | 0.01 | 23 | 23 | 55 | 100 |
| CO | 1 | 2000 | 113.7 | 88.7 | 4114 | 4228 | 23,000 | 40,000 |
| | 8 | 500 | 6.4 | 5.4 | 3086 | 3092 | 10,000 | 10,000 |
| SO2 | 1 | | 1.0 | 1.0 | 78 | 79 | 650 | -- |
| | 3[1] | 25 | 1.0 | 1.0 | 78 | 79 | -- | 1300 |
| | 24 | 5 | 0.02 | 0.02 | 16 | 16 | 105 | 365 |
| | Annual | 1 | 0.001 | 0.001 | 8 | 8 | -- | 80 |
| PM10 | 24 | 5.0 | 0.1 | 0.1 | 106 | 106 | 50 | 150 |
| | Annual | 1.0 | 0.01 | 0.01 | 44 | 44 | 20 | -- |
| PM2.5 | 24 | | 0.01 | 0.01 | 86 | 86 | -- | 35 |
| | Annual | | 0.0005 | 0.0004 | 20 | 20 | 12 | 15 |
| Pb[2] | 30-day | | 0.0002 | | 0.02 | 0.02 | 1.5 | -- |
| | Calendar quarter | | 0.0002 | | 0.01 | 0.01 | -- | 1.5 |

1. Conservatively assumed that the 3-hour SO2 concentration is the same as the 1-hour SO2 concentration.
2. Conservatively assumed that 24-hour lead impacts represent 30-day and calendar quarter and diesel fire pump and auxiliary boiler run for 24-hours/day. 30-day background concentration represented by 24-hour measured background concentration.

**PSD Class I Results**

Tables 8.1-15 and 8.1-16 contain summaries of the impacts of the KRCD CPP on Class I increment, visibility and deposition for the Siemens and GE CTs, respectively. Note that San Rafael and Mokelumne Wilderness Areas were removed from the analysis since the results showed impacts decreasing with distance and below significance levels for the closer Class I areas.

Concentrations of NO2 and $PM_{10}$ are predicted to be below the Class I significant impact levels, so no additional increment analysis will be required. As previously mentioned, SO2 emissions will also be below the significant emission rate of 40 tons per year, so it does not need to be included in the increment analysis.

As established for Best Available Retrofit Technology (BART) CALPUFF analyses, 98 percent of the visibility impacts should fall below a five percent change in light extinction to be considered insignificant. Thus, for the five-year period of analysis, as many as 36.5 days could have changes in extinction above five percent. Furthermore, only those receptors within +/- 90 degrees of the Class I area (shrunken arc) need to be considered in the visibility analysis (Irwin and Notar, 2001). As shown in Tables 8.1-14 and 8.1-15, no Class I areas will exceed these criteria.

For N and S deposition, deposition analysis thresholds (DAT's) of 0.005 Kilograms per hectare per year (kg/ha/yr) have been established. The DAT is the additional amount of deposition that triggers a management concern, not necessarily the amount that constitutes an adverse impact to the environment (National Park Service and US Fish and Wildlife Service, 2002). Although no definitive "critical load" of N and S deposition has been agreed upon, research in the Pacific Northwest suggests that total N deposition (from all sources) in the region should be below five kg/ha/yr and total S deposition should be below three kg/ha/yr (E&S Environmental Chemistry, Inc. and Pacific Northwest Research Station USDA Forest Service, 1994). S deposition is far below the DAT for both CT options at all Class I areas analyzed. The DAT for N was exceeded at the closest boundary of Kings Canyon, Sequoia, and John Muir Class I areas under the GE and Siemens CT options. Additionally, N deposition at the closest boundary of Kaiser was greater than 0.005 kg/ha/yr under the Siemens CT option.

Further analysis at these four Class I areas at the median distance and the farthest boundary, showed that the N deposition will fall below the DAT by the median distance and closer. Figure 8.1-1 shows how N deposition varies with distance for both CT options. For the Siemens CT's, N deposition falls below 0.005 kg/ha/yr at approximately 80 km downwind, while for the GE CT's N deposition falls below 0.005 kg/ha/yr at a distance of approximately 73 km downwind. At Kings Canyon, less than seven percent of the park is within 80 km of the KRCD CPP and less than three percent is within 73 km of the KRCD CPP. At Sequoia, approximately 28 percent of the park is within 80 km of the KRCD CPP and 13 percent within 73 km of the KRCD CPP. At John Muir, less than eight percent of the park is within 80 km of the KRCD CPP and less than one percent is closer than 73 km to the KRCD CPP. Kaiser has 30 percent of the park within 80 km of the KRCD CPP.

The average total N deposition monitored at Sequoia/Kings Canyon over the years 1999, 2001, 2003, and 2004 was 3.2 kg/ha/yr (http://www.epa.gov/castnet/sites/sek402.html). For the Siemens CT scenario, the KRCD CPP maximum N deposition at Kings Canyon of 0.0085 kg/ha/yr and at Sequoia of 0.0078 kg/ha/yr will be 0.27 percent and 0.24 percent of the monitored level, respectively. Assuming this monitoring data will also be applicable to John

Muir and Kaiser, Siemens CT scenario N deposition will be 0.19 percent and 0.17 percent of existing levels, respectively. For the GE CT scenario, at Kings Canyon and Sequoia, KRCD CPP N deposition will be 0.23 percent and 0.21 percent of measured levels, and at John Muir, KRCD CPP N deposition will be 0.17 percent of background concentrations. The DAT of 0.005 kg/ha/yr is 0.16 percent of these monitored concentrations. Also, it is important to note the KRCD CPP will offset its NOx emissions by 130 percent or more, i.e., 1.3 or 1.5 tons for every one ton of NOx emitted, depending on the distance of the offset source from the KRCD CPP.

**Table 8.1-15**
**PSD Class I Analysis – Siemens**
**KRCD CPP**

| Class I Area | Distance from KRCD CPP (km) | Visibility (% change in extinction) | | | | Concentrations (ug/m$^3$) | | | Annual Deposition | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | All Receptors | | Shrunken Arc | | NOx | PM10 | PM10 | N | | S | |
| | | % change | Number of days ≥ 5% | % change | Number of days ≥ 5% | annual | 24-hr | Annual | g/m$^2$-sec | kg/ha/yr | g/m$^2$-sec | kg/ha/yr |
| Kings Canyon | 55.7 | 11.28 | 168 | 10.74 | 36 | 3.06E-02 | 2.79E-01 | 4.22E-02 | 2.70E-11 | 0.0085 | 6.79E-12 | 0.0021 |
| Sequoia | 59.7 | 10.65 | 142 | 10.04 | 33 | 2.76E-02 | 2.61E-01 | 3.90E-02 | 2.46E-11 | 0.0078 | 6.21E-12 | 0.0020 |
| John Muir | 70 | 9.38 | 88 | 8.57 | 23 | 2.06E-02 | 2.16E-01 | 3.17E-02 | 1.95E-11 | 0.0061 | 5.01E-12 | 0.0016 |
| Kaiser | 76.5 | 8.34 | 59 | 7.58 | 8 | 1.77E-02 | 1.94E-01 | 2.85E-02 | 1.71E-11 | 0.0054 | 4.43E-12 | 0.0014 |
| Ansel Adams | 92.7 | 7.48 | 20 | 6.32 | 7 | 1.21E-02 | 1.76E-01 | 2.25E-02 | 1.26E-11 | 0.0040 | 3.42E-12 | 0.0011 |
| Yosemite | 100.7 | 7.15 | 15 | 7.15 | 15 | 1.03E-02 | 1.67E-01 | 2.01E-02 | 1.10E-11 | 0.0035 | 3.03E-12 | 0.0010 |
| Dome Land | 131.9 | 6.13 | 3 | 4.31 | 0 | 4.99E-03 | 1.49E-01 | 1.41E-02 | 6.64E-12 | 0.0021 | 2.02E-12 | 0.0006 |
| Pinnacles | 142.6 | 5.38 | 1 | 5.38 | 1 | 5.55E-03 | 1.16E-01 | 1.17E-02 | 6.45E-12 | 0.0020 | 1.78E-12 | 0.0006 |
| Hoover | 161.6 | 4.83 | 0 | 4.83 | 0 | 3.50E-03 | 1.07E-01 | 1.00E-02 | 4.71E-12 | 0.0015 | 1.47E-12 | 0.0005 |
| Ventana | 162 | 4.76 | 0 | 4.76 | 0 | 4.20E-03 | 1.01E-01 | 9.77E-03 | 5.14E-12 | 0.0016 | 1.47E-12 | 0.0005 |
| Emigrant | 163 | 4.69 | 0 | 4.69 | 0 | 3.42E-03 | 1.05E-01 | 9.87E-03 | 4.63E-12 | 0.0015 | 1.45E-12 | 0.0005 |
| SIL | | | | | | 0.1 | 0.3 | 0.2 | | | | |

Acronyms:
g/m2-sec = grams per square meter per second

**Table 8.1-16**
**PSD Class I Analysis – GE**
**KRCD CPP**

| Class I Area | Distance from KRCD CPP (km) | Visibility | | | | Concentrations (ug/m$^3$) | | | Deposition | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | All receptors | | Shrunken arc | | NOx | PM10 | PM10 | N | | S | |
| | | % change | Number of days ≥ 5% | % change | Number of days ≥ 5% | annual | 24-hr | Annual | g/m$^2$-sec | kg/ha/yr | g/m$^2$-sec | kg/ha/yr |
| Kings Canyon | 55.7 | 10.87 | 139 | 10.26 | 28 | 2.66E-02 | 2.68E-01 | 3.81E-02 | 2.34E-11 | 0.0074 | 6.14E-12 | 0.0019 |
| Sequoia | 59.7 | 9.81 | 118 | 9.58 | 24 | 2.40E-02 | 2.51E-01 | 3.51E-02 | 2.13E-11 | 0.0067 | 5.62E-12 | 0.0018 |
| John Muir | 70 | 9.07 | 76 | 8.19 | 17 | 1.78E-02 | 2.09E-01 | 2.86E-02 | 1.69E-11 | 0.0053 | 4.53E-12 | 0.0014 |
| Kaiser | 76.5 | 8.07 | 47 | 7.24 | 5 | 1.53E-02 | 1.83E-01 | 2.57E-02 | 1.48E-11 | 0.0047 | 4.01E-12 | 0.0013 |
| Ansel Adams | 92.7 | 6.97 | 16 | 6.02 | 6 | 1.05E-02 | 1.63E-01 | 2.03E-02 | 1.09E-11 | 0.0034 | 3.09E-12 | 0.0010 |
| Yosemite | 100.7 | 6.65 | 9 | 6.65 | 7 | 8.86E-03 | 1.54E-01 | 1.81E-02 | 9.51E-12 | 0.0030 | 2.74E-12 | 0.0009 |
| Dome Land | 131.9 | 5.85 | 1 | 4.12 | 0 | 4.29E-03 | 1.41E-01 | 1.27E-02 | 5.73E-12 | 0.0018 | 1.82E-12 | 0.0006 |
| Pinnacles | 142.6 | 5.15 | 1 | 5.15 | 1 | 4.80E-03 | 1.10E-01 | 1.06E-02 | 5.58E-12 | 0.0018 | 1.61E-12 | 0.0005 |
| Hoover | 161.6 | 4.60 | 0 | 4.60 | 0 | 3.02E-03 | 1.01E-01 | 8.98E-03 | 4.06E-12 | 0.0013 | 1.32E-12 | 0.0004 |
| Ventana | 162 | 4.53 | 0 | 4.53 | 0 | 3.62E-03 | 9.58E-02 | 8.77E-03 | 4.44E-12 | 0.0014 | 1.32E-12 | 0.0004 |
| Emigrant | 163 | 4.47 | 0 | 4.47 | 0 | 2.95E-03 | 1.00E-01 | 8.86E-03 | 3.99E-12 | 0.0013 | 1.31E-12 | 0.0004 |
| SIL | | | | | | 0.1 | 0.3 | 0.2 | | | | |

#### *8.1.3.6 Cumulative Impacts*

As the results in Table 8.1-13 indicate, the KRCD CPP's impacts of criteria pollutants, based on maximum emissions rates, are minor and below all of the USEPA significance (de minimis) levels. Therefore, the KRCD CPP will not cause or significantly contribute to a violation of any AAQS for those pollutants with significance levels, and it is reasonable to conclude that no significant cumulative impacts will result from the KRCD CPP implementation. However, there are no significance levels for one-hour NO2 concentrations. A data request for nearby sources was sent to the SJVAPCD and follow-up calls have been placed to check on a status for receiving the information. As of the date of completion of this section, the data has not been received. Upon receipt of this information from SJVAPCD a cumulative analysis for one-hour NO2 impacts can be performed.

#### *8.1.3.7 Mitigation Measures*

**Construction**

Applicable mitigation measures will be imposed during KRCD CPP construction. These measures include the use of low emitting diesel engines and ultra-low diesel fuel, regular preventive maintenance and a variety of fugitive dust mitigation measures (see to Appendix 8.1-3, Construction Phase Emissions and Impacts).

**Operations**

During KRCD CPP operations the emissions of criteria pollutants will be mitigated, as required by SJVAPCD rules, through the imposition of BACT, which will minimize emissions at their source. These minimized emissions will be mitigated further, as required by SJVAPCD rules and CEC requirements, through the acquisition of NOx, VOC, PM10 and SO2 emission reduction credits (ERCs). No ERC banking or trading programs as yet exist for PM2.5. Consequently, direct offsetting of the KRCD CPP's PM2.5 emissions is not feasible. However, a portion of the ERCs obtained to offset the KRCD CPP's PM10 emissions will serve as indirect offsets for PM2.5, since PM2.5 is a subset of PM10.

The KRCD CPP emissions of non-criteria pollutants will also be minimized through the use of natural gas as the only fuel for the CTs.

The KRCD CPP will mitigate its GHG emissions through the application of combined cycle technology, which maximizes the use of CT exhaust waste heat by producing steam for additional power generation. This efficient use of fuel resources, which results in fewer British thermal units (Btus) being consumed for each MWhr of electricity produced, also results in fewer GHG emissions per MWhr. At 800-850 lbs/MWhr, the KRCD CPP emissions of CO2 will be significantly less than California's current EPS for CO2 emissions of 1,100 lbs/MWhr.

**Emissions Reduction Credits**

In accordance with its Rule 2201, the SJVAPCD requires the application of ERCs for projects, which exceed the following emissions thresholds:

- NOx – 10 tons per year;
- CO – 100 tons per year (in CO attainment areas);
- VOCs – 10 tons per year;
- PM10 – 14.6 tons per year; and
- SO2 – 27.375 tons per year.

The acquisition of ERCs is required for emissions above these levels. Projects can be exempted from the ERC requirement for CO, provided the project has demonstrated that its CO emissions do not cause or contribute to a violation of an AAQS. The KRCD CPP has made this demonstration through its AQIA and, therefore the offset requirements that are imposed by SJVAPCD regulations relate only to NOx, VOC and PM10 emissions.

While the SJVAPCD exempts the first portion of emissions from offsetting requirements (e.g., the first ten tons of NOx), it imposes a distance multiplier in its calculations of the amount of ERCs needed as follows:

- 1.0 for ERCs at the same location as the new source;
- 1.2 for ERCS within 15 miles of the new source, provided the new source is a non-major source;
- 1.3 for ERCs within 15 miles of the new source, if the new source is a major source; and
- 1.5 for ERCs beyond 15 miles from the new source.

The SJVAPCD classifies the KRCD CPP as a major source with respect to its NOx, VOC & PM10 emissions, and therefore, the applicable distance multiplier is either 1.3 or 1.5, depending on the locations of the ERCs that are acquired.

In addition to the SJVAPCD's ERC requirements, the CEC, in its capacity as the functional Lead Agency for compliance with the California Environmental Quality Act (CEQA), imposes its own offsetting approach, which requires full (100%) offsetting, i.e., no first portion exemption, no distance multiplier, for emissions of all pollutants, which are classified as non-attainment of either the NAAQS or CAAQS or which are pre-cursor pollutants with respect to non-attainment pollutants. The KRCD CPP project area is classified as non-attainment of both the federal and

state O3 and PM10 standards. Since NOx and VOCs are considered pre-cursor pollutants for O3 and SO2 is considered a pre-cursor for PM10, the CEC ERC framework requires offsetting for NOx, VOCs, PM10 and SO2 emissions from the KRCD CPP on a one-for-one basis.

KRCD is in the process of locating the specific ERCs, which will be used to satisfy the offsetting requirements shown above. KRCD has prepared a Confidential Offset Strategy which has been filed separately under a Request for Confidentiality.

Tables 8.1-17 through 8.1-20 provide KRCD CPP quarterly and annual emissions of the four pollutants, which require offsetting, as well as the calculated amounts of ERCs needed, based on both the SJVAPCD and CEC requirements. The amounts shown in these tables are approximately 101 percent of KRCD CPP estimated annual emissions.

**Table 8.1-17**
**Emission Reduction Credits Required for Nitrogen Oxide (in tons per year)**
**KRCD CPP**

| **NOx** | **1st Quarter** | | **2nd Quarter** | | **3rd Quarter** | | **4th Quarter** | | **Annual Totals** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **GE** | **Siemens** | **GE** | **Siemens** | **GE** | **Siemens** | **GE** | **Siemens** | **GE** | **Siemens** |
| KRCD CPP Emissions | 29.633 | 34.285 | 29.633 | 34.285 | 29.633 | 34.285 | 29.633 | 34.285 | 118.532 | 137.140 |
| ERCs per SJVAPCD[1] | 35.273 (40.700) | 41.321 (47.678) | 35.273 (40.700) | 41.321 (47.678) | 35.273 (40.700) | 41.321 (47.678) | 35.273 (40.700) | 41.321 (47.678) | 141.092 (162.798) | 165.282 (190.710) |
| ERCS per CEC[2] | 29.633 | 34.285 | 29.633 | 34.285 | 29.633 | 34.285 | 29.633 | 34.285 | 118.532 | 137.140 |
| **ERCs Required[3]** | 35.273 (40.700) | 41.321 (47.678) | 35.273 (40.700) | 41.321 (47.678) | 35.273 (40.700) | 41.321 (47.678) | 35.273 (40.700) | 41.321 (47.678) | 141.092 (162.798) | 165.282 (190.710) |

Notes:
1. Based on the 1st 10 tons being exempt from the ERC requirement & a multiplier of **1.3 (or 1.5)** for the remainder.
2. Based on a multiplier of 1.0.
3. The greater of the SJVAPCD or CEC requirement.

**Table 8.1-18**
**Emission Reduction Credits Required for Volatile Organic Carbons (in tons per year)**
**KRCD CPP**

| VOCs | 1st Quarter | | 2nd Quarter | | 3rd Quarter | | 4th Quarter | | Annual Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | GE | Siemens | GE | Siemens | GE | Siemens | GE | Siemens | GE | Siemens |
| KRCD CPP Emissions | 5.330 | 8.780 | 5.330 | 8.780 | 5.330 | 8.780 | 5.330 | 8.780 | 21.320 | 35.120 |
| ERCs per SJVAPCD[1] | 3.679 (4.245) | 8.164 (9.420) | 3.679 (4.245) | 8.164 (9.420) | 3.679 (4.245) | 8.164 (9.420) | 3.679 (4.245) | 8.164 (9.420) | 14.716 (16.980) | 32.656 (37.680) |
| ERCS per CEC[2] | 5.330 | 8.780 | 5.330 | 8.780 | 5.330 | 8.780 | 5.330 | 8.780 | 21.320 | 35.120 |
| **ERCs Required[3]** | 5.330 | 8.78 (9.420) | 5.330 | 8.78 (9.420) | 5.330 | 8.78 (9.420) | 5.330 | 8.78 (9.420) | 21.32 | 35.12 (37.68) |

Notes:
1. Based on the 1st 10 tons being exempt from the ERC requirement & a multiplier of **1.3 (or 1.5)** for the remainder.
2. Based on a multiplier of 1.0.
3. The greater of the SJVAPCD or CEC requirement.

**Table 8.1-19**
**Emission Reduction Credits Required for Particulate Matter 10 Micrograms Diameter and Smaller (in tons per year)**
**KRCD CPP**

| PM10 | 1st Quarter | | 2nd Quarter | | 3rd Quarter | | 4th Quarter | | Annual Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | GE | Siemens | GE | Siemens | GE | Siemens | GE | Siemens | GE | Siemens |
| KRCD CPP Emissions | 20.663 | 22.919 | 20.663 | 22.919 | 20.663 | 22.919 | 20.663 | 22.919 | 82.652 | 91.676 |
| ERCs per SJVAPCD[1] | 22.117 (25.520) | 25.050 (28.904) | 22.117 (25.520) | 25.050 (28.904) | 22.117 (25.520) | 25.050 (28.904) | 22.117 (25.520) | 25.050 (28.904) | 88.468 (102.080) | 100.200 (115.616) |
| ERCS per CEC[2] | 20.663 | 22.919 | 20.663 | 22.919 | 20.663 | 22.919 | 20.663 | 22.919 | 82.652 | 91.676 |
| **ERCs Required[3]** | 22.117 (25.520) | 25.050 (28.904) | 22.117 (25.520) | 25.050 (28.904) | 22.117 (25.520) | 25.050 (28.904) | 22.117 (25.520) | 25.050 (28.904) | 88.468 (102.080) | 100.200 (115.616) |

Notes:
1. Based on the 1st 14.6 tons being exempt from the ERC requirement & a multiplier of **1.3 (or 1.5)** for the remainder.
2. Based on a multiplier of 1.0.
3. The greater of the SJVAPCD or CEC requirement.

**Table 8.1-20**
**Emission Reduction Credits Required for Sulfur Dioxide (in tons per year)**
**KRCD CPP**

| SO2 | 1st Quarter | | 2nd Quarter | | 3rd Quarter | | 4th Quarter | | Annual Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | GE | Siemens | GE | Siemens | GE | Siemens | GE | Siemens | GE | Siemens |
| KRCD CPP Emissions | 3.333 | 3.687 | 3.333 | 3.687 | 3.333 | 3.687 | 3.333 | 3.687 | 13.332 | 14.748 |
| ERCs per SJVAPCD[1] | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ERCS per CEC[2] | 3.333 | 3.687 | 3.333 | 3.687 | 3.333 | 3.687 | 3.333 | 3.687 | 13.332 | 14.748 |
| **ERCs Required[3]** | 3.333 | 3.687 | 3.333 | 3.687 | 3.333 | 3.687 | 3.333 | 3.687 | 13.332 | 14.748 |

Notes:
1. SO2 ERCs are not required by the SJVAPCD.
2. Based on a multiplier of 1.0.
3. The greater of the SJVAPCD or CEC requirement.

SJVAPCD Rule 2201, Section 4.13.3 allows for the use of inter-pollutant offsets. Specifically, Section 4.13.3.2 of the rule provides for the use of inter-pollutant offsets for PM10 and its precursors. Since SO2 emissions are considered as a precursor to PM10, SO2 ERCS may be used in lieu of PM10 ERCs. KRCD has chosen to satisfy a portion of its PM10 ERC requirement by providing SO2 ERCs. As part of its approval process for the use SO2 in lieu of PM10 ERCs, the SJVAPCD requires that an SO2 for PM10 ratio be established. For Fresno County, the county in which the KRCD CPP is located, the SJVAPCD has developed a ratio of 1.87 tons of SO2 per ton of PM10. This 1.87:1 ratio has been used to calculate the amount of SO2 ERCs, which will be used by the KRCD CPP in lieu of PM10 ERCs.

### 8.1.4 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable federal, state and local LORS that affect air quality and are potentially applicable to the KRCD CPP are summarized in Table 8.1-21 and in the following paragraphs.

| Table 8.1-21<br>Air Quality LORS<br>KRCD CPP | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| **Federal** | | | |
| Federal Clean Air Act (CAA), and implementing regulations, 40 Code of Federal Regulations (CFR) 51 & 52 - PSD review | USEPA, Region IX | Maintenance of NAAQS and air quality related values | The construction of new major sources or major modifications to existing major sources, requires PSD review. PSD only applies to criteria pollutants for which ambient concentrations do not exceed the NAAQS.<br><br>A PSD review and the associated permit are required for the KRCD CPP, as the project's emissions of any one PSD pollutant exceed the applicable trigger level of 100 tons per year. KRCD CPP is filing a separate PSD application with Region IX of the USEPA to comply with this requirement.<br><br>See Section 8.1.4 |
| Federal CAA and implementing regulations, 40 CFR 51 & 52 - New Source Review (NSR) | SJVAPCD with review oversight by the USEPA | Maintenance of NAAQS | New or modified major stationary sources require pre-construction review and permitting.<br><br>The KRCD CPP will meet NSR requirements through its compliance with the SJVAPCD NSR rule (see below).<br><br>See Section 8.1.4 |
| Federal CAA, and implementing regulations, 40 CFR 60 - New Source Performance Standards (NSPS) | SJVAPCD with review oversight by the US EPA | Maintenance of NAAQS | The NSPS mandate standards of performance for specific categories of equipment to limit the emissions of criteria pollutants (i.e., pollutants for which NAAQS have been established).<br><br>The applicable NSPS for the KRCD CPP is Subpart KKKK (Standards of Performance for Stationary Combustion Turbines). If applicable, the KRCD CPP will also meet the NSPS for Subpart IIII |

| Table 8.1-21<br>Air Quality LORS<br>KRCD CPP | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| | | | (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines). The KRCD CPP will meet the NSPS requirement(s) through its compliance with the SJVAPCD NSR rule (see below).<br><br>See Section 8.1.4 |
| Federal CAA, and implementing regulations, 40 CFR 63 – National Emissions Standards for Hazardous Air Pollutants (NESHAPs) | SJVAPCD with review oversight by the US EPA | Control of Hazardous Air Pollutants (HAPs) | The NESHAPs defines HAPs and sets emissions limits for major sources of HAPs.<br><br>The KRCD CPP will not be a major source of HAPs.<br><br>See Section 8.1.4 |
| Federal CAA, and implementing regulations, 40 CFR 70 - Title V (Operating Permit Program) | SJVAPCD with review oversight by the USEPA | Need for a uniform nationwide operating permit program for major stationary sources. | Establishes a program for major stationary sources to have an operating permit, which identifies all federal requirements for emissions performance, operations, emissions monitoring, recordkeeping and reporting.<br><br>KRCD will file a Title V permit application with the SJVAPCD within 12 months of initial operation of the KRCD CPP.<br><br>See Section 8.1.4 |
| Federal CAA, and implementing regulations, 40 CFR 72 - Title IV (Acid Rain Program) | SJVAPCD with review oversight by the USEPA | Reduction of impacts due to acidic rain | Requires monitoring of NOx and SO2 emissions as well as the acquisition of annual SO2 allowances.<br><br>The KRCD CPP will comply with Title IV requirements as part of its Title V compliance (see below).<br><br>See Section 8.1.4 |

| **Table 8.1-21<br>Air Quality LORS<br>KRCD CPP** | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| **State** | | | |
| CAA, Health & Safety Code 39000, et seq. | SJVAPCD with review oversight by CARB | Maintenance of NAAQS and CAAQS | Requires local air districts to either attain or maintain NAAQS and CAAQS.<br><br>The KRCD CPP will comply with the requirements of the CAA through its compliance with the SJVAPCD NSR rule (see below).<br><br>See Section 8.1.4 |
| State Implementation Plan (SIP), Health & Safety Code 39500, et seq. | SJVAPCD with review oversight by CARB | Attainment and maintenance of NAAQS | Requires local air districts to develop and implement regulations to either maintain compliance with NAAQS, or if in non-attainment, to reach attainment status.<br><br>The KRCD CPP will comply with SIP requirements through its compliance with applicable SJVAPCD regulations (see below).<br><br>See Section 8.1.4 |
| Toxic Air Contaminant Program, Health & Safety Code 39650, et seq. | CARB and the Office of Environmental Health Hazard Assessment (OEHHA) | Control of Toxic Air Contaminants (TACs) | Identifies TACs, as determined by state agencies, and develops control measures to limit their emissions.<br><br>There are no control measures developed under this program that are applicable to the KRCD CPP<br><br>See Section 8.1.4. |
| Air Toxics Hot Spots Program, Health & Safety Code 44300, et seq. | SJVAPCD with review oversight by CARB | Control of TACs | Requires facilities with TAC emissions to identify and quantify these emissions and to perform a Health Risk Assessment (HRA) based on the emissions identified. The KRCD CPP will comply with these requirements by performing an HRA.<br><br>See Section 8.1.4 and Section 8.7, Public Health |

| **Table 8.1-21<br>Air Quality LORS<br>KRCD CPP** | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| **Local** | | | |
| Rule 1080, Stack Monitoring | SJVAPCD | Maintenance of BACT, conformance with federal acid rain program requirements | Provides requirements for Continuous Emissions Monitoring Systems (CEMS).<br><br>The KRCD CPP, which will have a CEMS, will construct and operate the CEMS per the requirements of this rule.<br><br>See Section 8.1.4 |
| Rule 1081, Source Sampling | SJVAPCD | Verification on emissions limits | Provides requirements for stack (source) testing.<br><br>The KRCD CPP, which will be required to perform periodic source testing, will construct and operate the applicable stacks per the requirements of this rule.<br><br>See Section 8.1.4 |
| Rule 2010, Permits Required | SJVAPCD | Maintenance of NAAQS and CAAQS | Requires that sources of air emissions obtain an Authority To Construct (ATC) permit and subsequently (after start of operation) a Permit To Operate (PTO).<br><br>KRCD will comply with the requirements of this rule by obtaining a Determination Of Compliance (DOC) in lieu of an ATC and subsequently obtaining a PTO for the KRCD CPP.<br><br>See Section 8.1.4 |
| Rule 2201, New and Modified Stationary Source Review Rule | SJVAPCD | Maintenance of NAAQS and CAAQS | New and modified sources are required to conduct pre-construction review, including BACT, an AQIA and to obtain ERCs. KRCD will comply with the requirements of this rule through its application of BACT, AQIA demonstration and acquisition of ERCs.<br><br>See Section 8.1.3 |

**Table 8.1-21**
**Air Quality LORS**
**KRCD CPP**

| Regulation/Program | Regulatory/ Administering Agency | Air Quality Concern | Description/Project Applicability and Conformance (AFC Section Reference) |
|---|---|---|---|
| Rule 2520, Federally Mandated Operating Permits | SJVAPCD | Need for a uniform nationwide operating permit program for major stationary sources. | Establishes a permitting program for applicable sources to comply with all federal requirements for emissions performance, operations, emissions monitoring, recordkeeping and reporting.<br><br>KRCD will file a Title V permit application with the SJVAPCD within 12 months of initial operation of the KRCD CPP.<br><br>See Section 8.1.4 |
| Rule 2540, Acid Rain Program | SJVAPCD | Reduction of impacts due to acidic rain | Requires monitoring of both NOx and SO2 emissions as well as the acquisition of annual SO2 allowances.<br><br>KRCD will comply with Title IV requirements as part of its Title V compliance (see below).<br><br>See Section 8.1.3 and 8.1.4 |
| Rule 4001, New Source Performance Standards | SJVAPCD | Maintenance of NAAQS | Limits the emissions from specific source categories through the incorporation of federal NSPS requirements.<br><br>KRCD will comply with the requirements of this rule through its application of application of BACT.<br><br>See Section 8.1.3 |
| Rule 4002, National Emissions Standards for Hazardous Air Pollutants | SJVAPCD | HAPs | Imposes controls and limits the emissions of HAPs for major sources through the incorporation of federal NESHAPs requirements.<br><br>The KRCD CPP will not be a major source of HAPs.<br><br>See Section 8.1.4 |

| **Table 8.1-21<br>Air Quality LORS<br>KRCD CPP** | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| Rule 4101, Visible Emissions | SJVAPCD | Control of visible air emissions | Limits the opacity of air emissions.<br><br>KRCD will comply with the requirements of this rule through the use of natural gas and low sulfur liquid fuel.<br><br>See Section 8.1.1 and Chapter 5.0, Natural Gas Supply |
| Rule 4102, Nuisance | SJVAPCD | Control of air emissions that may cause injury or annoyance | Prevents the emitting of substances that will result in injury or serve as a nuisance to the public.<br><br>The KRCD CPP AQIA demonstrates compliance with the requirements of this rule.<br><br>See Section 8.1.3 |
| Rule 4201, Particulate Matter Concentration | SJVAPCD | Control of particulate emissions | Limits the concentration of particulate emissions.<br><br>KRCD will comply with the requirements of this rule through the use of natural gas and low sulfur liquid fuel.<br><br>See Section 8.1.4 |
| Rule 4202, Particulate Matter Emission Rate | SJVAPCD | Control of particulate emissions | Limits the rate of particulate emissions.<br><br>The KRCD CPP will comply with the requirements of this rule through the use of natural gas and low sulfur liquid fuel.<br><br>See Section 8.1.1 and Chapter 5.0, Natural Gas Supply |
| Rule 4301, Fuel Burning Equipment | SJVAPCD | Controls emissions from fuel burning equipment and Limits emissions of various pollutants. | The KRCD CPP will comply with the requirements of this rule through the implementation BACT.<br><br>See Section 8.1.3 |

| **Table 8.1-21<br>Air Quality LORS<br>KRCD CPP** | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| Rule 4304, Equipment Tuning Procedure for Boilers, Steam Generators and Process Heaters | SJVAPCD | Visible, NOx & CO emissions | Provides requirements for equipment tuning procedures.<br><br>KRCD will comply with the requirements of this rule, if applicable, through the incorporation of the mandated tuning procedures in the KRCD CPP operating procedures.<br><br>See Section 8.1.4 |
| Rule 4306, Boilers, Steam Generators and Process Heaters – Phase 3 | SJVAPCD | NOx & CO emissions | Limits NOx & CO emissions from boilers.<br><br>KRCD will comply with the requirements of this rule through the implementation of BACT for the auxiliary boiler.<br><br>See Section 8.1.3 |
| Rule 4623, Storage of Organic Liquids | SJVAPCD | VOC emissions | Limits VOC emissions from the storage of organic liquids (e.g., fuel oil) if the on-site amount is 1,100 gallons or more.<br><br>KRCD will comply with the requirements of this rule through appropriate design, construction and operations procedures for the KRCD CPP.<br><br>See Section 8.1.4 and Chapter 2.0, Project Description |
| Rule 4625, Wastewater Separators | SJVAPCD | VOC emissions form wastewater separators | Limits VOC emissions from wastewater separators.<br><br>KRCD will comply with the requirements of this rule, if applicable, through appropriate design, construction and operations procedures for the KRCD CPP.<br><br>See Section 8.1.4 and Chapter 2.0, Project Description |

| **Table 8.1-21<br>Air Quality LORS<br>KRCD CPP** | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| Rule 4702, Internal Combustion Engines – Phase 2 | SJVAPCD | NOx, CO & VOC emissions from internal combustion engines | Limits the emissions of NOx, CO and VOCs from stationary internal combustion engines.<br><br>KRCD will comply with the requirements of this rule through the implementation BACT.<br><br>See Section 8.1.3 |
| Rule 4703, Stationary Gas Turbines | SJVAPCD | Control of emissions from stationary gas turbines | Limits the emissions of various pollutants from stationary gas turbines.<br><br>KRCD will comply with the requirements of this rule through the implementation BACT.<br><br>See Section 8.1.3 |
| Rule 4801, Sulfur Compounds | SJVAPCD | Control of sulfur compound emissions | Limits the amount of SO2 emitted in sulfur compound emissions.<br><br>KRCD will comply with the requirements of this rule through the use of natural gas low sulfur liquid fuel.<br><br>See Section 8.1.1 and Chapter 5.0, Natural Gas Supply |
| Rule 7012, Hexavalent Chromium – Cooling Towers | SJVAPCD | Control of cooling tower emissions of chromium | Limits the emissions of chromium from cooling towers.<br><br>KRCD will comply with the requirements of this rule by not adding hexavalent chromium compounds to the cooling tower circulating water used for the KRCD CPP.<br><br>See Section 8.1.4 and Chapter 2.0, Project Description |
| Rule 8011, General Requirements | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions through the imposition of mitigation. KRCD will |

| Table 8.1-21<br>Air Quality LORS<br>KRCD CPP | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| | | | comply with the requirements of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.1.3 |
| Rule 8021, Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions through the imposition of mitigation.<br><br>KRCD will comply with the requirements of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.1.3 |
| Rule 8031, Bulk Materials | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions from the outdoor storage, handling & transport of bulk materials, if 100 cubic yards or more of soil are involved.<br><br>KRCD will comply with the requirements of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.1.3 |
| Rule 8041, Carryout and Trackout | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions through the imposition of mitigation.<br><br>KRCD will comply with the requirements of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.13 |
| Rule 8051, Open Areas | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions through the imposition of mitigation.<br><br>KRCD will comply with the requirements |

| Table 8.1-21<br>Air Quality LORS<br>KRCD CPP | | | |
|---|---|---|---|
| **Regulation/Program** | **Regulatory/ Administering Agency** | **Air Quality Concern** | **Description/Project Applicability and Conformance (AFC Section Reference)** |
| | | | of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.1.3 |
| Rule 8061, Paved and Unpaved Roads | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions through the imposition of mitigation.<br><br>KRCD will comply with the requirements of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.13 |
| Rule 8071, Unpaved Vehicle/Equipment Traffic Areas | SJVAPCD | Control of fugitive dust | Limits fugitive dust emissions through the imposition of mitigation.<br><br>KRCD will comply with the requirements of this rule through implementation of the mitigation measures for fugitive dust from construction of the KRCD CPP.<br><br>See Section 8.13 |

### *8.1.4.1 Federal*

Federal air quality law is administered by the USEPA. The federal Clean Air Act (CAA) (as amended through 1990) and its implementing regulations, e.g., 40 CFR 51 & 52, provide for the maintenance of NAAQS and air quality related values, e.g., visibility, through an evaluation process for the construction of new major sources or major modifications to existing major sources. This PSD review process is performed by the USEPA either directly or via delegation to a state level agency. The PSD review only applies to criteria pollutants for which ambient concentrations do not exceed the NAAQS.

40 CFR 51 & 52 require a New Source Review (NSR) evaluation or new or modified major stationary sources. The NSR process, which focuses on a BACT evaluation and air quality impact analysis, is usually delegated by the USEPA to a state agency.

40 CFR 60 establishes New Source Performance Standards (NSPS). The NSPS mandate standards of performance for specific categories of equipment to limit the emissions of criteria pollutants. The applicable NSPS for the KRCD CPP is Subpart KKKK (Standards of Performance for Stationary Combustion Turbines), and if applicable, the KRCD CPP Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines).

40 CFR 63 establishes National Emissions Standards for Hazardous Air Pollutants (NESHAPs). This section of the federal CAA defines Hazardous Air Pollutants (HAPs), and requires Maximum Achievable Control Technology (MACT) for major sources of HAPs. A major source is defined as one which emits 10 tons per year of any single HAP or 25 tons per year of total HAPs.

40 CFR 70 implements the federal operating permit program, as required per Title V of the federal Clean Air Act. This section of the CAA provides for a uniform nationwide operating permit program for major stationary sources, which identifies all federal requirements for emissions performance, operations, emissions monitoring and recordkeeping and reporting.

40 CFR 72 implements the federal acid rain program, as required per Title IV of the federal CAA, which is intended to reduce the adverse impacts to soils, vegetation and health resulting from acidic rain. This section of the CAA requires monitoring of NOx and SO2 emissions as well as the acquisition of annual SO2 allowances.

#### *8.1.4.2 State*

The CARB is responsible for overseeing the implementation of state air quality law, including the 1988 CAA. State air quality law is codified in the California Health & Safety Code, Division 26, Air Resources (Sections 39000 through 44999). As noted in Table 8.1-20, Division 26 addresses both criteria and non-criteria (toxic) emissions through compliance with both the NAAQS and CAAQS as well as the identification of toxic air contaminants (TAC Program) and their inventory and assessment (Air Toxics Hot Spots Program). Division 26 also establishes the bases for the state's Air Pollution Control Districts and Air Quality Management Districts, which are responsible for direct implementation of state air quality law.

#### *8.1.4.3 Local*

The SJVAPCD is responsible for implementing state air quality programs as well as much federal air quality law in the San Joaquin Valley air basin. As shown in Table 8.1-21, the KRCD CPP is subject to a number of SJVAPCD rules. The most significant of which is the New Source

Review rule, which mandates compliance with BACT requirements, an AQIA, the procurement of ERCs and the equivalence of the CEC's Application for Certification (AFC) process with the SJVAPCD's ATC process. The KRCD CPP is also subject to a number of SJVAPCD prohibitory rules (i.e., rules that limit emissions for specific pollutants or equipment categories).

### 8.1.5 INVOLVED AGENCIES AND CONTACTS

The regulatory agencies responsible for ensuring the maintenance of air quality and for implementing the LORS addressed previously in Table 8.1-21 are listed in Table 8.1-22.

**Table 8.1-22**
**Agency Contacts – Air Quality**
**KRCD CPP**

| Agency | Contact Person and Title | Phone Number and email |
|---|---|---|
| USEPA, Region IX,<br>Office of Air & Radiation<br>75 Hawthorne Street<br>San Francisco, CA 94105 | Gerardo Rios, Chief – Permits | (415) 972-3974<br>rios.gerardo@epa.gov |
| SJVAPCD – Fresno Office<br>1990 E. Gettysburg Avenue<br>Fresno, CA 93726 | Dave Warner, Director of Permit Services | (559) 230-6000<br>dave.warner@valleyair.org |
| CARB, Stationary Source Division<br>1001 "I" Street<br>PO Box 2815<br>Sacramento, CA 95812 | Michael Tollstrup, Chief, Projects Assessment Branch | (916) 322-6026<br>mtollstr@arb.ca.gov |

### 8.1.6 REQUIRED PERMITS AND SCHEDULES

The permits required as well as the schedules for obtaining these permits are shown in Table 8.1-23.

**Table 8.1-23**
**Air Quality Permits and Schedules**
**KRCD CPP**

| Permit | Regulatory/ Administering Agency | Schedule |
|---|---|---|
| Determination of Compliance (DOC)* | CEC/SJVAPCD | The DOC will be obtained as part of the Site Certificate from the CEC, and prior to KRCD CPP construction |
| PSD Permit | USEPA, Region IX | The PSD application for the KRCD CPP will be filed in October 2007. It is anticipated that the PSD permit will be processed and granted |

| Table 8.1-23<br>Air Quality Permits and Schedules<br>KRCD CPP | | |
|---|---|---|
| **Permit** | **Regulatory/ Administering Agency** | **Schedule** |
| | | by the USEPA either in parallel or shortly after the CEC license is granted. The PSD permit must be granted prior to KRCD CPP construction. |
| Federal Operating (Title V) Permit | SJVAPCD | The application will be filed no later than 12 months after initial operation of the KRCD CPP and the permit obtained subsequently. |
| Acid Rain (Title IV) Permit | SJVAPCD | The permit will be obtained as part of Title V permit. |
| *Usually the SJVAPCD will issue the required air permit (ATC). However, since the CEC has overall permitting authority in the AFC process for state agencies, air quality permitting is accomplished through the SJVAPCD acting as a consultant to the CEC and issuing a DOC in lieu of the ATC. The DOC is functionally equivalent to an ATC. | | |

### 8.1.7 REFERENCES

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