

## 4.11 Air Quality

### Affected Environment

#### Regional Setting

Battle Creek and its tributaries lie within the northern Sacramento Valley Air Basin (SVAB) in the Shasta County Air Quality Management District (SCAQMD) and the Tehama County Air Pollution Control District (TCAPCD).

#### Climate

The climate in the SVAB is Mediterranean, with average maximum and minimum temperatures of 97°F and 58°F, respectively. The sun shines approximately 75% of the annual daytime hours, and annual precipitation ranges from approximately 15 inches in the northwest to 60 inches in the northeast. Prevailing winds in the air basin originate offshore of the San Francisco Bay area and flow through the Carquinez Strait, then north through the Sacramento Valley. Elevations of the broad valley floor range from 60 feet to 500 feet above mean sea level (msl). The valley is bordered to the north by the Sierra Cascade Mountains, to the east by the Sierra Nevada, and to the west by the Coast Ranges.

The topography and climate of the air basin create a high potential for air inversions (i.e., when air of one temperature is contained beneath a layer of air of another temperature and air circulation is impeded). Inversions occur frequently within the air basin during all seasons. The most stable of these inversions occurs in the late summer and early fall, when cool coastal air is trapped beneath a warm air mass. Photochemical smog (i.e., ozone) trapped in these inversions is often exacerbated when preceded by sunny days with relatively high temperatures. During late fall and winter, air inversions occurring at ground level often result in low-lying fog when valley air becomes trapped and does not mix with coastal air. It is during these periods that the air basin experiences the highest concentrations of carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), and airborne particulate matter.

Most air pollutants in the vicinity of the Restoration Project are associated with either urban or agricultural land uses. Pollutants commonly associated with agricultural land uses include CO, NO<sub>x</sub>, ozone precursors, and particulate matter of 10 microns or less in mean diameter (PM10). PM10 results from field burning, farm operations such as tilling and plowing, the operation of farm equipment on loose earth, entrained road dust releases, and fuel combustion in vehicles and farm equipment. Particulate emissions may also occur when fallow fields do not have a cover crop to inhibit wind erosion. CO is released to the atmosphere during field burning and fuel combustion in farm equipment. NO<sub>x</sub> is also released during field burning. Ozone precursors are released in farm

equipment emissions and during the application of pesticides and fertilizers. The effect of these practices on air quality may be influenced by meteorological conditions, the variability of emission controls, and the adoption and enforcement of emission regulations. In undeveloped areas, hydrocarbon emissions result primarily from wildfires, and particulate emissions result from windblown dust and wildfires. No clear relationship exists between agricultural acres and the occurrence or resulting concentrations of ozone and PM10 in the atmosphere (Reclamation and USFWS 1999). Several variables other than land uses can affect air quality conditions, and these variables may change over time.

## Regional Air Pollutants

The federal and state governments have established ambient air quality standards for six criteria pollutants: ozone, CO, nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), PM10, and lead. Ozone and PM10 are generally considered to be “regional” pollutants because these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, NO<sub>2</sub>, SO<sub>2</sub>, and lead are considered to be local pollutants that tend to accumulate in the air locally. PM10 is considered to be a localized pollutant as well as a regional pollutant. In the area where the Restoration Project is located, PM10 and ozone are of particular concern.

### Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials. Ozone causes extensive damage to plants by leaf discoloration and cell damage.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and NO<sub>x</sub>, react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and NO<sub>x</sub>, are emitted by mobile sources and by stationary combustion equipment.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period.

## Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches to nausea to death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, and the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period.

## PM10

Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates can damage human health and retard plant growth. Particulates also reduce visibility, soil buildings and other materials, and corrode materials.

PM10 emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

The state PM10 standards are 50 micrograms per cubic meter as a 24-hour average and 20 micrograms per cubic meter as an annual geometric mean. The federal PM10 standards are 150 micrograms per cubic meter as a 24-hour average and 50 micrograms per cubic meter as an annual arithmetic mean.

## Existing Air Quality Conditions

The existing air quality conditions in the Restoration Project area can be characterized by monitoring data collected in the region. PM10, CO, and ozone concentrations are measured at several north bay monitoring stations. These are the pollutants of greatest concentration within the SVAB and are the pollutants of most concern from the Restoration Project. Air quality monitoring data for the last 3 years are presented in Table 4.11-1. The closest monitoring stations are located at the Lassen Volcanic National Park–Manzanita Lake monitoring station in Shasta County and Tuscan Butte monitoring stations in Tehama County.

These air monitoring stations monitor only ozone, as the counties are in nonattainment for ozone only.

**Table 4.11-1. Ambient Air Quality Monitoring Data from the Lassen Volcanic National Park–Manzanita Lake and Tuscan Butte Monitoring Stations**

Pollutant Standards	1999	2000	2001
<b>Ozone (O<sub>3</sub>)- Lassen Volcanic National Park</b>			
Maximum 1-hour concentration (ppm)	0.109	0.091	0.084
Number of days standard exceeded			
CAAQS 1-hour (>0.09 ppm)	3	0	0
NAAQS 1-hour (>0.12 ppm)	0	0	0
<b>Ozone (O<sub>3</sub>)- Tuscan Butte</b>			
Maximum 1-hour concentration (ppm)	0.128	0.094	0.094
Number of days standard exceeded			
CAAQS 1-hour (>0.09 ppm)	16	0	0
NAAQS 1-hour (>0.12 ppm)	1	0	0
Notes: CAAQS = California Ambient Air Quality Standards. NAAQS = National Ambient Air Quality Standards.			
<sup>a</sup> Calculated exceedances based on measurements taken every 6 days.			
Sources: CARB 2002, EPA 2002			

Regions in which the National Ambient Air Quality Standards (NAAQS) or the California Ambient Air Quality Standards (CAAQS) are currently met for a given pollutant, as determined by air monitoring, are considered attainment areas for that pollutant. Regions in which NAAQS or CAAQS are not met are considered nonattainment areas for a given pollutant. These classifications are determined by comparing actual monitored air pollutant concentrations to state and federal standards. Because of the difference between some NAAQS and CAAQS, it is possible for an area to be an attainment area for a federal standard while being a nonattainment area for a state standard. The CAAQS are more stringent than the NAAQS for ozone, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and lead. The pollutants of greatest concern in this valley are ozone and inhalable particulate matter. As seen from Table 4.11-1, the Restoration Project area has experienced violations of the state and federal ozone standards during the last 3 years, although the counties have not experienced any violations in the last 2 years. Table 4.11-1 also indicates that the federal and state CO standards have not been exceeded.

The State of California has designated Shasta and Tehama Counties as being in moderate nonattainment for ozone and in nonattainment for PM<sub>10</sub>. The counties are designated as unclassified for CO. The EPA has designated Shasta and

Tehama Counties as being unclassified/attainment for ozone and CO, and unclassified for PM10. Table 4.11-2 summarizes the various attainment statuses for Shasta and Tehama Counties.

**Table 4.11-2. Ambient Air Quality Standards Attainment Status**

Pollutant	Shasta County	Tehama County
<b>State</b>		
Ozone	Moderate Nonattainment	Moderate Nonattainment
Particulate matter (PM10)	Nonattainment	Nonattainment
Carbon monoxide	Unclassified	Unclassified
<b>Federal</b>		
Ozone	Unclassified/Attainment	Unclassified/Attainment
Particulate matter (PM10)	Unclassified	Unclassified
Carbon monoxide	Unclassified/Attainment	Unclassified/Attainment

## Sensitive Land Uses

Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, school children, hospital patients, the elderly, etc. Within the Restoration Project area, the only sensitive land use is Oasis Springs Lodge, a 3,000-acre fly-fishing lodge located along South Fork Battle Creek just upstream of Inskip Diversion Dam.

## Regulatory Setting

Air quality in the state of California is regulated by the Federal Clean Air Act and the California Clean Air Act. Descriptions of the Federal and California Clean Air Acts can be found in Chapter 5, “Consultation and Coordination.”

Air quality is regulated through both the federal and California Ambient Air Quality Standards. The California Air Resources Board (CARB), an agency within the California Environmental Protection Agency, regulates air quality within California. In conjunction with its associated regional air quality districts (discussed below), CARB is responsible for monitoring and regulating air emissions within the state for compliance with both the CAAQS and NAAQS.

Concentrations of criteria air pollutants are monitored by CARB at various locations within California. Both NAAQS and CAAQS have been developed for certain air pollutants. Federal and state agencies have developed these health- and welfare-based ambient air quality standards for outdoor air to identify the maximum acceptable average concentrations of criteria air pollutants during a

specified period of time. Both NAAQS and CAAQS apply to criteria air pollutants. Table 4.11-3 lists the federal and state standards.

California has been divided into 15 air basins for the purpose of managing the state's air resources on a regional basis. Areas within each air basin are considered to share the same air masses and are, therefore, expected to have similar ambient air quality. Battle Creek and its tributaries lie within the northern SVAB.

Air quality management districts and air pollution control districts have been developed within each air basin to regulate stationary, indirect, and area sources of air pollution within their respective jurisdictions. Air pollution control districts have the authority to regulate stationary, indirect, and area sources of air pollution such as power plants, highway construction, and housing developments in a given county. The districts issue air emission permits and control emissions from stationary sources of air pollution. They also implement transportation control measures for their respective regions. Each district adopts its own rules and regulations to combat the particular air quality problems in its region.

SCAQMD and the TCAPCD have jurisdiction over the area in which Battle Creek and its tributaries are located. The California Clean Air Act of 1988 (Health & Safety Code §44300 *et seq.*) requires that each air pollution control district or air quality management district designated as a nonattainment area for a specified criteria air pollutant prepare a triennial Air Quality Management Plan, the implementation of which would bring the district into compliance with the requirements of the NAAQS and CAAQS for that pollutant. These plans are incorporated into the State Implementation Plan (SIP) prepared by the State of California in accordance with the Federal Clean Air Act, as amended (42 USC 7401-7661).

## Environmental Consequences

### Summary

No significant air quality impacts are associated with the No Action Alternative. Significant impacts are associated with all Action Alternatives (Five Dam Removal, No Dam Removal, Six Dam Removal, and Three Dam Removal). Air quality impacts would be limited to areas associated with construction, modification, or removal activities, including streambeds, stream banks, short-term and long-term access roads, staging areas, and Hydroelectric Project dam site facilities, conveyances, and appurtenant facilities. Reclamation will implement mitigation measures to reduce significant impacts to a less-than-significant level.

## Impact Significance Criteria

Based on specific project concerns and professional judgment, impacts were considered significant for this analysis if implementation of the Restoration Project would:

- contribute substantially to the violation of an existing or projected air quality standard within the Restoration Project area during construction from emissions of PM10 and ozone precursors (i.e., ROGs and NO<sub>x</sub>);
- expose sensitive receptors (those most responsive to or most easily affected by the type of air pollution in question) to substantial pollutant concentrations;
- produce emissions of criteria air pollutants during construction that would lead to an exceedence of NAAQS or CAAQS in attainment areas for a given pollutant; or
- produce emissions of criteria air pollutants during operation that would lead to an exceedence of NAAQS or CAAQS in attainment areas for a given pollutant.

Neither Shasta nor Tehama County has any specific significance thresholds for construction activities. Instead, discussions with the districts indicate that projects use BMPs and other management methods to try to reduce construction-related project emissions. Within Tehama County, if a complaint is received regarding a project, a fugitive dust permit may be required. In addition, roads within 1,000 feet of a sensitive receptor boundary should be watered or treated with a paliative dust agent.

## Impact Assessment

As applicable, the general environmental protection measures listed in the introduction to this chapter shall be used for this resource. In addition, specific mitigation measures for this resource are identified below.

### No Action Alternative

The No Action Alternative would not affect air quality. This alternative assumes that the projected future air quality would be the same as now exists. This assumption is predicated on existing air quality maintenance and improvement programs, as well as state and federal requirements that may require further reductions in emissions from stationary sources and will likely require further reductions in vehicular emissions.

## Five Dam Removal Alternative (Proposed Action)

### **Impact 4.11-1 Significant—Construction-related emissions in excess of allowable thresholds.**

Construction emission estimates have not been included in this report because SCAQMD and TCAQMD do not have specific significance thresholds for construction activities. Instead, these districts require the use of BMPs and other management methods to try to reduce construction-related project emissions. Implementation of the Five Dam Removal could result in a temporary increase in an undetermined amount of construction-related emissions. Because of the number of construction activities that may occur simultaneously and the large number of truck trips anticipated daily, this impact is considered significant. Implementing the following mitigation measure will reduce construction-related emissions to less-than-significant levels and minimize adverse air quality effects.

**Mitigation Measures for Impact 4.11-1.** Reclamation's contractor shall implement the following mitigation measures to minimize air quality impacts.

- To control the generation of construction-related PM10 emissions, Reclamation's contractor shall comply with BMPs summarized below in Table 4.11-4.

**Table 4.11-4.** Control Measures for Construction Emissions of PM10

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Several PM10 dust controls are required to be implemented at all construction sites. The following controls are applicable to the Battle Creek project and should be implemented.

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- All disturbed areas, including storage piles, that are not being actively used for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or tarp or other suitable cover or vegetative ground cover.
  - All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
  - All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions by applying water or by presoaking.
  - When materials are transported off site, all material shall be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container shall be maintained.
  - Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions using sufficient water or chemical stabilizer/suppressant.
  - Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
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- The BMPs listed in Table 4.11-4 shall be made a component of the project description and incorporated into the working project.



- Reclamation's contractor shall obtain all applicable permits required by SCAQMD and TCAPCD. To ensure that the operation of all motors associated with construction of the proposed project does not result in significant air quality impacts, the project applicant shall obtain all applicable permits required by SCAQMD and TCAPCD.

Guidance from the EPA indicates that the conformity rule applies only to nonattainment and maintenance areas (EPA 1994). Because the proposed project area is in attainment for the criteria pollutants, the proposed project is not subject to a federal conformity analysis. Consequently, a federal conformity analysis was not completed.

Further, permits may require additional measures to further reduce emissions. The incorporation of the mitigation measures listed above would reduce construction-related air emissions to less-than-significant levels.

**Impact 4.11-2 Less than Significant—Increased emissions from operational and maintenance activities would contribute to violation of air quality standards.**

Emissions associated with operational activities (including maintenance and monitoring) would be limited to emissions from vehicles transporting necessary equipment and personnel. During normal operations and depending on the accessibility of the site, personnel vehicle trips would be limited to one trip daily for operations, maintenance, and periodic monitoring of environmental restoration measures.

Similarly, maintenance activities associated with the fish ladders and screens and other environmental restoration measures would require infrequent equipment operation and soil or dust disturbance. The limited number of vehicle trips used to transport personnel and to support maintenance activities would not contribute substantially to the violation of an existing air quality standard, expose sensitive receptors to substantial pollutant concentrations, or otherwise produce emissions of criteria pollutants to levels of significance. Therefore, the increased emissions from operational and maintenance activities are considered less-than-significant direct air quality impacts.

## **No Dam Removal Alternative**

Air quality impacts would be the same as those described for the Five Dam Removal Alternative. With the implementation of the proposed mitigation measures, these potential impacts would be mitigated to a less-than-significant level.

**Impact 4.11-3 Significant—Construction-related emissions in excess of allowable thresholds.**

This impact is similar to Impact 4.11-1 described under the Five Dam Removal Alternative. Construction of the fish screens and fish ladders at the North Battle Creek Feeder Eagle Canyon Diversion Dam, Wildcat Diversion Dam, South

Diversion Dam, Inskip Diversion Dam, and Coleman Diversion Dam would result in air emissions in excess of allowable thresholds. Although SCAQMD and TCAPCD do not have specific significance thresholds for construction activities, these districts require the use of BMPs and other management methods to try to reduce construction-related project emissions. Implementation of the No Dam Removal Alternative could result in a temporary increase in an undetermined amount of construction-related emissions. This impact is considered significant. Implementing Mitigation Measures for Impact 4.11-1 would reduce this impact to a less-than-significant level.

**Impact 4.11-4 Less than Significant—Increased emissions from operational and maintenance activities would contribute to violation of air quality standards.**

This impact is similar to Impact 4.11-2 described under the Five Dam Removal Alternative. Emissions associated with operational activities (including maintenance and monitoring) would be limited to emissions from vehicles transporting necessary equipment and personnel to the project sites. During normal operations and depending on the accessibility of the site, personnel vehicle trips would be limited to one trip daily for operations, maintenance, and periodic monitoring of environmental restoration measures. Under the No Dam Removal Alternative, no action would occur at the Lower Ripley Creek Feeder and Soap Creek Feeder Diversion Dams compared to the Five Dam Removal Alternative. Therefore, operation and maintenance emissions produced under the No Dam Removal Alternative are expected to be somewhat lower than under the Five Dam Removal Alternative. This impact is considered less than significant.

## **Six Dam Removal Alternative**

Air quality impacts would be the same as those described for the Five Dam Removal Alternative. With the implementation of the proposed mitigation measures, these potential impacts would be mitigated to a less-than-significant level.

**Impact 4.11-5 Significant—Construction-related emissions in excess of allowable thresholds.**

This impact is similar to Impact 4.11-1 described under the Five Dam Removal Alternative. Constructing fish screens and fish ladders at North Battle Creek Feeder and Inskip Diversion Dams and removing Eagle Canyon, Wildcat, South, Inskip, Coleman, Soap Creek Feeder, and Lower Ripley Creek Feeder Diversion Dams would result in air emissions in excess of allowable thresholds. Although one additional dam would be removed under the Six Dam Removal Alternative compared to the Five Dam Removal Alternative, construction would not occur all at the same time, and the daily emission rates during construction would not be substantially different from the Five Dam Removal Alternative. SCAQMD and TCAPCD do not have specific significance thresholds for construction activities; however, these districts require the use of BMPs and other management methods to try to reduce construction-related project emissions. Implementation of the Six Dam Removal Alternative could result in a temporary increase in an

undetermined amount of construction-related emissions. This impact is considered significant. Implementing Mitigation Measures for Impact 4.11-1 would reduce this impact to a less-than-significant level.

**Impact 4.11-6 Less than Significant—Increased emissions from operational and maintenance activities would contribute to violation of air quality standards.**

This impact is similar to Impact 4.11-2 described under the Five Dam Removal Alternative. Emissions associated with operational activities (including maintenance and monitoring) associated with the Six Dam Removal Alternative would be limited to emissions from vehicles transporting necessary equipment and personnel to the project sites. During normal operations and depending on the accessibility of the site, personnel vehicle trips would be limited to one trip daily for operations, maintenance, and periodic monitoring of environmental restoration measures. Under the Six Dam Removal Alternative, one additional dam (Eagle Canyon Diversion Dam) would be removed rather than receive a new fish screen and fish ladder as proposed under the Five Dam Removal Alternative. Because the dam would be removed, the site would not require future operations and maintenance. Therefore, operation and maintenance emissions produced under the No Dam Removal Alternatives are expected to be less than under the Five Dam Removal Alternative. This impact is considered less than significant.

### **Three Dam Removal Alternative**

Air quality impacts would be similar to those described for the Five Dam Removal Alternative. With the implementation of the proposed mitigation measures, these potential impacts would be mitigated to a less-than-significant level.

**Impact 4.11-7 Significant—Construction-related emissions in excess of allowable thresholds.**

This impact is similar to Impact 4.11-1 described under the Five Dam Removal Alternative. Constructing fish screens and fish ladders at North Battle Creek Feeder, South, and Inskip Diversion Dams and removing Eagle Canyon, Wildcat, and Coleman, Diversion Dams would result in air emissions in excess of allowable thresholds. Because fewer dams would be removed, cumulative emissions from the Three Dam Removal Alternative would be less than the emissions potentially resulting from either the Five or Six Dam Removal Alternative. SCAQMD and TCAPCD do not have specific significance thresholds for construction activities; however, these districts require the use of BMPs and other management methods to try to reduce construction-related project emissions. Implementation of the Three Dam Removal Alternative could result in a temporary increase in an undetermined amount of construction-related emissions. This impact is considered significant. Implementing Mitigation Measures for Impact 4.11-1 would reduce this impact to a less-than-significant level.

**Impact 4.11-8 Less than Significant—Increased emissions from operational and maintenance activities would contribute to violation of air quality standards.**

This impact is similar to Impact 4.11-2 described under the Five Dam Removal Alternative. Emissions associated with operational activities (including maintenance and monitoring) would be limited to emissions from vehicles transporting necessary equipment and personnel to the project sites. During normal operations and depending on the accessibility of the site, personnel vehicle trips would be limited to one trip daily for operations, maintenance, and periodic monitoring of environmental restoration measures. Under the Three Dam Removal Alternative, no action would occur at the Lower Ripley Creek Feeder and Soap Creek Feeder Diversion Dams, compared to the Five Dam Removal Alternative. Therefore, operation and maintenance emissions produced under the No Dam Removal Alternative are expected to be somewhat lower than the Five Dam Removal Alternative. This impact is considered less than significant.

## Cumulative Impacts

Implementation of the Restoration Project, in combination with other past, present, and reasonably foreseeable projects (including those mentioned in Chapter 6), would not result in cumulative air quality impacts. The Restoration Project would divert water flow from existing PG&E hydroelectric power plants. This action would result in a reduction in the amount of energy produced by this powerplant. This reduction in generated power at the power plant would be made up by other existing power plants connected on the power grid. It is important to note that the diversion in power production would go to power plants that have gone through stringent air quality regulations and permitting processes pursuant to the Federal Clean Air Act (42 USC 7401-7661) and to California statutes and regulations. Any new power plants that would be constructed to make up for the loss in power supply resulting from the Proposed Action would be subject to a new source permitting process and would be cleaner than the existing power plant. In addition, there would be no *net increase* in power demand resulting from the Proposed Action; additional power would not need to be generated above current levels, only power to *maintain* current levels. Consequently, this project has no significant cumulative impacts. Chapter 6 contains a discussion of all related projects near the Restoration Project area.

**Table 4.11-3. Ambient Air Quality Standards Applicable in California**

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		
			California	National	California	National	California	National	
Ozone	O3	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years	
		8 hours	NA	0.08	NA	157	NA	If exceeded on more than 3 days in 3 years	
Carbon monoxide  (Lake Tahoe only)	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	
		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA	
Nitrogen dioxide	NO2	Annual average	NA	0.053	NA	100	NA	If exceeded	
		1 hour	0.25	NA	470	NA	If exceeded		
Sulfur dioxide	SO2	Annual average	NA	0.03	NA	80	NA	If exceeded	If exceeded on more than 1 day per year
		24 hours	0.04	0.14	105	365	NA	NA	
		1 hour	0.25	NA	655	NA	NA	NA	
Hydrogen sulfide	H2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA	
Vinyl chloride	C2H3Cl	24 hours	0.010	NA	26	NA	If equaled or exceeded	NA	
Sulfate particles	SO4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA	
Inhalable particulate matter	PM10	Annual geometric mean	NA	NA	20	NA	If exceeded	NA	
		Annual arithmetic mean	NA	NA	NA	50	NA	If exceeded	
		24 hours	NA	NA	50	150	If exceeded	If average 1% over 3 years is exceeded	

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria	
			California	National	California	National	California	National
	PM2.5	Annual geometric mean	NA	NA	12	NA	If exceeded	NA
		Annual arithmetic mean 24 hours	NA	NA	NA	15	NA	If exceeded
			NA	NA	NA	65	NA	If average 2% over 3 years is exceeded
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year
		30 days	NA	NA	1.5	NA	If equaled or exceeded	NA

Notes:

All standards are based on measurements at 25°C and 1 atmosphere pressure.

National standards shown are the primary (health effects) standards.

NA = not applicable.