

Air Quality

Affected Environment

The primary factors that influence air quality are the locations of air pollutant sources, the types and amounts of pollutants emitted, meteorological conditions, and topographic features. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. Air quality in the Merced River corridor and potential impacts associated with the project alternatives are discussed below.

Regulatory Context

Regulation of air pollution is achieved through both national and state ambient air quality standards and emissions limits for individual sources of air pollutants.

Federal and State Ambient Air Quality Standards

The Clean Air Act of 1970 (42 USC 7401 et seq.) tasked the U.S. Environmental Protection Agency (EPA) with establishing national ambient air quality standards (NAAQS) and periodically reassessing whether these standards are adequate to protect public health and the national welfare, including those resources and values associated with national parks and wilderness areas. The NAAQS set thresholds for *criteria pollutants*, including ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO₂), suspended particulate matter (PM), and lead (Pb). Since that time, subsets of particulate matter have been identified for which permissible levels have been established. These include particulate matter of 10 microns in diameter or less (PM₁₀) and particulate matter of 2.5 microns in diameter or less (PM_{2.5}).

Under the 1988 California Clean Air Act, the California Air Resources Board has also adopted standards for these criteria pollutants (called California Ambient Air Quality Standards, or CAAQS) and applies additional standards for pollutants that are not currently included in the national standards. The federal and state ambient standards differ in some cases; in general, the California standards are more stringent, particularly for ozone and PM₁₀. Both the EPA and the California Air Resources Board classify air basins in California as either in “attainment” or “nonattainment” with their respective standards. Areas that were once designated as nonattainment, but are now achieving the NAAQS, are termed “maintenance areas.” **Table 9-131** shows the current state and federal ambient air quality standards.

The federal government delegates the inventory of all criteria pollutants to the state, which performs this regulatory function and assesses air quality under NAAQS and CAAQS by inventorying emissions and regulating the concentrations of primary pollutants. Some of these standards contain both primary standards for human health and secondary standards for more indirect (e.g., ecological) endpoints, including acidification and eutrophication of lakes. The National Park Service (NPS) assists the State of California by measuring concentrations of pollutants and monitoring ecological endpoints to help evaluate the effectiveness of secondary NAAQS and CAAQS.

TABLE 9-131: AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	State Standard	Federal Primary Standard	Federal Secondary Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	0.075 ppm	Same as primary standard	Formed when ROG and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/industrial mobile equipment
	1 hour	0.090 ppm	---		
Carbon Monoxide	8 hour	9.0 ppm	9.0 ppm	None	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	35 ppm		
Nitrogen Dioxide	Annual Average	0.030 ppm	0.053 ppm	Same as primary standard	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.180 ppm	0.100 ppm		
Sulfur Dioxide	Annual Average	---	---	--	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing
	24 Hour	0.04 ppm	---		
	3 Hour	---	---	0.5 ppm	
	1 Hour	0.25 ppm	0.075 ppm	--	
Particulate Matter (PM10)	Annual Arithmetic Mean	20 µg/m ³	---	Same as primary standard	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, prescribed and wildland fires, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 µg/m ³	150 µg/m ³		
Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 µg/m ³	15 µg/m ³	Same as primary standard	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; prescribed and wildland fires; also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics
	24 hour	---	35 µg/m ³		
Lead	Calendar Quarter	---	1.5 µg/m ³	Same as primary standard	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	30-Day Average	1.5 µg/m ³	---	---	
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard		Geothermal power plants, petroleum production and refining
Visibility-Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more			See PM2.5.
NOTE: ppm = parts per million; µg/m ³ = micrograms per cubic meter; km = kilometers					
SOURCE: CARB 2009a, 2011a.					

The State Implementation Plans

The state and federal Clean Air Acts require nonattainment air districts to develop plans, known as State Implementation Plans (SIPs). SIPs are comprehensive plans that describe how the district would attain NAAQS. The 1990 amendments to the federal Clean Air Act set deadlines for attainment based on the severity of an area's air pollution problem. SIPs are not single documents. They are a compilation of new and previously submitted plans, programs (e.g., monitoring, modeling, permitting), district rules, state regulations, and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes the California Air Resources Board the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to the California Air Resources Board for review and approval. The California Air Resources Board forwards SIP revisions to the EPA for approval and publication in the Federal Register. The Code of Federal Regulations, title 40, chapter I, part 52, subpart F, section 52.220 lists all of the items that are included in the California SIP. At any one time, several California submittals are pending EPA approval.

The portion of the South Fork Merced River corridor within Yosemite National Park crosses into both Mariposa and Madera counties, which are located in the Mountain Counties Air Basin and the San Joaquin Valley Air Basin, respectively. The Mountain Counties Air Basin has been designated as nonattainment for state and federal ozone standards. Only the Yosemite National Park portion of Mariposa County is designated as nonattainment for the state PM10 standard, primarily due to local sources near the Yosemite Valley Visitor Center monitoring site. Similarly, the San Joaquin Valley Air Basin has also been designated as nonattainment for state and federal ozone standards, state PM10 standards, and state and federal PM2.5 standards. The Mariposa County Air Pollution Control District (MCAPCD) is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in Mariposa County. No air quality plans have been prepared for the Mariposa County portion of the Mountain Counties Air Basin. The state has not required an ozone plan because of the overwhelming influence of pollutant transport on ozone conditions in Mariposa County. With regard to the Madera County portion of the San Joaquin Valley Air Basin, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has developed air quality plans for 1-hour and 8-hour ozone, as well as for PM10 and PM2.5.

General Conformity

Under the 1990 amendment to the Clean Air Act (section 176(c)(4)), a general conformity rule was established to ensure that actions taken by federal agencies in nonattainment areas conform to state goals for the attainment and maintenance of the NAAQS. In 1993 the EPA published guidance on this rule that assists federal agencies in deciding whether a conformity determination is required, and if so, how to make such a determination (EPA 1993). The general conformity rule is currently undergoing revision.

Management actions identified herein that would occur in Mariposa County would likely be subject to the General Conformity Rule, given that the county is now a nonattainment area for the national 8-hour ozone standard. The de minimus thresholds¹ for ozone are 50 tons per year of volatile organic

¹ The minimum threshold for which a conformity determination must be performed.

compounds (VOC) and 100 tons per year of nitrogen oxides (NO_x). Actions that would occur in Madera County are currently, and would continue to be, subject to the rule because the county lies in an area (San Joaquin Valley Air Basin) that has been designated as nonattainment for national ozone and PM₁₀ standards, which is the subject of the ozone SIP and a PM₁₀ SIP. As a result of the San Joaquin Valley Air Basin's recent designation as an extreme nonattainment area, the applicable de minimis standards for ozone are lower — 10 tons per year of VOC and 10 tons per year of NO_x. With respect to particulates, Madera County's applicable de minimis threshold for PM_{2.5} is 100 tons per year.

Mandatory Class I Areas

In addition to the state and federal requirements described above for nonattainment areas, section 162(a) of the federal Clean Air Act sets forth additional provisions for the protection of air quality across certain federal lands, such as national parks, national wilderness areas, and national monuments. Yosemite National Park was designated as a Class I area in 1977. This designation gives Federal Land Managers (FLMs) the responsibility for protecting air quality related values (AQRVs) from the adverse impacts of new or modified sources of emissions. Generally, an AQRV is a resource, as identified by the FLM, that may be adversely affected by a change in air quality and may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the FLM for a particular federal area (NPS, 2011t). In order to achieve greater consistency in the approach each agency uses to identify and evaluate AQRVs, air resource managers from the U.S. Forest Service (USFS), the NPS, and the U.S. Fish and Wildlife Service (FWS) FLMs established the Federal Land Managers' Air Quality Related Values Work Group (FLAG) in order to:

- Define sensitive AQRVs,
- Identify the critical loads (or pollutant levels) that would protect an area and identify the criteria that define adverse impacts, and
- Standardize the methods and procedures for conducting AQRV analyses. (USFS et al. 2010)

AQRVs that have been identified for Yosemite National Park include visibility, pine (injury from ozone), high elevation lakes (acidity), and lichen (sensitive to vehicle-derived reactive nitrogen deposition) (Tarnay 2012).

In 1999, the EPA published a regional haze rule to guide the preparation of state regional haze plans to improve air quality and reduce haze in Class I federal areas. The ultimate goal of the rule is to restore natural visibility conditions in Class I areas, such as Yosemite National Park, by 2064. Under the regulations, all states are required to develop implementation plans that demonstrate reasonable progress toward this goal. In January of 2009, the California Air Resources Board adopted the *California Regional Haze Plan*, which sets forth specific visibility goals for the state. The plan is part of a broader multi-state effort to improve visibility throughout the western region. The plan details baseline conditions of individual Class I areas, including Yosemite National Park, and sets a path toward achieving interim, reasonable progress goals statewide by 2018 (CARB 2009b). The El Portal Administrative Site is located within a Class II area, in which less stringent standards apply.

Federal Policies

Executive Order 13423, Issued by President George W. Bush, Jan. 24, 2007. This executive order sets as a policy of the United States that “Federal agencies conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner” (section 1, Policy). Goals for agencies include such measures as improving energy efficiency and reducing greenhouse gases generated by agency operations and actions, reducing energy intensity and requiring that energy consumed by the agency comes from new renewable sources, reducing water consumption, and ensuring that agencies reduce their fleet’s total consumption of petroleum products (NPS 2007h).

National Park Service Management Policies

The NPS has a responsibility to protect air quality under both the 1916 Organic Act and the Clean Air Act. Accordingly, the service would seek to perpetuate the best possible air quality in parks to (1) preserve natural resources and systems; (2) preserve cultural resources; and (3) sustain visitor enjoyment, human health, and scenic vistas. Through the *NPS Management Policies 2006*, the park has committed to actively promoting and pursuing measures to protect AQRVs from the adverse impacts of air pollution. In cases of doubt as to the impacts of existing or potential air pollution on park resources, the park would err on the side of protecting air quality and related values for future generations (NPS 2006a).

It is also NPS policy that internal activities at parks must comply with all applicable federal, state, and local air pollution laws and regulations (NPS 2004a). To meet these goals, parks may be required to obtain air quality permits before conducting activities, such as prescribed burning, that emit pollutants. Likewise, operating permits may be required for some emission sources, such as wastewater treatment facilities.

Environmental Context

Climate and Meteorology

California is divided into air basins that are defined partly by their meteorological and topographical characteristics. As previously noted, the portions of the Merced River and South Fork Merced River that traverse Yosemite National Park are located within two air basins: Mountain Counties Air Basin and San Joaquin Valley Air Basin. Generally, the uppermost reaches of the Merced River and South Fork Merced River lie within San Joaquin Valley Air Basin, and the lower reaches lie within Mountain Counties Air Basin.

The portions of the Merced River and South Fork Merced River that traverse the park lie within the Sierra Nevada mountain range, which roughly parallels the eastern boundary of California and extends from the Cascades Range in the north to the Tehachapi Mountains in the south. Cooler climates with more wind are, in general, characteristic of the mountains, as contrasted with the nearby valleys. Mountain climatic zones are characterized by considerable vertical wind motion and by winds and temperatures different from those in the valleys. The Yosemite Valley, for instance, experiences

inversions, which occur when air temperature increases with altitude. Flat topography traps descending cold air at night, creating a shallow inversion layer that inhibits air pollutant dispersion and results in high pollutant concentrations.

Air Quality Monitoring Data

Federal, state, and local agencies operate a network of monitoring stations throughout California to collect data on ambient concentrations of air pollutants. **Table 9-132** summarizes recent monitoring data from the monitoring stations in the project vicinity. Three of the stations are in Yosemite National Park (Turtleback Dome, Merced River, and Yosemite Valley Visitor Center) and one is outside of the park, in the Sierra National Forest (Jerseydale). The Merced River, Yosemite Valley Visitor Center (in Yosemite Village), and Jerseydale stations are approximately 4,000 feet above sea level, and Turtleback Dome is approximately 5,300 feet above sea level. As shown in table 9-131, exceedances of state and national standards for ozone and PM10 are recorded on occasion within the park and in the park vicinity.

Ozone. Ozone is a reactive pollutant that is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving volatile organic compounds (VOCs) and nitrogen oxides (NOx). These pollutants are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of VOC and NOx. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate respiratory diseases such as asthma, bronchitis, and emphysema. Exposure to ozone is also associated with a wide range of effects on vegetation AQRVs, such as visible foliar injury, growth reductions and yield loss in annual crops, growth reductions in tree seedlings and mature trees, and effects that can have impacts at the forest stand and ecosystem level (EPA 1997).

Particulate Matter (PM10 and PM2.5). PM10 consists of particulate matter that is 10 microns or less in diameter (a micron is 1 one-millionth of a meter), and PM2.5 consists of particulate matter 2.5 microns or less in diameter. Both PM10 and PM2.5 can be inhaled into the air passages and the lungs and can cause lung irritation, but PM2.5 can penetrate more deeply into alveolar passages where diffusion into the blood stream is possible, which can result in additional adverse cardiovascular health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. For instance, in Mariposa County, the principal sources of direct emissions of PM10 include entrainment of dust through vehicle travel over paved and unpaved roads, residential fuel combustion, and wildfires. However, PM10 and PM2.5 concentrations also reflect secondary pollutant formation derived from photochemical reactions involving pollutants such as VOC and NOx. As described above in connection with ozone, on-road motor vehicles are a principal source of regional VOC and NOx emissions.

TABLE 9-132: AIR QUALITY DATA SUMMARY (2006-2010) FOR THE STUDY AREA

Pollutant	Standard ^a	Monitoring Data by Year				
		2006	2007	2008	2009	2010
Ozone (Yosemite National Park — Turtleback Dome Station)						
Highest 1-Hour Average (ppm) ^b		0.100	0.100	0.108	0.096	0.091
Days over State Standard	0.09	4	3	11	1	0
Highest 8-Hour Average (ppm) ^b		0.094	0.097	0.102	0.086	0.085
Days over State Standard	0.07	52	49	56	8	23
Days over National Standard	0.075	30	25	33	26	5
Ozone (Sierra National Forest — 6440 Jerseydale)						
Highest 1-Hour Average (ppm) ^b		0.101	0.099	0.108	0.096	0.109
Days over State Standard	0.09	3	1	5	1	2
Highest 8-Hour Average (ppm) ^b		0.092	0.092	0.093	0.084	0.101
Days over State Standard	0.07	41	26	30	18	6
Days over National Standard	0.075	13	12	17	5	3
Particulate Matter (PM10) (Yosemite Village — Visitor Center)						
Highest 24-Hour Average – State/National (µg/m ³) ^b Highest 1-Hour Average, ppm ^c		97.0	116.0	118.4	82.2	74.3
Estimated days over State Standard ^c	50	2	1	2	3	2
Estimated days over National Standard ^c	150	0	0	0	0	0
State Annual Average ^d	20	NA	NA	NA	23.6	20.3
Particulate Matter (PM2.5) (Yosemite Village — Visitor Center)						
Highest 24-Hour Average – National (µg/m ³) ^b Highest 1-Hour Average, ppm ^c		36.1	134.0	130.1	47.2	61.0
Estimated days over National Standard ^c	35	NA	NA	NA	NA	NA
State Annual Average ^d	12	NA	14.2	NA	NA	NA
National Annual Average ^d	15	NA	NA	NA	NA	NA
NOTE: NA = Adequate data was not available. Values in bold exceed the respective air quality standard.						
^a Generally, state standards are not to be exceeded and federal standards are not to be exceeded more than once per year.						
^b ppm = parts per million; µg/m ³ = micrograms per cubic meter.						
^c PM10 and PM2.5 are not measured every day of the year.						
^d State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.						
SOURCE: CARB 2011b						

On occasion, concentrations of PM10/PM2.5 in the park reflect pollutant transport from upwind areas, such as San Joaquin Valley Air Basin; under other conditions, ambient concentrations reflect local sources such as campfires, entrainment of dust from vehicle movement over paved roads (particularly from wintertime sanding of roads for traction), and wildland and prescribed fires. Regional emissions of PM10/PM2.5 and their precursors within the San Joaquin Valley are expected to decrease over the next decade or so, largely as a result of reductions in emissions due to state and federal motor-vehicle emissions control standards and programs. Local emissions of PM10/PM2.5 would continue to be proportional to the number of campsites; the level of construction-related activity; the extent of vehicle travel on park roads; and the frequency and extent of prescribed fires.

Visibility-Reducing Particles and Gases. Visibility impairment occurs as a result of the scattering and absorption of light by particles and gases in the atmosphere. Both primary and secondary formations of particles contribute to visibility impairment. Primary particles, such as elemental carbon from diesel and wood combustion or dust from certain industrial activities or natural sources, are emitted directly into the atmosphere. Secondary particles that are formed in the atmosphere from primary gaseous emissions include sulfate from sulfur dioxide emissions, nitrates from NO_x emissions (which can also adversely impact lichen AQRVs from nitrogen deposition), and organic carbon particles formed from VOC emissions. The only primary gaseous pollutant that directly reduces visibility is nitrogen dioxide, which is the brown-colored gas readily visible during periods of heavy air pollution.

Visibility conditions are commonly expressed in terms of three mathematically related metrics: visual range, light extinction, and deciviews. Visual range is the maximum distance at which one can identify a black object against the horizon and is typically described in miles or kilometers. Light extinction, which is inversely related to visual range, is the sum of light scattering and light absorption by particles and gases in the atmosphere and is expressed in terms of inverse megameters, with large values representing poorer visibility. Unlike visual range, the light extinction coefficient expresses the relative contribution of one particulate constituent (e.g., sulfates or nitrates) versus another to overall visibility impairment. The deciview metric was developed because changes in visual range and light extinction are not proportional to human perception. For example, a 5-mile change in visual range can be either very apparent or not perceptible, depending on the baseline level of ambient pollution. The deciview metric provides a linear scale for perceived visual changes over the entire range of conditions, from clear to hazy, analogous to the decibel scale for sound. Under many scenic conditions, a change of 1 deciview is considered to be perceptible by the average person. A deciview of zero represents pristine conditions.

Current visibility impairment in Yosemite National Park ranged from 4.6 deciviews for the clearest 20% of days during the 1990–1999 period, to 22 deciviews for the haziest 20% of days during that period (NPS 2002). In contrast, the corresponding range of deciview values was 3.9 (clearest 20%) to 13.9 (haziest 20%) and 13.6 to 31.8 in Rocky Mountain National Park and Great Smoky Mountains National Park, respectively. Yosemite National Park visibility for the clearest 20% of days is much better than the NPS average, whereas visibility for the haziest 20% of days is about average. Organic carbon, elemental carbon, crustal matter (fugitive dust originating from the earth's crust), nitrates, and sulfates are primarily responsible for visibility impairment in Yosemite Valley.

Emission Sources. Sources of pollution generally fall into one of three categories: stationary, mobile, or area. Stationary sources refer to emissions sources associated with industrial or commercial processes. Mobile sources refer to on-road and off-road vehicles, among other nonstationary sources. Area sources refer to a wide range of sources that are individually minor, but are more substantial in aggregate. A summary of the potential emissions sources within the project area, arranged by source category, is shown in **table 9-133**.

While air quality in a given air basin is usually determined by emission sources within the basin, it also can be affected by pollutants transported from upwind air basins by prevailing winds. A study of surface ozone in the summers of 2003 and 2005 identified the San Francisco Bay Area and eastern Nevada to be contributing sources of ozone pollution (Burley and Ray 2007). A similar study examined the potential sources of fine particulate matter within the park during the summer of 2002 and found

TABLE 9-133: POTENTIAL EMISSIONS SOURCES WITHIN THE PROJECT AREA

Stationary Sources	
Air conditioners and refrigeration units	Wastewater Treatment Plants
Food Preparation (e.g., grills, stoves)	Storage Tanks
Commercial/Institutional Boilers, Heaters, and Fireplaces	Stationary Pumps/Compressors/Generators
Mobile Sources	
Landscape maintenance equipment	NPS snowmobiles
NPS aircraft	NPS on-road vehicles
Visitor vehicles	Buses
Area Sources	
Landscape maintenance equipment	Campfires
Welding	Charcoal and lighter fluid consumption
Demolition activities	Consumer solvents
Road Maintenance	Dust from paved roads
Prescribed and Wild Fire	LPG Gas Combustion
Herbicides/pesticides	Solvent Use
Livestock	Surface Coating (e.g., paints/solvents)
Waste disposal	Woodworking/wood finishing
NPS = National Park Service; LPG = liquefied petroleum gas SOURCE: NPS 1999d	

that although local sources contributed, wildfires as far away as western and southern Oregon were primarily responsible for haze within Yosemite National Park during that summer (McMeeking et al. 2006). The California EPA concluded that all of the ozone exceedances in 1995 in the southern portion of the Mountain Counties Air Basin (i.e., Tuolumne and Mariposa counties) were caused by transport of ozone and ozone precursors from the San Joaquin Valley Air Basin (CARB 1996).

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young; population subgroups with higher rates of respiratory disease, such as asthma and chronic obstructive pulmonary disease; and populations with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases.

Such land uses and facilities as schools, children’s day care centers, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality;

however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically lessens overall exposure to pollutants. Residential areas are considered more sensitive to air pollution conditions compared with commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air pollution conditions. Sensitive receptors within the project area include on-site staff and recreational users, specifically the elderly and the young, within developed areas of the Merced River corridor, including Yosemite Valley, Wawona, and El Portal. In addition to human sensitive receptors described above, there are also sensitive ecological receptors in the Yosemite National Park, such as pine and lichen AQRVs, which are susceptible to adverse effects from elevated ozone exposure and nitrogen deposition, respectively.

Environmental Consequences Methodology

Local sources of emissions would have minimal effect on regional emissions, particularly during the summer season when regional emissions meet or exceed federal and state standards. The exceptions would be wildland and prescribed fires, which can result in regionally significant emissions on a given day. Other local emissions sources include stationary, area, and mobile sources. The air quality impact assessment involves the identification and qualitative description of the types of actions under the various alternatives that could affect air quality, sensitive receptors and AQRVs, corresponding emissions sources and pollutants, and relative source strengths. In addition, quantitative criteria pollutant emission estimates were developed for on-road vehicular traffic for each Alternative. Based on the relative source strengths, an assessment was performed to determine the potential for higher pollutant emissions or concentrations, taking into account the frequency, magnitude, duration, location, and reversibility of the potential impact. Regional pollutant transport issues were evaluated in the context of regional cumulative impacts. The criteria that follow are used to determine these impacts.

- **Context.** The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur in a specific area within a segment of the Merced River corridor. Regional impacts would be those related to the Mountain Counties Air Basin (MCAB) and San Joaquin Valley Air Basin (SJVAB). With respect to air quality issues, both local and regional perspectives are relevant.
- **Intensity.** The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts would be effects considered not detectable and would have no discernible effect on air quality (assumed to be 1% or less of threshold). Minor impacts would be those that are present, but not expected to have an overall effect on those conditions (assumed to occur up to 50% of the applicable threshold). Moderate impacts would be clearly detectable and could have an appreciable effect (assumed to occur at emissions levels greater than 50% but not exceed the applicable threshold). Major impacts would have a substantial, highly noticeable influence on local or regional air quality (assumed to occur when emissions exceed applicable threshold).

Quantitative thresholds that would apply to each river segment within the project area's respective air basins (i.e., MCAB and SJVAB) are described below. Notably, a major impact would occur if emissions exceed these thresholds.

Actions that would occur in the Mariposa County portion of the MCAB would be subject to:

Federal General Conformity Rule de minimis thresholds:

- 50 tons per year VOC or ROG
- 100 tons per year NOx

Actions that would occur in the Madera County portion of the SJVAB would be subject to:

Federal General Conformity Rule de minimis thresholds:

- 10 tons per year VOC or ROG
- 10 tons per year NOx
- 100 tons per year PM2.5

Notably, only one action — reroute Triple Peak Fork Trail upland where possible — in Segment 1, which is common to Alternatives 2–6, would occur in Madera County.

- **Duration.** The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of impacts. A long-term impact would have a permanent effect on air quality.
- **Type of Impact.** Impacts are evaluated in terms of whether they would be beneficial or adverse to air quality. Beneficial air quality impacts would reduce emissions or lower concentrations, and adverse impacts would have the opposite effect.

Environmental Consequences of Alternative 1 (No Action)

Under Alternative 1 (No Action), no policies that protect or enhance air quality in the corridor would be developed. Policies and actions that protect and enhance air quality in the corridor arise not from the Wild and Scenic Rivers Act but from such laws as the federal Clean Air Act. Alternative 1 would continue the current management direction and level of management intensity in the Merced River corridor. Lodging, camping, infrastructure, and parking would continue in the same locations, configurations, and at the same level of development. There would be no comprehensive approach to protect and enhance river values.

Under Alternative 1, air quality in the Merced River corridor would continue to be influenced by local pollution sources within the park and by regional sources upwind of the park. Local emissions sources include stationary, area, and mobile sources. Local air quality varies based on temperature, humidity, wind speed, elevation, topography, and other environmental factors, such as regionwide conditions. Generally, the effects of local emissions sources would be most intense in those areas where the sources are concentrated and can be compounded by inversions, such as in the Yosemite Valley. Analysis of effects is qualitative, and professional judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts.

All River Segments

Impacts of wildland and prescribed fires would continue to be controlled through implementation of smoke management policies in the *2004 Fire Management Plan/EIS*. These policies are intended to minimize impacts on air quality from prescribed burning within the park and region. It should be noted that while wildland fire drives the largest and most intense exceedances of particulate matter

standards in the Merced River corridor, as is the case in Yosemite Valley, the baseline levels of particulate emissions are already high. Several assumptions were integrated into this assessment.

- Alternative 1 (No Action) would not affect the smoke management policies in the *Fire Management Plan/EIS*.
- Alternative 1 would not create campfire regulations specific to the project area.
- The NPS would continue to ensure that all stationary emissions sources under its control or under the control of its concessioners comply with applicable air district rules and regulations.
- The NPS would continue to participate in the regional air quality planning processes for ozone and visibility impairment and would continue to review applications for new or modified major stationary sources upwind of the park, pursuant to the Prevention of Significant Deterioration regulations.
- The NPS would comply with the EPA's general conformity rule for any future actions that would occur within Mariposa and Madera counties, which are part of MCAB and SJVAB, respectively.

In accordance with the 2009 Settlement Agreement, no new structures would be constructed in the Merced River corridor, except for minor structures that are small, temporary, easily removed, not habitable; designed to support existing uses, systems, and programs; located within the existing building footprint; and not created solely for commercial purposes. Temporary housing for employees displaced by the 2008 rockfall would continue as needed at Huff House, Lost Arrow, Yosemite Lodge, Ahwahnee Dorm, Boys Town, and El Portal Trailer Village, and for NatureBridge students at Curry Village. Housing for NPS employees and park partner staff would remain in current locations and at current levels.

Alternative 1 accounts for 3% growth in visitation following recent trends. It is expected that more days during the peak season would receive the visitation currently experienced during the busiest days. Visitation could also increase in the off-peak seasons. Consequently, traffic congestion and associated air pollutant emissions during those nonpeak periods could approximate current congestion during peak periods. Increases in visitation during peak periods could also occur, and to the degree that such increases do happen, traffic congestion and air pollutant emissions would marginally increase. These local mobile sources would continue to include automobiles, trucks, and buses, and would remain subject to state and federal emissions control standards and programs. For the foreseeable future, motor vehicle fleet turnover, cleaner burning fuels, improved technologies, and stricter state and federal standards would be expected to decrease emissions per vehicle-mile-traveled (VMT). Thus, the overall impact of mobile source exhaust emissions would remain approximately the same as under existing conditions. Regional AQRV impacts (such as pine injury from ozone and visibility) would also be approximately the same as under existing conditions. However, in contrast to the ozone precursors, most of the particulate matter associated with vehicle use is related to entrainment of road dust rather than to exhaust. Emissions from vehicle entrainment of road dust would continue to affect air quality, particularly in winter and early spring, when drying road surfaces expose sand deposited for traction to vehicle entrainment into the atmosphere. However, even with the anticipated annual increase in visitation, the effect would be negligible. Were visitation to increase, road dust would be expected to increase in rough proportion to VMT within the park, as would those emissions associated with traffic

congestion and delays that would accompany such increases. Under the latter scenario, the effect on local air pollution conditions would be long term, minor, and adverse.

Park management has implemented temporary access restrictions for use when traffic and parking conditions in Yosemite Valley are overly congested. This has the effect of reducing the number of incoming vehicles and their related emissions until the traffic volume and parking demand in Yosemite Valley decrease sufficiently (as departing visitors leave the Valley) to stabilize traffic conditions. These access restrictions occur when traffic in Yosemite Valley is at maximum capacity, and thus associated vehicle pollutant emissions would also be at peak levels. In addition, the Yosemite Area Regional Transportation System (YARTS) would continue to reduce the number of individual vehicles operated within the park. In 2011, YARTS transported 300,979 passengers into Yosemite National Park (NPS, 2012i). The intent of YARTS is to provide an attractive alternative to private vehicles by expanding the range of travel options for visitors to Yosemite Valley and to other primary park destinations, and for employees commuting to work in the park.

Local area pollution sources would continue to include regular maintenance activities, consumer products, natural gas combustion for heating/cooling and campfires. Most of these sources would continue in the same manner and extent as under existing conditions. However, potential future increases in visitor use levels would cause these sources to increase in relative proportion. Daily, routine, and intermittent operational maintenance intended to stabilize and protect park facilities, address visitor health and safety issues, and protect natural and cultural resources would continue, such as campground maintenance, road and trail maintenance, building and grounds maintenance, and utility system repair and maintenance throughout Segments 1–8. Trail and road maintenance would preserve the existing character, so that parking areas or trails that are currently unpaved remain so. Park facilities themselves — roads, parking spaces, bridge crossings, and overnight accommodations — would remain as they were in 2010. Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased visitation, especially during nonpeak periods.

Segments 1, 5, 6, and 8: Merced River Above Nevada Fall, South Fork Merced River Above and Below Wawona, and Wawona Impoundment

Wilderness and impoundment Segments 1, 5, 6, and 8 would be minimally affected by local emissions sources, with the exception of wildland and prescribed fires, or the occasional campfire from overnight visitors. Impacts from prescribed burning would continue to be controlled through implementation of smoke management policies in the *Fire Management Plan/EIS*. Although there are no transportation facilities in Segments 1, 5, 6, or 8, and none are proposed under Alternative 1, incidental future increases in traffic within the Merced River corridor would affect these segments by pollutant drift. In addition, impacts from in-park emissions, such as vehicles, would be more apparent in areas near road corridors and concentrations of visitor and administrative services. The overall effect on regional air pollution conditions would be long term, minor, and adverse.

Segments 1, 5, 6, & 8 Impact Summary: Implementation of Alternative 1 (No Action) would result in local, long-term, minor, adverse air quality impacts within these segments.

Segment 2: Yosemite Valley

As described above, for Segments 1–8 there could be adverse air quality impacts associated with transportation conditions under Alternative 1. Specific to Segment 2, there would likely continue to be local, minor, long-term, adverse air quality impacts associated with traffic congestion and delays that would continue to occur at busy intersections in Yosemite Valley and possibly increase should visitation levels increase in the future. Traffic emissions, as a source of nitrogen deposition, are also correlated to lichen AQRVs and would also likely result in long-term local, minor, adverse air quality impacts. Park management may continue to implement temporary access restrictions in Yosemite Valley when westbound traffic is backed up from Lower Yosemite Fall to the Curry Village four-way intersection or when all of the day parking spaces have been filled.

The effect on air quality from existing stationary sources, such as fuel storage systems and generators, would be greatest immediately adjacent to the emission source, including employee housing areas, visitor facilities, and lodging. Emissions from stationary sources would continue to be regulated, as appropriate, through applicable MCAPCD regulations. In the long term, the replacement of dated equipment (e.g., generators) with newer, more energy-efficient models to meet NPS sustainability goals would result in regional and local long-term, negligible, beneficial impacts.

Area emissions would continue to affect air quality and visibility within the Yosemite Valley under certain meteorological conditions. For example, particulate matter resulting from burning wood could remain near ground level during temperature inversions. Area sources of particulate matter in the Valley are the most important driver for the PM₁₀ nonattainment status due to the strength and frequency of inversions. The majority of overnight visitor accommodations, and their associated campfires and other sources of evening smoke, are located within Segment 2. Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased visitation, especially during nonpeak periods. Campfires or other evening sources of smoke would continue to affect local air quality at levels that may be unhealthy for sensitive groups, including individuals with pulmonary or cardiovascular diseases, the elderly, and children. Since wood smoke can currently contribute enough local emissions to create unhealthy pollutant levels for sensitive groups, especially through many wood-burning sources operating under stable atmospheric conditions, the expected increase in the usage of campfires under Alternative 1 would have a potentially long-term, moderate, adverse impact on sensitive receptors within Segment 2. Increased usage of campfires would also result in a potentially long-term, local, moderate, adverse impact if the usage results in increased PM₁₀ measurements above the ambient air quality standard at the Yosemite Valley Visitor Center monitoring site.

Segment 2 Impact Summary: Implementation of Alternative 1 (No Action) would result in local, long-term, minor, adverse air quality impacts associated with vehicle emissions. Air quality within the segment would also experience long-term, moderate, adverse impacts from campfires and other evening sources of smoke.

Segments 3 and 4: Merced River Gorge and El Portal

Segments 3 and 4 would continue to be affected by local and regional sources of air pollutants, as described above for Segments 1–8. There are no NPS overnight accommodations along Segments 3 and 4, and thus few campfires or other visitor-related evening sources of smoke. As described above, were visitation to increase, road dust would be expected to increase in rough proportion to VMT within the park, as would those emissions associated with traffic congestion, which would result in long-term, local, minor, adverse impacts.

Segments 3 & 4 Impact Summary: Implementation of Alternative 1 (No Action) would result in local, long-term, minor, adverse air quality impacts within Segments 3 & 4.

Segment 7: Wawona

As described above for Segments 1–8, there could be regional, long-term, minor, adverse air quality impacts associated with transportation conditions under Alternative 1. Specific to Segment 7, there could be local, long-term, minor, adverse air quality impacts associated with traffic congestion and delays that would continue to occur at busy intersections in Wawona, and possibly increase should visitation levels increase in the future. Traffic emissions, as a source of nitrogen deposition, are also correlated to lichen AQRV impacts and would also likely result in local, long-term, minor, adverse air quality impacts. Park management may continue to implement temporary access restrictions in Wawona when all of the day parking spaces have been filled.

The effect on air quality from existing stationary sources, such as fuel storage systems and generators, would be greatest immediately adjacent to the emission source, including the Wawona Store and Wawona Hotel. Emissions from stationary sources would continue to be regulated, as appropriate, through applicable MCAPCD regulations. In the long term, the replacement of dated equipment (e.g., generators) with newer, more energy-efficient models to meet NPS sustainability goals would result in regional and local, long-term, negligible, beneficial impacts.

Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased visitation, especially during nonpeak periods. Since wood smoke can currently contribute enough local emissions to create unhealthy pollutant levels for sensitive groups, especially through many wood-burning sources operating under stable atmospheric conditions, the expected increase in the usage of campfires under Alternative 1 would have a potentially long-term, local, moderate, adverse impact on sensitive receptors.

Segment 7 Impact Summary: Implementation of Alternative 1 (No Action) would result in local, long-term, minor, adverse air quality impacts associated with vehicle emissions. Air quality within the segment would also experience long-term, moderate, adverse impacts from campfires and other evening sources of smoke.

Summary of Alternative 1 (No Action) Impacts

Under Alternative 1, air quality in the Merced River corridor would continue to be influenced by local pollution sources within the park and by regional sources upwind of the park. The relative importance of local and regional sources would continue to vary by season, diurnally, and by pollutant. Furthermore, nonwilderness portions of the corridor would be affected by local emissions sources to a much greater extent than wilderness portions. Local stationary sources would continue to be regulated under the MCAPCD rules and regulations, some local area sources would continue to be subject to park regulations, and mobile sources would continue to be subject to state and federal tailpipe emissions standards. With respect to ozone precursors, overall local emissions under Alternative 1 would be similar to existing conditions. AQRV impacts (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be approximately the same as under existing conditions. With no increase in visitation or VMT within the corridor, the effect of particulate matter on air quality would be negligible. However, should VMT increase by 3%, the long-term impacts would be minor and adverse.

Cumulative Impacts of Alternative 1 (No Action)

Cumulative effects on air quality discussed herein are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of Alternative 1. The projects identified below include only those that could affect air quality within the study area or that could be affected by air pollutant sources within the Merced River corridor.

Past Actions

Past actions have resulted in both adverse and beneficial impacts on air quality. The majority of past projects listed in Appendix C (Cumulative Actions) had short-term, regional and local adverse impacts on air quality resulting from temporary construction activities (i.e., associated with ozone precursors from equipment and motor vehicle exhaust, as well as fugitive dust from ground-disturbing activities and vehicular travel over paved and unpaved roads), which have no net adverse or beneficial impacts on current or future air pollution conditions. The following past projects had long-term, minor, beneficial impacts on transportation and associated regional and local air pollution conditions, which would continue under Alternatives 2–6.

The **Yosemite Area Regional Transportation System** is a regional transportation system, established in 2000, whose intent is to provide an alternative to private vehicles by expanding the range of travel options for visitors to Yosemite Valley and to other primary park destinations, and for employees commuting to work in the park. It also provides a means for visitors to travel to Yosemite Valley when restricted access measures are implemented for private vehicles during times of severe congestion. In 2011, YARTS transported 300,979 passengers into Yosemite National Park (NPS, 2012i). This regional transportation system has a regional and local, long-term, negligible beneficial impact by reducing the number of day visitors arriving in private vehicles.

Housing Projects (i.e., Curry Village Employee Housing, Curry Village Huff House Temporary Housing, Yosemite Valley Lost Arrow Temporary Employee Housing, and Yosemite Valley Ahwahnee

Temporary Employee Housing) included the construction of housing and related facilities to accommodate concessioner employees. The housing units replaced concessioner housing lost in the January 1997 flood and the rockfall events at Curry Village in October 2008, and were developed in consultation with litigants as part of a settlement agreement concerning the 2005 *Merced Wild and Scenic River Comprehensive Management Plan*. These actions provide temporary lodging for concessioner employees, and are needed to help meet immediate short-term housing needs for the park concessioner until permanent employee housing is available. Construction was completed between 2007 and 2009. Construction of housing units resulted in regional and local, short-term, minor, adverse impacts. Over the long-term, since the housing replaced lost units to maintain capacity, there would no net adverse or beneficial impacts on current or future air pollution conditions.

Yosemite Valley Shuttle Bus Stop Improvements involved the preparation of preliminary design plans, environmental compliance documents, and construction drawings; the construction of six 10-foot by 80-foot concrete braking pads; the rehabilitation or replacement of 94,000 square feet of asphalt road approaches; and the construction of bus stop shelters. Construction was completed in 2010. These improvements support shuttle bus service in Yosemite Valley, a local, long-term, minor, beneficial impact.

Hybrid Electric-Diesel Shuttle Bus Procurement consisted of the purchase of diesel hybrid transit buses by the NPS. Hybrid bus operations result in regional and local long-term, negligible benefits related to fuel usage and air pollutant emissions compared with diesel-only buses (NPS 2005C).

Present Actions

Present actions proposed in the region are separated below into four general categories: (1) projects anticipated to have a net beneficial impact, (2) projects anticipated to have both beneficial and adverse impacts, (3) projects anticipated to have adverse impacts, and (4) projects anticipated to have a no-net adverse or beneficial impact.

Present projects that could have a corridorwide, long-term, minor, beneficial, cumulative impact on air quality include:

- *2004 Fire Management Plan/EIS* smoke management policies
- The following projects would individually, and in combination, encourage travel to the park by alternative (nonprivate vehicle) modes, and would manage traffic and parking to reduce congestion and associated air pollutant emissions:
 - Increased Yosemite Area Regional Transportation System services
 - Changeable electronic signs in Mariposa, Midpines, and El Portal, alerting drivers to traffic conditions in Yosemite Valley
 - Computer-aided Dispatch/Automatic Vehicle Locator
 - Software design and purchase to process raw data from vehicle counters to produce useful information for visitors on parking and traffic conditions

Restricted access measures would continue to control the volume of incoming vehicles when traffic and parking conditions in Yosemite Valley are overly congested. The YARTS would continue to provide an alternative to individual private vehicles operated within the park.

Present projects that could have a short-term, adverse impact due to construction activities, but a long-term, beneficial, cumulative impact on traffic-related air quality include

- South Park Intelligent Transportation System: electronic signs and automatic vehicle counters at entrance stations and parking lots to know when parking lots are full
- Parking alternative option at the El Portal Maintenance Facility
- Parkwide Communication Data Network (CDN) infrastructure upgrade

Although the above projects would have some site-specific, short-term, adverse impacts (e.g., construction-related air pollution), the general goal of each of these projects is to improve transportation circulation, which would also improve the associated air quality.

Present projects that could have a short-term, adverse impact on air quality include all projects not mentioned above that include some temporary construction activities. There would be no net, long-term, adverse or beneficial impacts on air quality from these projects.

Reasonably Foreseeable Future Actions

Similar to past actions, reasonably foreseeable future actions would result in both adverse and beneficial impacts on air quality. Reasonably foreseeable future projects that could have a long-term, beneficial, cumulative impact on air quality include:

- Transit Passenger Information System

Other beneficial impacts for reasonably foreseeable future actions are similar to those discussed for past and present actions (i.e., the restricted access measures and increased Yosemite Area Regional Transportation System services). Reducing traffic congestion and encouraging travel to the park by alternative (nonprivate vehicle) modes would have regional and local, long-term, negligible beneficial impacts on air quality.

Reasonably foreseeable future actions that could have a short-term, adverse impact on air quality include all projects that include some temporary construction activities. There would be no-net, long-term, adverse or beneficial impacts on air quality from these projects.

Human activities (e.g., suburban growth, industry, transportation, farming and ranching) in the San Joaquin Valley, San Francisco Bay Area, and Sierra foothills continue to create air quality impacts that occasionally violate federal standards, particularly for ozone and for particulates. Some of these pollutants disperse into the Yosemite area, affecting the park's air quality and visibility. These adverse impacts are expected to continue for the foreseeable future with anticipated population growth.

Overall Cumulative Impact

Because Alternative 1 would not involve substantial construction projects, it is not anticipated to contribute to short-term, adverse impacts on air quality resulting from construction activities. Continued management of traffic and encouragement of alternative forms of transportation would have regional and local, long-term, negligible to minor beneficial impacts on air quality.

Over the long term, with respect to ozone, conditions in the Merced River corridor would be determined almost entirely by regional emissions trends instead of by local emissions sources under Alternative 1. The regional, long-term impact would most likely be minor and beneficial, owing to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. With respect to particulate matter, conditions in the corridor would be determined by both regional sources and local sources, and the relative influence of these two types of sources would vary from day to day and season to season. Under Alternative 1, with visitation assumed to remain constant, impacts from particulate matter would be negligible. However, if visitation or VMT within the corridor were to increase, particulate matter would be expected to increase in rough proportion to VMT (owing to entrainment of dust), which would have a local, long-term, minor, adverse impact on air pollution conditions. The increased usage of campfires would result in a long-term, local, moderate, adverse impact on air pollution conditions.

Environmental Consequences of Actions Common to Alternatives 2–6

For Alternatives 2–6, as described above for Alternative 1 (No Action), emissions from wildland and prescribed fires would continue to be controlled through implementation of smoke management policies in the *Fire Management Plan/EIS*. These policies are intended to minimize impacts on air quality from prescribed burning within the park and region. Several assumptions were integrated into this assessment.

- Alternatives 2–6 would not affect the smoke management policies in the *Fire Management Plan/EIS*.
- Alternatives 2–6 would not create campfire regulations specific to the project area.
- The NPS would continue to ensure that all stationary emissions sources under its control or under the control of its concessioners comply with applicable air district rules and regulations.
- The NPS would continue to participate in the regional air quality planning processes for ozone and visibility impairment and would continue to review applications for new or modified major stationary sources upwind of the park, pursuant to the Prevention of Significant Deterioration regulations.
- The NPS would comply with the EPA general conformity rule for any future actions that would occur within Mariposa and Madera counties, which are part of MCAB and SJVAB, respectively.

All River Segments

Impacts of Actions to Protect and Enhance River Values

Corridorwide actions to protect and enhance river values that would occur across Alternatives 2–6 involve restoration and protection of the channel itself, meadow and riparian habitats, and upland vegetation. These include restoration of six miles of informal trails, removal of abandoned underground infrastructure, improvement of river access points, management of large wood, and the removal of riprap, among other activities. Such actions would involve temporary emissions of air pollutants, which would likely include ozone precursors from equipment and motor vehicle exhaust, as well as fugitive dust from ground-disturbing activities and vehicular travel over paved and unpaved roads. Pollutant emissions would vary based on the intensity of construction (i.e., type and quantity of equipment, number of workers and trucks, area disturbed), time of day (due to inversions during the night and mixing during days), and duration of construction activities. Construction activities for each segment are assumed to be similar to those generally described herein, just with differing intensities. Compliance with the dust abatement and exhaust mitigation measures MM-AIR-1 and -2, which would reduce particulate emissions and NO_x during construction (included in Appendix C), for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic and geologic values that would occur across all segments under Alternatives 2-6 include removing 3,400 feet of riprap from the river bank and revegetating with riparian species, and replacing an additional 2,300 feet of riprap with bioengineered riverbank stabilization devices. This work would require the use of heavy equipment, including loaders and dump trucks. The removal, transport, disposal, restoration, and monitoring work associated with these actions would require several weeks of park staff time to implement, but would not substantially disrupt other ongoing construction, demolition, and restoration activities in the Valley and beyond. As a result, these actions would result in short-term regional and local, negligible to moderate, adverse impacts on air quality, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with parking and housing facilities would involve temporary emissions of air pollutants, which would likely include ozone precursors from equipment and motor vehicle exhaust, as well as fugitive dust from ground-disturbing activities and vehicular travel over paved and unpaved roads. Pollutant emissions would vary based on the intensity of construction (i.e., type and quantity of equipment, number of workers and trucks, area disturbed), time of day (due to inversions during the night and mixing during days), and duration of construction activities. Compliance with the dust abatement and exhaust mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Long-term Impacts of Actions to Manage User Capacities, Land Use, and Facilities would primarily be associated with on-road vehicles (visitors and employees) and local area pollution sources. Local

mobile sources would include automobiles, trucks, and buses and would remain subject to state and federal emissions control standards and programs, which are expected to lead to a continuing decrease in emissions per VMT for the foreseeable future, which would likely be regionally minor and beneficial. VOC and NO_x are precursor compounds associated with ozone formation. However, in contrast to the ozone precursors, most of the particulate matter associated with vehicle use is related to entrainment of road dust rather than to exhaust, which would likely be local, negligible, and adverse.

In general, local area pollution sources would include regular maintenance activities, consumer products, natural gas combustion for heating/cooling, and campfires. Daily, routine, and intermittent operational maintenance intended to stabilize and protect park facilities, address visitor health and safety issues, and protect natural and cultural resources include campground maintenance, road and trail maintenance, building and grounds maintenance, and utility system repair and maintenance throughout Segments 1–8. Visitors and employees may use consumer products, such as hair spray, that emit VOC. Natural gas combustion may be used for water heaters or other facility systems, which emit ozone precursors and particulates. Campfires emit particulate matter and would continue to be subject to park regulations. Impacts of these local sources would likely be regional and local, negligible, and adverse.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Actions to protect and enhance river values that would occur in Yosemite Valley under Alternatives 2-6 involve removal of abandoned infrastructure and other development affecting the Merced River's hydrologic function, extensive meadow restoration, and management of high visitor-use areas to address associated impacts on riparian habitats and sensitive cultural resources. Removal of abandoned or obsolete infrastructures would reduce ongoing impacts on meadow hydrology and lessen channel scour. Upland restoration activities, including removal of informal trails, roadbeds, and parking areas, would improve meadow health. The demolition, removal, transport, disposal, restoration would require the use of heavy equipment over a period of several weeks. As a result, these actions would result in short-term regional and local, negligible to minor, adverse impacts on air quality, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 2 under Alternatives 2-6 include: restoring 4.5 acres of riparian habitat in the area of Yosemite Lodge and 20 acres in the area of the Former Upper Pines Loop Campground; restoring impacted areas of Ahwahnee Meadow, including through removal of tennis courts; improving access and removing infrastructure from riparian areas at Cathedral Beach, Housekeeping Camp, and Bridalveil; constructing a boardwalk extension to reduce Sentinel Meadow trampling; fencing and vegetation management at Stoneman Meadow, restoring floodplain habitat at Devil's Elbow, removing one and paving and formalizing five other roadside pullouts along El Portal Road, and filling ditches not serving current operational needs. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, removal, transport, disposal, restoration, and monitoring work associated with these actions would

require more than one year of park staff time to implement. As a result, these actions would result in short-term regional and local, negligible to moderate, adverse impacts on air quality, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic and geologic values that would occur within Segment 2 under Alternatives 2-6 include: placing engineered logjams in the channel between Clarks and Sentinel Bridges; and removing the abandoned gauging station at Pohono Bridge, removing the footings and former river gauge base at Happy Isles, and restoring these areas to natural conditions. This work would involve the use of heavy equipment, including excavators, a skid steer, and dump trucks, and require approximately more than 17 weeks to implement. As a result, these actions would result in short-term regional and local, minor to moderate, adverse impacts on air quality, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Cultural Resource Actions. Specific projects to protect and enhance the river's cultural values that would occur within Segment 2 under Alternatives 2-6 include rehabilitation of informal trails and parking in the vicinity rock art and rock shelters in the area of Bridalveil Falls, fencing and/or restricting access to the archeologically significant large bedrock mortar (pounding rock) next to Yosemite Falls Trail, restoration of impacted portions of Ahwahnee Meadow, and removal of abandoned infrastructure from the Bridalveil sewer plant to enhance oak recruitment. With the exception of abandoned infrastructure removal, the majority of this work would be completed through the use of hand tools. As such, the impact on air quality would be regional and local, short-term, negligible to minor, and adverse.

Scenic Resource Actions. Specific projects to protect and enhance the river's scenic values that would occur within Segment 2 under Alternatives 2-6 include: selective thinning of conifers and other vegetation in the vicinities of The Ahwahnee and Meadow, Bridalveil Falls and West Valley, Cooks and Sentinel Meadows, Curry Village, El Capitan, Housekeeping Camp, Yosemite Lodge, and other areas of the Valley; restoring grassland and oak habitat in the areas of Bridalveil Straight; repairing riverbank erosion at Clark's Bridge; and addressing informal trails and trampling at the east end of El Capitan Meadow. Much of this work would be accomplished through the use of hand tools, but could also involve heavy equipment for various handling, transport, and restoration activities. This work would occur over the course of several years. As a result, these actions would result in short-term regional and local, negligible to moderate, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Actions to manage visitor use and facilities within Segment 2 that would occur under Alternatives 2-6 involve substantial changes to campsites, visitor and administrative facilities, employee housing, and transportation. The construction, demolition, transport, and disposal activities associated with this work would contribute to a short-term, regional and local, moderate, adverse impact on air quality, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C). These actions would have a long-term, local, minor, beneficial impact on air quality within Segment 2, as vehicle traffic and visitation would be reduced as a result.

Curry Village and Campgrounds. The park would remove the Happy Isles Snack Stand at Curry Village. At The Ahwahnee, the park would remove the swimming pool and tennis courts; redesign, formalize, and improve drainage within the existing parking lot; and construct a new 50 parking space lot east of the current parking area. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private vehicles, resulting in a local, long-term, negligible, adverse air quality impact.

Camp 6 and Yosemite Village. The park would remove from Yosemite Village the Concessioner General Office, Concessioner Garage, and the Arts and Activities Center (Bank Building), and repurpose the Village Sports Shop for public use. It would also construct a new maintenance building near the Government Utility Building. The park would remove roadside parking along Sentinel Drive and expand Camp 6 parking into the footprint of the Concessioner Garage. To improve visitor access between the Camp 6 area and Village, the park would construct a pathway connecting the new Camp 6 parking lot with the repurposed Village Sports Shop. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse.

West Yosemite Valley. The park would remove the NPS Volunteer Office, post office, swimming pool, and snack stand. It would also remove old and temporary employee housing (Thousands Cabins and Highland Court) and replace it with new housing. In addition, the park would relocate the Yosemite Lodge maintenance and housekeeping facilities and repurpose the food court. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse.

Segment 2 Impact Summary: Actions to protect and enhance river values would result in regional and local, short-term, adverse impacts on air quality, ranging from negligible to moderate. No long-term impacts would be expected. Actions to manage user capacities, land use, and facilities within Segment 2 would have regional and local, short-term, negligible adverse impacts. Over the long-term, the impacts of these actions would be local, long-term, minor, and beneficial.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

To protect and enhance river values within the Merced River gorge and El Portal, the park would remove informal trails, nonessential roads, fill materials, and abandoned infrastructure throughout Segments 3 and 4. The demolition, removal, transport, and disposal of waste materials; and restoration of these areas would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 and 4.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 4 under Alternatives 2-6 include removing development, asphalt, and imported fill from the Abbieville and Trailer Village areas and recontouring and revegetating the 150-foot riparian buffer. The project would require the use of a skid steer and dump truck, and take

several weeks to complete. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic and geologic resource values include restoring the Greenmeyer Sand Pit to natural conditions. The work would require the use of heavy equipment over a period of several weeks. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Scenic Resource Actions. Specific projects to protect and enhance the river's scenic values that would occur within Segment 3 under Alternatives 2-6 include: selective thinning of conifers in the area of the Cascade Falls viewpoint. Much of this work would be accomplished through the use of hand tools, but could also involve heavy equipment for various handling, transport, and restoration activities. This work would occur over the course of a few days and would not be expected to disrupt other restoration activities. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under each alternative, the park would construct infill housing in El Portal Village Center. The park would also construct a restroom for visitor use in Old El Portal. The work would require the use of heavy equipment throughout the construction process. As such, the projects would have a short-term, regional and local, negligible to minor, adverse impact on air quality within Segment 4. Over the long-term, occupation of the new residential units would contribute to a local, negligible, adverse impact on air quality within Segment 4.

Segments 3 & 4 Impact Summary: Actions to protect and enhance river values would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 and 4. These actions would not be expected to have a long-term air quality impact. Actions to manage user capacities, land use, and facilities within Segments 3 & 4 would have local, long-term, minor, adverse air quality impacts.

Segments 6 and 7: Wawona and Wawona Impoundment

Impacts of Actions to Protect and Enhance River Values

The park would improve Wawona Campground wastewater and refuse management and facilities, remove abandoned infrastructure, and undertake numerous site-specific management measures to counteract or minimize ongoing impacts on cultural resources. These actions would have a short-term, regional and local, negligible, adverse impact on air quality within Segment 7.

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic values that would occur within Segment 7 under Alternatives 2-6 include developing a waste water collection system, including the construction of a pump station above the Wawona Campground. This work would require the use of heavy equipment, including an excavator, skid steer, loader, and

dump truck. This effort would require approximately one month of crew time to complete. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Cultural Resource Actions. Specific projects to protect and enhance the river's cultural values that would occur within Segment 7 under Alternatives 2-6 include removing and relocating campsites that cause potential impacts to sensitive archeological resources. This work could require the use of heavy equipment, including an excavator, skid steer, loader, and dump truck. This effort would require approximately one week of staff time to complete. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality. Over the long-term, reduced campsites would result in reduced campfires, which would be a local, negligible, beneficial impact.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

To improve operational efficiency, the park would construct new facilities to house maintenance operations and a new wildland fire station within Segment 7. The park would also remove staged materials, abandoned utilities, vehicles, and a parking lot from the riparian buffer at the Wawona Maintenance Yard and restore the area's native ecosystem, and remove roadside parking between the Wawona Store and Chilnualna Falls Road. The construction and restoration activities associated with these projects would involve the use of heavy equipment and occur over a period of several months. The resulting impact on Segment 7 air quality would be regional and local, short-term, minor to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2.

Wawona. The park would redesign the bus stop at the Wawona Store to accommodate increased visitor use. This work would be completed largely with hand tools and some power tools. As a result, the air quality impact would be local, short-term, negligible, and adverse.

Segment 7 Impact Summary: Actions to protect and enhance river values within Segments 6 & 7 would have a local, negligible, beneficial air quality impact. Actions to manage user capacities, land use, and facilities would not be expected to have a long-term air quality impact.

Summary of Impacts Common to Alternatives 2–6

Air quality in the Merced River corridor would continue to be influenced by local pollution sources within the park and by regional sources upwind of the park. The relative importance of local and regional sources would continue to vary by season and by pollutant. Furthermore, nonwilderness portions of the corridor would be affected by local emissions sources to a much greater extent than wilderness portions. Local stationary sources would continue to be regulated under the applicable air district rules and regulations, some local area sources would continue to be subject to park regulations, and mobile sources would continue to be subject to state and federal tailpipe emissions standards.

Many of the action items would involve varying degrees of short-term construction activities that would result in short-term, negligible to moderate (depending on action item construction phasing/activity overlap) impacts with regard to ozone precursors and particulate emissions from equipment and vehicular exhaust and fugitive dust. Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce these potential short-term, adverse impacts

associated with construction emissions to the extent feasible. Even after mitigation, regional and local short-term, negligible to moderate, adverse impacts from construction would be expected.

Environmental Consequences of Alternative 2: Self-reliant Visitor Experiences and Extensive Floodplain Restoration

All River Segments

Impacts of Actions to Protect and Enhance River Values

Impacts associated with implementation of Alternative 2 would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

With regard to regional, long-term impacts associated with the reduced visitor capacity under Alternative 2, on-road mobile emissions were quantified using the California Air Resources Board's emissions factors model (EMFAC2007) and compared to the Federal General Conformity thresholds. The results are shown in **table 9-134**, below. Although bus operations are projected to increase under Alternative 2, the reduction in total daily visitor and administrative use and capacity would result in a regional and local long-term, minor, beneficial impact owing to reduced on-road vehicles in the park, as depicted in the table. Regional and local impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, minor, and beneficial. Other local, long-term operational impacts of Alternative 2 are described below for each segment.

Segments 1, 5, 6, and 8: Merced River Above Nevada Fall, South Fork Merced River Above and Below Wawona, and Wawona Impoundment

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

TABLE 9-134: ON-ROAD VEHICLE CRITERIA AIR POLLUTANT EMISSIONS (tons/year)^a

Scenario	NO _x	ROG
Alternative 2 Emissions	18	20
Alternative 1 (No Action) Emissions	22	26
Incremental Change ^b	(4)	(6)
Federal General Conformity Threshold ^c	100	50
Impact Intensity, Type? ^d	Minor, Beneficial	Minor, Beneficial
<p>^a Emissions were calculated using EMFAC2007 factors and assume 2.4 visitors per car with approximately 22 VMT per vehicle (calibrated based on annual VMT projected for Alternative 1 assuming 240 days/year peak and shoulder seasons) and bus trip VMT from <i>Supporting Information: A Life-Cycle Greenhouse Gas Inventory for Yosemite National Park</i> (Villalba et al 2012b). User capacities included in chapter 7 were totaled for each alternative to determine the regional air pollutant emissions. Specific assumptions and emission factors incorporated into the calculations are included in Appendix G.</p> <p>^b Values in (parentheses) are net reductions with respect to Alternative 1 (No Action) emissions.</p> <p>^c Federal General Conformity thresholds for the Mariposa County portion of the MCAB.</p> <p>^d Negligible impacts would be effects considered not detectable and would have no discernible effect on air quality (assumed to be 1% or less of threshold). Minor impacts would be those that are present but not expected to have an overall effect on those conditions (assumed to occur up to 50% of the applicable threshold). Moderate impacts are clearly detectable and could have an appreciable effect (assumed to occur at emissions levels greater than 50% but does not exceed the applicable threshold). Major impacts would have a substantial, highly noticeable influence on local or regional air quality (assumed to occur when emissions exceed applicable threshold).</p>		

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to the Merced Lake Backpackers Camp, Merced Lake High Sierra Camp, and Little Yosemite Valley would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Wilderness areas would be minimally affected by local emissions sources, with the exception of wildland and prescribed fires, or the occasional campfire from overnight visitors. Impacts from prescribed burning would continue to be controlled through implementation of smoke management policies in the *Fire Management Plan/EIS*. In addition, impacts from in-park emissions, such as vehicles, would be more apparent in areas close to roads and concentrations of visitor and administrative services. With fewer on-road vehicles in the vicinity under Alternative 2, the overall effect on local air pollution conditions would be long term, minor, and beneficial.

Merced Lake High Sierra Camp. The park would close the Merced Lake High Sierra Camp and remove all associated infrastructure, convert the area to designated Wilderness, and expand dispersed camping at Merced Lake Backpackers Camping Area into the former High Sierra Camp footprint. These actions would primarily involve the use of hand tools and a limited amount of power equipment. However, removal of these facilities would likely require several helicopter trips. As such, the impact on local air quality would be short-term, negligible, and adverse. The reduction in lodging

units would reduce total overnight visitation and energy required to run the facility, resulting in a local, long-term, negligible, beneficial air quality impact.

Segments 1, 5, 6, & 8 Impact Summary: Actions to manage user capacities, land use, and facilities within Segments 1, 5, 6, and 8 would have long-term, minor, beneficial impacts on air quality within these segments.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river’s biological values that would occur within Segment 2 under Alternative 2 include: rerouting trails at Ahwahnee Meadows; removing and restoring a portion of Northside Drive (900 feet) and rerouting the bike path; removing 1,335 feet of Southside Drive, re-alignment of the road, reconfiguring Curry Orchard parking lot, and extending the Stoneman Meadow boardwalk; removing development, asphalt, and fill material, and restoring 35.6 acres of floodplain at the former Upper and Lower River campgrounds; removing campsites and infrastructure from the 100-year floodplain and restoring an additional 25.1 acres of floodplain and riparian habitat; and removing informal trails and informal parking at El Capitan Meadow. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and restoration work would require approximately 65 weeks of crew and equipment time over a period of three years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2.

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river’s hydrologic and geologic values that would occur within Segment 2 under Alternative 2 include: relocating unimproved Camp 6 parking and rerouting a portion of Northside Drive; removing the Stoneman, Ahwahnee and Sugar Pine Bridges; and restoring these areas to natural conditions. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and revegetation activities associated with this work would require approximately 30 weeks of crew and equipment time. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping, lodging, parking, circulation, employee housing, and service facilities would be similar to those described above for the

analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Overnight visitation and total daily use levels would be 26% and 33% less, respectively, than under Alternative 1. With fewer on-road vehicles under Alternative 3, the effect on local air pollution conditions would be long term, minor, and beneficial. However, the majority of campsites and their associated campfires and other sources of evening smoke are located within Segment 2. These sources of smoke would continue to affect local air quality at levels that may be unhealthy for sensitive groups, including individuals with pulmonary or cardiovascular diseases, the elderly, and children. Wood smoke can contribute enough local emissions currently to create unhealthy pollutant levels for sensitive groups, especially many wood burning sources operating under stable atmospheric conditions. Reduced campsites along this segment (estimated at 450 versus 466 for Alternative 1) would result in a proportional reduction in campfire emissions, which would be a local, long-term, minor beneficial impact. With fewer on-road vehicles and potential for wood smoke under Alternative 2, the overall effect on local air pollution conditions would be long term, minor, and beneficial.

Curry Village and Campground. The park would construct 78 new hard-sided units in Boys Town, bringing the total number of new and retained units at Curry Village to 433. The park would remove campsites from lower Pines (32), North Pines (86), and Upper Pines (24). In addition, the park would discontinue commercial day rides from the Curry Village Stables. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The reduction in overnight accommodations would reduce total overnight visitation and number of campfires, resulting in a local, long-term, minor, beneficial air quality impact.

Camp 6 and Yosemite Village. The park would reroute Northside Drive to the south of the Yosemite Village day-use parking area, reconfigure the lot to accommodate a total of 550 parking spaces north of the road, and install walkways leading to Yosemite Village. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse.

Camp 4 and Yosemite Lodge. The park would move on-grade pedestrian crossing Camp 4 and Yosemite Lodge. The park would convert the Highland Court area to a walk-in campground; reconfigure pedestrian crossing of Northside Drive and Yosemite Lodge Drive, and redevelop an area west of Yosemite Lodge to provide an additional parking for 150 automobiles and 15 tour busses. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private and commercial vehicles, resulting in a local, long-term, minor, adverse air quality impact.

Segment 2 Impact Summary: Actions to protect and enhance river values within Segment 2 would have local, short-term, adverse impacts ranging from negligible to moderate. These actions would not

be expected to have a long-term impact on air quality. Actions to manage user capacities, land use, and facilities within Segment 2 would have local, long-term, minor, beneficial impacts on air quality.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping and employee housing facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

There are no NPS overnight accommodations along Segments 3 and 4, and thus few campfires or other visitor-related evening sources of smoke. Also, as described in the Alternatives chapter, total daily use levels would be less than under Alternative 1. With fewer on-road vehicles under Alternative 1, the overall effect on local air pollution conditions would be long-term, minor, and beneficial.

Segments 3 & 4 Impact Summary: Actions to protect and enhance river values would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 and 4. These actions would not be expected to have a long-term air quality impact. Actions to manage user capacities, land use, and facilities within Segments 3 & 4 would have local, long-term, minor, beneficial air quality impacts.

Segment 7: Wawona

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 7 under Alternative 2 include the relocation of stock use campsites

from sensitive resource areas to Wawona Stables. This work could require the use of heavy equipment and would require approximately one week to implement. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to service facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Wawona Campground: Under Alternative 2, the park would reduce the size of the Wawona Campground. Thirty-two campsites, or 33% of all campsites within Wawona, would be removed from the floodplain. There would be a proportional reduction in campfire emissions. This would result in a long-term, local, minor, beneficial impact on air quality.

Segment 7 Impact Summary: Actions to protect and enhance river values within Segments 6 & 7 would have regional and local, short-term, negligible to minor, adverse air quality impacts. Over the long-term, these actions would contribute to a local, negligible, beneficial impact. Actions to manage user capacities, land use, and facilities within Segment 7 would have local, long-term, minor, beneficial impacts on air quality.

Summary of Impacts from Alternative 2: Self-reliant Visitor Experiences and Extensive Floodplain Restoration

Impacts associated with implementation of Alternative 2 would be similar to those described above for the analysis common to Alternatives 2–6. In summary, compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential short-term adverse impacts associated with construction emissions to the extent feasible. Even after mitigation, short-term, negligible to moderate, adverse impacts from construction would be anticipated. With regard to long-term operations, reduced housing, campsites, or lodging would result in a proportional reduction in area source emissions (e.g., from consumer products, maintenance/landscaping, natural gas combustion for heating/cooling) and campfire emissions. In addition, reducing the overall visitor capacity would result in a regional and local, long-term, minor, beneficial impact on the air quality environment by reducing pollutant emissions associated with on-road vehicles and campfires in Yosemite Valley. Regional and local, impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, minor, and beneficial.

Cumulative Impacts from Alternative 2: Self-reliant Visitor Experiences and Extensive Floodplain Restoration

The past, present, and reasonably foreseeable future actions in the Yosemite region considered for the following air quality analysis are the same as those identified for Alternative 1.

Overall Cumulative Impact from Alternative 2: Self-reliant Visitor Experiences and Extensive Floodplain Restoration

Because management action under Alternative 2 and actions common to Alternatives 2-6 involve substantial construction activity, it would be expected to contribute to regional and local, short-term, adverse impacts on air quality resulting from construction activities.

Over the long term, with respect to ozone, conditions in the Merced River corridor would continue to be determined almost entirely by regional emissions trends instead of by local emissions sources. The regional, long-term impact would most likely be beneficial, owing to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. In addition, with reduced visitor capacity and campsites, Alternative 2 would result in a long-term, cumulatively beneficial impact on air quality from reduced VMT (ozone and particulate emissions) and campfire usage (particulate emissions). The continued management of traffic and encouragement of alternative forms of transportation would have regional and local, long-term, negligible to minor, beneficial impacts on air quality.

Environmental Consequences of Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

All River Segments

Impacts of Actions to Protect and Enhance River Values

Impacts associated with implementation of Alternative 3 would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

With regard to regional, long-term impacts associated with the reduced visitor capacity under Alternative 3, on-road mobile emissions were quantified using EMFAC2007 emission factors and compared to the Federal General Conformity thresholds. The results are shown in **table 9-135**, below. Although bus operations are projected to increase under Alternative 3, the reduction in total daily visitor and administrative use and capacity would result in a regional and local, long-term, minor, beneficial impact owing to reduced on-road vehicles in the park, as depicted in the table. Regional and local impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, minor, and beneficial.

TABLE 9-135: ON-ROAD VEHICLE CRITERIA AIR POLLUTANT EMISSIONS (tons/year)^a

Scenario	NO _x	ROG
Alternative 3 Emissions	17	19
Alternative 1 (No Action) Emissions	22	26
Incremental Change ^b	(5)	(7)
Federal General Conformity Threshold ^c	100	50
Impact Intensity, Type? ^d	Minor, Beneficial	Minor, Beneficial
<p>^a Emissions were calculated using EMFAC2007 factors and assume 2.4 visitors per car with approximately 22 VMT per vehicle (calibrated based on annual VMT projected for Alternative 1 assuming 240 days/year peak and shoulder seasons) and bus trip VMT from <i>Supporting Information: A Life-Cycle Greenhouse Gas Inventory for Yosemite National Park</i> (Villalba et al 2012b). User capacities included in chapter 7 were totaled for each alternative to determine the regional air pollutant emissions. Specific assumptions and emission factors incorporated into the calculations are included in Appendix G.</p> <p>^b Values in (parentheses) are net reductions with respect to Alternative 1 (No Action) emissions.</p> <p>^c Federal General Conformity thresholds for the Mariposa County portion of the MCAB.</p> <p>^d Negligible impacts would be effects considered not detectable and would have no discernible effect on air quality (assumed to be 1% or less of threshold). Minor impacts would be those that are present but not expected to have an overall effect on those conditions (assumed to occur up to 50% of applicable threshold). Moderate impacts are clearly detectable and could have an appreciable effect (assumed to occur at emissions levels greater than 50% but does not exceed the applicable threshold). Major impacts would have a substantial, highly noticeable influence on local or regional air quality (assumed to occur when emissions exceed applicable threshold).</p>		

Other local, long-term, operational impacts of Alternative 3 are described below for each segment.

Segments 1, 5, 6, and 8: Merced River Above Nevada Fall, South Fork Merced River Above and Below Wawona, and Wawona Impoundment

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts from in-park emissions, such as vehicles, would be more apparent in areas close to roads and concentrations of visitor and administrative services. With fewer on-road vehicles in the vicinity under

Alternative 3, the overall effect on local air pollution conditions would be long term, minor, and beneficial.

Merced Lake High Sierra Camp. The park would close the Merced Lake High Sierra Camp and removal all infrastructure, convert the area to designated Wilderness, and use the former camp area for a temporary stock camp. These actions would primarily involve the use of hand tools and a limited amount of power equipment. However, removal of these facilities would likely require several helicopter trips. As such, the impact on local air quality would be short-term, negligible, and adverse. The reduction in lodging units would reduce total overnight visitation and energy required to run the facility, resulting in a local, long-term, negligible, beneficial air quality impact.

Segments 1, 5, 6, & 8 Impact Summary: Actions to manage user capacities, land use, and facilities within Segments 1, 5, 6, and 8 would have long-term, minor, beneficial impacts on air quality within these segments.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 2 under Alternative 3 include: rerouting trails at Ahwahnee Meadows; removing and restoring a portion of Northside Drive (900 feet) and rerouting the bike path; removing 1,335 feet of Southside Drive, re-alignment of the road, reconfiguring Curry Orchard parking lot, and extending the Stoneman Meadow boardwalk; removing development, asphalt, and fill material, and restoring 35.6 acres of floodplain at the former Upper and Lower River campgrounds; removing campsites and infrastructure from within 150 feet of the river and restoring an additional 12 acres of floodplain and riparian habitat; and removing informal trails and installing signage and fencing to redirect visitor traffic at El Capitan Meadow. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and restoration work would require approximately 50 weeks of crew and equipment time over a period of two years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2.

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic and geologic values that would occur within Segment 2 under Alternative 3 include: relocating unimproved Camp 6 parking; removing the Stoneman, Ahwahnee and Sugar Pine Bridges; and restoring these areas to natural conditions. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and revegetation activities associated with this work would require approximately 30 weeks of crew and

equipment time over a period of two years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping, lodging, parking, circulation, employee housing, and service facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Overnight visitation and total daily use levels would be 23% and 37% less, respectively, than under Alternative 1. With fewer on-road vehicles under Alternative 3, the effect on local air pollution conditions would be long term, minor, and beneficial. However, the majority of campsites, and their associated campfires and other sources of evening smoke, are located within Segment 2. Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased campsites. Campfires or other evening sources of smoke would continue to affect local air quality at levels that may be unhealthy for sensitive groups, including individuals with pulmonary or cardiovascular diseases, the elderly, and children. Since wood smoke can contribute enough local emissions currently to create unhealthy pollutant levels for sensitive groups, especially many wood burning sources operating under stable atmospheric conditions, the expected increase in the usage of campfires under Alternative 3 would have a potentially local, long-term, moderate, adverse impact on sensitive receptors. Increased usage of campfires would also result in a potentially local, long-term, moderate, adverse impact if the usage results in increased PM10 measurements above the ambient air quality standard at the monitoring site at the Yosemite Valley Visitor Center.

Curry Village and Campground. The park would retain 355 guest units at Curry Village. The park would remove campsites from lower Pines (15), North Pines (34), and Upper Pines (2). In addition, the park would discontinue commercial day rides from the Curry Village Stables. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The reduction in overnight accommodations would reduce total overnight visitation and number of campfires, resulting in a local, long-term, minor, beneficial air quality impact.

Camp 6 and Yosemite Village. The park would reroute Northside Drive to the south of the Yosemite Village day-use parking area, reconfigure the lot to accommodate a total of 550 parking spaces north of the road, and install walkways leading to Yosemite Village. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse.

Camp 4 and Yosemite Lodge. The park would move on-grade pedestrian crossing to west of the Northside Drive and Yosemite Lodge Drive, relocate the existing bus drop-off area to the Highland

Court area to accommodate loading/unloading for 3 busses, and redevelop an area west of Yosemite Lodge to provide an additional parking for 150 automobiles and 15 tour busses. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private and commercial vehicles, resulting in a local, long-term, minor, adverse air quality impact.

Segment 2 Impact Summary: Actions to protect and enhance river values within Segment 2 would have local, short-term, adverse impacts ranging from negligible to moderate. These actions would not be expected to have a long-term impact on air quality. Actions to manage user capacities, land use, and facilities within Segment 2 would have local, long-term, minor, beneficial air quality impacts associated with vehicle emissions; but would also result in a local, long-term, moderate, adverse air quality impact from increased numbers of campfires.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to employee housing facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

There are no NPS overnight accommodations along Segments 3 and 4, and thus few campfires or other visitor-related evening sources of smoke. Also, as described in the Alternatives chapter, total daily use levels would be less than under the Alternative 1. With fewer on-road vehicles under Alternative 3, the overall effect on local air pollution conditions would be long term, minor, and beneficial.

Segments 3 & 4 Impact Summary: Actions to protect and enhance river values would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 & 4. These actions would not be expected to have a long-term air quality impact. Actions to manage user capacities, land use, and facilities within Segments 3 & 4 would have local, long-term, minor, beneficial air quality impacts.

Segment 7: Wawona

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 7 under Alternative 3 include the relocation of stock use campsites from sensitive resource areas to Wawona Stables. This work could require the use of heavy equipment and would require approximately one week to complete. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to service facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Wawona Campground. Under Alternative 3, the park would reduce the size of the Wawona Campground. Twenty seven campsites, or 28% of all campsites within Wawona, would be removed from the floodplain. There would be a proportional reduction in campfire emissions. This would result in a long-term, local, minor, beneficial impact on air quality.

Segment 7 Impact Summary: Actions to protect and enhance river values within Segments 6 & 7 would have regional and local, short-term, negligible to minor, adverse air quality impacts. Over the long-term, these actions would contribute to a local, negligible, beneficial impact. Actions to manage user capacities, land use, and facilities within Segment 7 would have local, long-term, minor, beneficial impacts on air quality.

Summary of Impacts from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Impacts associated with implementation of Alternative 3 would be similar to those described above for the analysis common to Alternatives 2-6. In summary, compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local, short-term, adverse impacts associated with construction emissions to the extent feasible. Even after mitigation, regional and local, short-term, negligible to moderate, adverse impacts from construction would be anticipated. With regard to long-term operations, increased campsites and associated campfires in Yosemite Valley could result in a local, moderate, adverse impact. Reduced housing or

lodging would result in a proportional reduction in area source emissions (e.g., from consumer products, maintenance/landscaping, natural gas combustion for heating/cooling). In addition, reducing the overall visitor capacity would result in a regional and local, long-term, minor, beneficial impact on air quality within the Merced River corridor by reducing pollutant emissions associated with on-road vehicles and campfires in Yosemite Valley. Regional and local, impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, minor, and beneficial.

Cumulative Impacts from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

The past, present, and reasonably foreseeable future actions in the Yosemite region considered for the following air quality analysis are the same as those identified for Alternative 1.

Overall Cumulative Impact from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Because management action under Alternative 3 and actions common to Alternatives 2-6 involve substantial construction activity, it would be expected to contribute to short-term, adverse impacts on air quality resulting from construction activities.

Over the long term, with respect to ozone, conditions in the Merced River corridor would continue to be determined almost entirely by regional emissions trends instead of by local emissions sources. The regional, long-term impact would most likely be beneficial, owing to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. In addition, with reduced visitor capacity, Alternative 3 would result in a long-term, cumulatively beneficial impact on air quality from reduced VMT (ozone and particulate emissions). Regarding potential particulate emissions, since campsites would increase in Yosemite Valley, campfire usage (particulate emissions) would increase proportionately which would result in a local, long-term, moderate adverse impact. The continued management of traffic and encouragement of alternative forms of transportation would have regional and local, long-term, negligible to minor beneficial impacts on air quality.

Environmental Consequences of Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

All River Segments

Impacts of Actions to Protect and Enhance River Values

Impacts associated with implementation of Alternative 4 would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

With regard to regional, long-term impacts associated with the reduced visitor capacity under Alternative 4, on-road mobile emissions were quantified using EMFAC2007 emission factors and compared to the Federal General Conformity thresholds. The results are shown in table 9-136, below. Although bus operations are projected to increase under Alternative 4, the reduction in total daily visitor and administrative use and capacity would result in a regional and local, long-term, minor, beneficial impact owing to reduced on-road vehicles in the park, as depicted in the table. Regional and local, impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, minor, and beneficial.

TABLE 9-136: ON-ROAD VEHICLE CRITERIA AIR POLLUTANT EMISSIONS (tons/year)^a

Scenario	NO _x	ROG
Alternative 4 Emissions	20	22
Alternative 1 (No Action) Emissions	22	26
Incremental Change ^b	(2)	(4)
Federal General Conformity Threshold ^c	100	50
Impact Intensity, Type? ^d	Minor, Beneficial	Minor, Beneficial
<p>^a Emissions were calculated using EMFAC2007 factors and assume 2.4 visitors per car with approximately 22 VMT per vehicle (calibrated based on annual VMT projected for Alternative 1 assuming 240 days/year peak and shoulder seasons) and bus trip VMT from <i>Supporting Information: A Life-Cycle Greenhouse Gas Inventory for Yosemite National Park</i> (Villalba et al 2012b). User capacities included in chapter 7 were totaled for each alternative to determine the regional air pollutant emissions. Specific assumptions and emission factors incorporated into the calculations are included in Appendix G.</p> <p>^b Values in (parentheses) are net reductions with respect to Alternative 1 (No Action) emissions.</p> <p>^c Federal General Conformity thresholds for the Mariposa County portion of the MCAB.</p> <p>^d Negligible impacts would be effects considered not detectable and would have no discernible effect on air quality (assumed to be 1% or less of threshold). Minor impacts would be those that are present but not expected to have an overall effect on those conditions (assumed to occur up to 50% of applicable threshold). Moderate impacts are clearly detectable and could have an appreciable effect (assumed to occur at emissions levels greater than 50% but does not exceed the applicable threshold). Major impacts would have a substantial, highly noticeable influence on local or regional air quality (assumed to occur when emissions exceed applicable threshold).</p>		

Other local, long-term, operational impacts of Alternative 4 are described below for each segment.

Segments 1, 5, 6, and 8: Merced River Above Nevada Fall, South Fork Merced River Above and Below Wawona, and Wawona Impoundment

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts from in-park emissions, such as vehicles, would be more apparent in areas close to roads and concentrations of visitor and administrative services. With fewer on-road vehicles in the vicinity under Alternative 4, the overall effect on air pollution conditions would be local, long term, minor, and beneficial.

Merced Lake High Sierra Camp. The park would close the Merced Lake High Sierra Camp and removal all infrastructure, convert the area to designated Wilderness, and restoration of the former camp area to natural conditions. These actions would primarily involve the use of hand tools and a limited amount of power equipment. However, removal of these facilities would likely require several helicopter trips. As such, the impact on local air quality would be short-term, negligible, and adverse. The reduction in lodging units would reduce total overnight visitation and energy required to operate the facility, resulting in a local, long-term, negligible, beneficial air quality impact.

Segments 1, 5, 6, & 8 Impact Summary: Actions to manage user capacities, land use, and facilities within Segments 1, 5, 6, and 8 would have long-term, minor, beneficial impacts on air quality within these segments.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river’s biological values that would occur within Segment 2 under Alternative 4 include: removing fill and constructing a boardwalk over meadow and wet areas at Ahwahnee Meadows; installing culverts beneath Northside Drive; removing 1,335 feet of Southside Drive, re-alignment of the road, reconfiguring Curry Orchard parking lot, and extending the Stoneman Meadow boardwalk; removing asphalt and fill material, restoring topography of 19.7 acres of floodplain, and installation of box culverts or other similar design components at the former Upper and Lower River campgrounds; removing campsites and infrastructure from within 150 feet of the river and restoring an additional 12 acres of floodplain and riparian habitat; and erecting fencing, signage, and boardwalks to redirect visitor traffic, and removing informal trails at El Capitan Meadow. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and restoration work would require at least 20 weeks of crew and equipment time over a period of at least two years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river’s hydrologic and geologic values that would occur within Segment 2 under Alternative 4 include: relocating unimproved Camp 6 parking; placing large wood and engineered logjams along the base of Stoneman Bridge; removing the Ahwahnee and Sugar Pine Bridges; and restoring these areas to natural conditions. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and revegetation activities associated with this work would require approximately 30 weeks of crew and equipment time over a period of two years, during which other restoration and maintenance activities would be disrupted. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping, lodging, parking, circulation, employee housing, and service facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Overnight visitation and total daily use levels would be 7% greater and 19% less, respectively, than under Alternative 1. With fewer on-road vehicles under Alternative 4, the overall effect on local air pollution conditions along roadways would be long term, minor, and beneficial. However, the majority of campsites, and their associated campfires and other sources of evening smoke, are located within Segment 2. Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased campsites (701 sites versus 466 sites for Alternative 1). Campfires or other evening sources of smoke would continue to affect local air quality at levels that may be unhealthy for sensitive groups, including individuals with pulmonary or cardiovascular diseases, the elderly, and children. Since wood smoke can contribute enough local emissions currently to create unhealthy pollutant levels for sensitive groups, especially many wood-burning sources

operating under stable atmospheric conditions, the expected increase in the usage of campfires under Alternative 4 would have a potentially local, long-term, moderate, adverse impact on sensitive receivers. Increased usage of campfires would also result in a potentially local, long-term, moderate, adverse impact if the usage results in increased PM10 measurements above the ambient air quality standard at the monitoring site at the Yosemite Valley Visitor Center.

Curry Village and Campground. The park would retain 355 guest units and construct a new 40 site campground at Curry Village. The park would remove campsites from lower Pines (15), North Pines (34), and Upper Pines (2). In addition, the park would discontinue commercial day rides from the Curry Village Stables. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The reduction in overnight accommodations would reduce total overnight visitation and number of campfires, resulting in a local, long-term, minor, beneficial air quality impact.

Camp 6 and Yosemite Village. The park would improve the configuration of and on-grade pedestrian crossing at the Northside Drive-Yosemite Village Drive intersection, shift the parking area north and redevelop a portion of the former administrative footprint to accommodate 750 parking spaces, and install a new three-way intersection connecting the parking lot to Sentinel Drive. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private and commercial vehicles, resulting in a local, long-term, minor, adverse air quality impact.

Camp 4 and Yosemite Lodge. The park would design a pedestrian underpass, relocate the existing bus drop-off area to the Highland Court area to accommodate loading/unloading for 3 busses, and redevelop an area west of Yosemite Lodge to provide an additional parking for 150 automobiles and 15 tour busses. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private and commercial vehicles, resulting in a local, long-term, minor, adverse air quality impact.

Segment 2 Impact Summary: Actions to protect and enhance river values within Segment 2 would have local, short-term, adverse impacts ranging from negligible to moderate. These actions would not be expected to have a long-term impact on air quality. Actions to manage user capacities, land use, and facilities within Segment 2 would have local, long-term, minor, beneficial air quality impacts associated with vehicle emissions; but a local, long-term, moderate, adverse air quality impact from increased numbers of campfires.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2

(included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to parking and employee housing facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

There are no NPS overnight accommodations along Segments 3 and 4, and thus few campfires or other visitor-related evening sources of smoke. Also, as described in the alternatives chapter, total daily use levels would be less than under Alternative 1. With fewer on-road vehicles under Alternative 4, the overall effect on local air pollution conditions would be long term, minor, and beneficial.

Segments 3 & 4 Impact Summary: Actions to protect and enhance river values would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 & 4. These actions would not be expected to have a long-term air quality impact. Actions to manage user capacities, land use, and facilities within Segments 3 & 4 would have short-term, regional and local, negligible to minor, adverse impacts on air quality within Segment 4. Over the long-term, these actions would have minor, beneficial air quality impacts.

Segment 7: Wawona

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 7 under Alternative 4 include the relocation of stock use campsites from sensitive resource areas to Wawona Stables. This work could require the use of heavy equipment and would require approximately one week of crew and equipment time. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1

and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Wawona Campground. Under Alternative 4, the park would reduce the size of the Wawona Campground. Twenty-seven campsites, or 28% of all campsites within Wawona, would be removed from the floodplain. There would also be a proportional reduction in campfire emissions. This would result in a long-term, local, minor, beneficial impact on air quality.

Segment 7 Impact Summary: Actions to protect and enhance river values within Segments 6 & 7 would have regional and local, short-term, negligible to minor, adverse air quality impacts. Over the long-term, these actions would contribute to a local, negligible, beneficial impact. Actions to manage user capacities, land use, and facilities within Segment 7 would have local, long-term, minor, beneficial impacts on air quality.

Summary of Impacts from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Impacts associated with implementation of Alternative 4 would be similar to those described above for the analysis common to Alternatives 2–6. In summary, compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential short-term adverse impacts associated with construction emissions to the extent feasible. Even after mitigation, regional and local, short-term, negligible to moderate, adverse impacts from construction would be anticipated. With regard to long-term operations, reduced housing or lodging would result in a proportional reduction in area source emissions (e.g., from consumer products, maintenance/landscaping, natural gas combustion for heating/cooling). In addition, reducing the overall visitor capacity would result in a regional and local, long-term, minor, beneficial impact on the air quality environment by reducing pollutant emissions associated with on-road vehicles. Regional and local, impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, minor, and beneficial. A greater number of potential campfires associated with increased campsites in Yosemite Valley, however, would result in a potentially local, long-term, moderate, adverse impact owing to particulate emissions.

Cumulative Impacts from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

The past, present, and reasonably foreseeable future actions in the Yosemite region considered for the following air quality analysis are the same as those identified for Alternative 1.

Overall Cumulative Impact from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Because management action under Alternative 4 and actions common to Alternatives 2–6 involve substantial construction activity, it would be expected to contribute to regional and local, short-term, negligible to moderate, adverse impacts on air quality resulting from construction activities.

Over the long term, with respect to ozone, conditions in the Merced River corridor would continue to be determined almost entirely by regional emissions trends instead of by local emissions sources. The regional, long-term impact would most likely be beneficial, owing to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. In addition, with reduced overall visitor capacity, Alternative 4 would result in a regional and local, long-term, minor cumulatively beneficial impact on air quality from reduced VMT (ozone and particulate emissions). However, increased campsites could result in a local, moderate, adverse impact from increased campfire usage (particulate emissions). The continued management of traffic and encouragement of alternative forms of transportation would have regional and local, long-term, negligible to minor beneficial impacts on air quality.

Environmental Consequences of Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

All River Segments

Impacts of Actions to Protect and Enhance River Values

Impacts associated with implementation of Alternative 5 would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

With regard to regional, long-term impacts associated with the reduced visitor capacity under Alternative 5, on-road mobile emissions were quantified using EMFAC2007 emission factors and compared to the Federal General Conformity thresholds. The results are shown in **table 9-137**, below. As depicted in the table, the reduction in total daily visitor and administrative use and capacity would result in a regional and local, long-term, minor, beneficial impact for ROG emissions owing to reduced on-road vehicles in the park. However, with the increased bus operations under Alternative 5, NO_x emissions would be a regional and local, long-term, negligible adverse impact. Regional impacts to AQRVs (such as pine injury from ozone and visibility) would be similar to existing conditions, but the local impact to lichen along roadways would be long-term, negligible, and adverse due to increased nitrogen deposition.

Other local, long-term, operational impacts of Alternative 5 are described below for each segment.

TABLE 9-137: ON-ROAD VEHICLE CRITERIA AIR POLLUTANT EMISSIONS (tons/year)^a

Scenario	NO _x	ROG
Alternative 5 Emissions	23	25
Alternative 1 (No Action) Emissions	22	26
Incremental Change ^b	1	(1)
Federal General Conformity Threshold ^c	100	50
Impact Intensity, Type? ^d	Negligible, Adverse	Minor, Beneficial

^a Emissions were calculated using EMFAC2007 factors and assume 2.4 visitors per car with approximately 22 VMT per vehicle (calibrated based on annual VMT projected for Alternative 1 assuming 240 days/year peak and shoulder seasons) and bus trip VMT from *Supporting Information: A Life-Cycle Greenhouse Gas Inventory for Yosemite National Park* (Villalba et al 2012b). User capacities included in chapter 7 were totaled for each alternative to determine the regional air pollutant emissions. Specific assumptions and emission factors incorporated into the calculations are included in Appendix G.

^b Values in (parentheses) are net reductions with respect to Alternative 1 (No Action) emissions.

^c Federal General Conformity thresholds for the Mariposa County portion of the MCAB.

^d Negligible impacts would be effects considered not detectable and would have no discernible effect on air quality (assumed to be 1% or less of threshold). Minor impacts would be those that are present but not expected to have an overall effect on those conditions (assumed to occur up to 50% of applicable threshold). Moderate impacts are clearly detectable and could have an appreciable effect (assumed to occur at emissions levels greater than 50% but does not exceed the applicable threshold). Major impacts would have a substantial, highly noticeable influence on local or regional air quality (assumed to occur when emissions exceed applicable threshold).

Segments 1, 5, 6, and 8: Merced River Above Nevada Fall, South Fork Merced River Above and Below Wawona, and Wawona Impoundment

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts from in-park emissions, such as vehicles, would be more apparent in areas close to roads and concentrations of visitor and administrative services. With fewer on-road vehicles in the vicinity under Alternative 5, the overall effect on air pollution conditions would be long term, minor, and beneficial.

Merced Lake High Sierra Camp. The park would reduce the capacity of the Merced Lake High Sierra Camp to 42 beds and replace the flush toilets with composting toilets. These actions would primarily involve the use of hand tools and a limited amount of power equipment. However, removal of these facilities could require one or more helicopter trips. As such, the impact on local air quality would be short-term, negligible, and adverse. The reduction in lodging units would reduce total overnight visitation and energy required to run the facility, resulting in a local, long-term, negligible, beneficial air quality impact.

Segments 1, 5, 6, & 8 Impact Summary: Actions to manage user capacities, land use, and facilities within Segments 1, 5, 6, and 8 would have long-term, minor, beneficial impacts on air quality within these segments.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 2 under Alternatives 5 include: removing asphalt and fill material, restoring topography of 35.6 acres of floodplain, and installation of box culverts or other similar design components at the former Upper and Lower River campgrounds; removing campsites and infrastructure from within 100 feet of the river and restoring an additional 6.5 acres of floodplain and riparian habitat; removing fill and constructing a boardwalk over meadow and wet areas at Ahwahnee Meadows; installing culverts beneath Northside Drive; reconfiguring the Curry Orchard parking lot; removing informal trails and erecting fencing, signage, and boardwalks to redirect visitor traffic, and selectively removing conifers to improve views at El Capitan Meadow. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and restoration work would require at least 40 weeks of crew and equipment time over a period of two years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic and geologic values that would occur within Segment 2 under Alternative 5 include: relocating unimproved Camp 6 parking; removing the Sugar Pine Bridge; placing large wood and engineered logjams along the base of Stoneman Bridge; and improving trail connectivity and routing in the vicinity of the Ahwahnee Bridge. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and revegetation activities associated with this work would require at least 16 weeks of crew and equipment time over a period of two years, during which other restoration and maintenance activities could be disrupted. The

resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping, lodging, visitor services, parking, circulation, employee housing, and service facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Overnight visitation and total daily use levels would be 16% greater and 5% less, respectively, than under Alternative 1. With fewer on-road vehicles and potential for wood smoke under Alternative 5, the overall effect on local air pollution conditions would be long term, minor, and beneficial. However, the majority of campsites, and their associated campfires and other sources of evening smoke, are located within Segment 2. Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased campsites (640 sites versus 466 sites for Alternative 1). Campfires or other evening sources of smoke would continue to affect local air quality at levels that may be unhealthy for sensitive groups, including individuals with pulmonary or cardiovascular diseases, the elderly, and children. Since wood smoke can contribute enough local emissions currently to create unhealthy pollutant levels for sensitive groups, especially many wood-burning sources operating under stable atmospheric conditions, the expected increase in the usage of campfires under Alternative 5 would have a potentially local, long-term, moderate, adverse impact on sensitive receivers. Increased usage of campfires would also result in a potentially local, long-term, moderate, adverse impact if the usage results in increased PM10 measurements above the ambient air quality standard at the monitoring site at the Yosemite Valley Visitor Center.

Curry Village and Campground. The park would construct 98 hard-sided units at Boys Town, bringing the total number of new and retained units at Curry Village to 453. The park would remove campsites from lower Pines (5), North Pines (14), and Upper Pines (2). In addition, the park would discontinue commercial day rides from the Curry Village Stables. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of overnight accommodations would increase total overnight visitation and related vehicle emissions, while the reduction in campsites would decrease the number of valley campfires and associated emissions. The resulting air quality impact would be local, long-term, negligible, and adverse.

Camp 6 and Yosemite Village. The park would construct a pedestrian underpass and a traffic circle at the intersection of Northside and Yosemite Village Drives, shift the parking area north and redevelop a portion of the former administrative footprint to accommodate 850 parking spaces, and install a new three-way intersection connecting the parking lot to Sentinel Drive. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The traffic circle and underpass would reduce emissions through

reducing intersection delays. However, addition of parking would provide access to the valley for a greater number of private vehicles. The net air quality effect would be local, long-term, minor, and adverse.

Camp 4 and Yosemite Lodge. The park would design a pedestrian underpass, relocate the existing bus drop-off area to the Highland Court area to accommodate loading/unloading for 3 busses, and redevelop an area west of Yosemite Lodge to provide an additional parking for 300 automobiles and 15 tour busses. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private and commercial vehicles, resulting in a local, long-term, minor, adverse air quality impact.

Segment 2 Impact Summary: Actions to protect and enhance river values within Segment 2 would have local, short-term, adverse impacts ranging from negligible to moderate. These actions would not be expected to have a long-term impact on air quality. Actions to manage user capacities, land use, and facilities within Segment 2 would have local, long-term, minor, beneficial air quality impacts associated with vehicle emissions; but a local, long-term, moderate, adverse air quality impact from increased numbers of campfires.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to parking and employee housing facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

There are no NPS overnight accommodations along Segments 3 and 4, and thus few campfires or other visitor-related evening sources of smoke. Also, as described in the alternatives chapter, total daily use levels would be less than under Alternative 1. With fewer on-road vehicles under Alternative 5, the overall effect on local air pollution conditions would be long term, minor, and beneficial.

Segments 3 & 4 Impact Summary: Actions to protect and enhance river values would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 & 4.

These actions would not be expected to have a long-term air quality impact. Actions to manage user capacities, land use, and facilities within Segments 3 & 4 would have short-term, regional and local, negligible to minor, adverse impacts on air quality within Segment 4. Over the long-term, these actions would have minor, beneficial air quality impacts.

Segment 7: Wawona

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 7 under Alternative 3 include the relocation of stock use campsites from sensitive resource areas to the Wawona Maintenance Yard. This work could require the use of heavy equipment and would require approximately one week of crew and equipment time. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Wawona Campground. Under Alternative 5, the park would reduce the size of the Wawona Campground. Thirteen campsites, or 13% of all campsites within Wawona, would be removed from the floodplain. There would also be a proportional reduction in campfire emissions. This would result in a long-term, local, minor, beneficial impact on air quality.

Segment 7 Impact Summary: Actions to protect and enhance river values within Segments 6 & 7 would have regional and local, short-term, negligible to minor, adverse air quality impacts. Over the long-term, these actions would contribute to a local, negligible, beneficial impact. Actions to manage user capacities, land use, and facilities within Segment 7 would have local, long-term, minor, beneficial impacts on air quality.

Summary of Impacts from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Impacts associated with implementation of Alternative 5 would be similar to those described above for the analysis common to Alternatives 2–6. In summary, compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential short-term, adverse impacts associated with construction emissions to the extent feasible. Even after mitigation, short-term, negligible to moderate, adverse impacts from construction would be anticipated. With regard to long-term operations, reduced housing or lodging would result in a proportional reduction in area source emissions (e.g., from consumer products, maintenance/landscaping, natural gas combustion for heating/cooling). In addition, the reduction in total daily visitor and administrative use and capacity and would result in a regional and local, long-term, minor, beneficial impact for ROG emissions owing to reduced on-road vehicles in the park. However, with the increased bus operations under Alternative 5, NO_x emissions would be a regional and local, long-term, negligible adverse impact. Regional impacts to AQRVs (such as pine injury from ozone and visibility) would be similar to existing conditions, but the local impact to lichen along roadways would be long-term, negligible, and adverse due to increased nitrogen deposition. A greater number of potential campfires associated with increased campsites in Yosemite Valley, however, would result in a potentially local, long-term, moderate, adverse impact owing to particulate emissions.

Cumulative Impacts from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

The past, present, and reasonably foreseeable future actions in the Yosemite region considered for the following air quality analysis are the same as those identified for Alternative 1.

Overall Cumulative Impact from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Because management action under Alternative 5 and actions common to Alternatives 2–6 involve substantial construction activity, it would be expected to contribute to regional and local, short-term, negligible to moderate, adverse impacts on air quality resulting from construction activities.

Over the long term, with respect to ozone, conditions in the Merced River corridor would continue to be determined almost entirely by regional emissions trends instead of by local emissions sources. The regional, long-term impact would most likely be beneficial, owing to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. In addition, with reduced overall visitor capacity, would result in a regional and local, long-term, minor, beneficial impact for ROG emissions. However, with the increased bus operations under Alternative 5, NO_x emissions would be a regional and local, long-term, negligible adverse impact. Increased campsites could result in a local moderate, adverse impact from increased campfire usage (particulate emissions). The continued management of traffic and encouragement of alternative forms of transportation would have regional and local, long-term, negligible to minor beneficial impacts on air quality.

Environmental Consequences of Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

All River Segments

Impacts of Actions to Protect and Enhance River Values

Impacts associated with implementation of Alternative 6 would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

With regard to regional, long-term impacts associated with the slightly increased visitor capacity under Alternative 6, on-road mobile emissions were quantified using EMFAC2007 emission factors and compared to the Federal General Conformity thresholds. The results are shown in **table 9-138**, below. As depicted in the table, the increase in total daily visitor and administrative use and capacity and bus operations would result in a regional and local, long-term, negligible to minor, adverse impact owing to increased on-road vehicles in the park. Regional and local, impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, negligible to minor, and adverse.

Other local, long-term, operational impacts of Alternative 6 are described below for each segment.

Segments 1, 5, 6, and 8: Merced River Above Nevada Fall, South Fork Merced River Above and Below Wawona, and Wawona Impoundment

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

TABLE 9-138: ON-ROAD VEHICLE CRITERIA AIR POLLUTANT EMISSIONS (tons/year)^a

Scenario	NO _x	ROG
Alternative 6 Emissions	25	26
Alternative 1 (No Action) Emissions	22	26
Incremental Change ^b	3	0
Federal General Conformity Threshold ^c	100	50
Impact Intensity, Type? ^d	Minor, Adverse	Negligible, Adverse
<p>^a Emissions were calculated using EMFAC2007 factors and assume 2.4 visitors per car with approximately 22 VMT per vehicle (calibrated based on annual VMT projected for Alternative 1 assuming 240 days/year peak and shoulder seasons) and bus trip VMT from <i>Supporting Information: A Life-Cycle Greenhouse Gas Inventory for Yosemite National Park</i> (Villalba et al 2012b). User capacities included in chapter 7 were totaled for each alternative to determine the regional air pollutant emissions. Specific assumptions and emission factors incorporated into the calculations are included in Appendix G.</p> <p>^b Values in (parentheses) are net reductions with respect to Alternative 1 (No Action) emissions.</p> <p>^c Federal General Conformity thresholds for the Mariposa County portion of the MCAB.</p> <p>^d Negligible impacts would be effects considered not detectable and would have no discernible effect on air quality (assumed to be 1% or less of threshold). Minor impacts would be those that are present but not expected to have an overall effect on those conditions (assumed to occur up to 50% of applicable threshold). Moderate impacts are clearly detectable and could have an appreciable effect (assumed to occur at emissions levels greater than 50% but does not exceed the applicable threshold). Major impacts would have a substantial, highly noticeable influence on local or regional air quality (assumed to occur when emissions exceed applicable threshold).</p>		

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping facilities would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts from in-park emissions, such as vehicles, would be more apparent in areas close to roads and concentrations of visitor and administrative services. With more vehicles on park roads and in the vicinity of wilderness under Alternative 6, the overall effect on local, air pollution conditions would be long term, negligible, and adverse.

Merced Lake High Sierra Camp. The park would retain the Merced Lake High Sierra Camp and replace the flush toilets with composting toilets. These actions would primarily involve the use of hand tools and a limited amount of power equipment. However, removal of these facilities would likely require one or more helicopter trips. As such, the impact on local air quality would be short-term, negligible, and adverse.

Segments 1, 5, 6, & 8 Impact Summary: Actions to manage user capacities, land use, and facilities within Segments 1, 5, 6, and 8 would have long-term, negligible, adverse impacts on air quality within these segments.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river's biological values that would occur within Segment 2 under Alternative 6 include: removing asphalt and fill material, restoring topography of 19.7 acres of floodplain, and installation of box culverts or other similar design components at the former Upper and Lower River campgrounds; removing campsites and infrastructure from within 100 feet of the river and restoring an additional 6.5 acres of floodplain and riparian habitat; removing fill and constructing a boardwalk over meadow and wet areas at Ahwahnee Meadows; and removing informal trails, installing viewing platforms and boardwalks, and selectively removing conifers to improve views at El Capitan Meadow. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and restoration work would require at least 40 weeks of crew and equipment time over a period of at least two years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Hydrologic/Geologic Resource Actions. Specific projects to protect and enhance the river's hydrologic and geologic values that would occur within Segment 2 under Alternative 6 include: relocating unimproved Camp 6 parking and placing large wood and engineered logjams along the bases of Stoneman, Sugar Pine, and Ahwahnee Bridges. Under this alternative, Sugar Pine Bridge would be retained, engineered log jams and large wood installed at its base, and its condition monitored. Should long-term monitoring reveal mitigation measures are not sufficient, the park may undertake more aggressive management action, including removal of the bridge. Such action would require the use of heavy equipment and explosives to drop the bridge and dismantle the abutments. This work would require the use of heavy equipment, including excavators, skid steers, loaders, and dump trucks. The demolition, transport, disposal, and revegetation activities associated with this work would require approximately 16 weeks of crew and equipment time over a period of two years. The resulting impact on regional and local air quality would be short-term, negligible to moderate, and adverse, even after implementation of mitigation measures MM-AIR-1 and -2 (included in Appendix C).

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to camping, lodging, parking, circulation, employee housing, and service facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Overnight visitation and total daily use levels would be 33% and 4% greater, respectively, than under Alternative 1. With more on-road vehicles under Alternative 6, the overall effect on local air pollution conditions along roadways would be long term, minor, and adverse. In addition, the majority of campsites, and their associated campfires and other sources of evening smoke, are located within Segment 2. Campfires would continue to be subject to park regulations, and related emissions could increase in proportion to the increased campsites (739 sites versus 466 sites for Alternative 1). Campfires or other evening sources of smoke would continue to affect local air quality at levels that may be unhealthy for sensitive groups, including individuals with pulmonary or cardiovascular diseases, the elderly, and children. Since wood smoke can contribute enough local emissions currently to create unhealthy pollutant levels for sensitive groups, especially many wood burning sources operating under stable atmospheric conditions, the expected increase in the usage of campfires under Alternative 6 would have a potentially local, long-term, moderate, adverse impact on sensitive receptors. Increased usage of campfires would also result in a potentially local long-term, major, adverse impact if the usage results in increased PM10 measurements above the ambient air quality standard at the monitoring site at the Yosemite Valley Visitor Center.

Curry Village and Campground. The park would construct 98 hard-sided units at Boys Town, bringing the total number of new and retained units at Curry Village to 453. The park would remove campsites from lower Pines (5), North Pines (14), and Upper Pines (2). In addition, the park would discontinue commercial day rides from the Curry Village Stables. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of overnight accommodations would increase total overnight visitation and related vehicle emissions, while the reduction in campsites would decrease the number of valley campfires and associated emissions. The resulting air quality impact would be local, long-term, negligible, and adverse.

Camp 6 and Yosemite Village. The park would expand the Concessioner Warehouse Building to accommodate Concessioner General Office functions, construct a pedestrian underpass and two roundabouts, shift the parking area north and redevelop a portion of the former administrative footprint to accommodate 850 parking spaces, and install a new three-way intersection connecting the parking lot to Sentinel Drive. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The roundabout and underpass would reduce emissions through reducing intersection delays. However, addition of parking would provide access to the valley for a greater number of private vehicles. The net air quality effect would be local, long-term, minor, and adverse.

Camp 4 and Yosemite Lodge. The park would design a pedestrian underpass, relocate the existing bus drop-off area to the Highland Court area to accommodate loading/unloading for 3 busses, and redevelop an area west of Yosemite Lodge to provide an additional parking for 300 automobiles and 15 tour busses. These actions would require the use of heavy equipment and demolition activities. As such, the impact on local air quality would be short-term, minor, and adverse. The addition of parking would provide access to the valley for a greater number of private and commercial vehicles, resulting in a local, long-term, minor, adverse air quality impact.

Segment 2 Impact Summary: Actions to protect and enhance river values within Segment 2 would have local, short-term, adverse impacts ranging from negligible to moderate. These actions would not be expected to have a long-term impact on air quality. Actions to manage user capacities, land use, and facilities within Segment 2 would have local, long-term, negligible to minor, adverse air quality impacts associated with vehicle emissions; but a local, long-term, moderate, adverse air quality impact from increased numbers of campfires.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts associated with changes to parking and employee housing facilities would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

There are no NPS overnight accommodations along Segments 3 and 4, and thus few campfires or other visitor-related evening sources of smoke. Also, as described in the alternatives chapter, total daily use levels would be greater than under Alternative 1. With more on-road vehicles under Alternative 6, the overall effect on local air pollution conditions would be regional and local, long term, negligible, and adverse.

Segments 3 & 4 Impact Summary: Actions to protect and enhance river values would have a short-term, regional and local, negligible to minor adverse impact on air quality within Segments 3 & 4. These actions would not be expected to have a long-term air quality impact. Actions to manage user capacities, land use, and facilities within Segments 3 & 4 would have short-term, regional and local, negligible to minor, adverse impacts on air quality within Segment 4. Over the long-term, these actions would have minor, beneficial air quality impacts.

Segment 7: Wawona

Impacts of Actions to Protect and Enhance River Values

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2-6 (see discussion of Impacts of Actions to Protect and Enhance

River Values under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

Biological Resource Actions. Specific projects to protect and enhance the river’s biological values that would occur within Segment 7 under Alternative 6 include the relocation of stock use campsites from sensitive resource areas to Wawona Stables. This work could require the use of heavy equipment and would require approximately one week of crew and equipment time. Accordingly, this action would result in short-term regional and local, negligible, adverse impacts on air quality.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Short-term construction activities and impacts would be similar to those described above for the analysis common to Alternatives 2–6 (see discussion of Impacts of Actions to Manage User Capacities, Land Use, and Facilities under All River Segments). Compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential regional and local short-term, negligible to moderate impacts associated with construction emissions to the extent feasible.

As described in the alternatives chapter, total daily use levels would not change and maximum overnight capacity would be 5% less than under Alternative 1. Since campsites would be reduced along this segment (estimated at 83 and one group site versus 96 and one group site for Alternative 1), there would also be a proportional reduction in campfire emissions, which would be a local, long-term, minor, beneficial impact.

Wawona Campground. Under Alternative 6, the park would reduce the size of the Wawona Campground. Thirteen campsites, or 13% of all campsites within Wawona, would be removed from the floodplain. This would result in a long-term, local, minor, beneficial impact on air quality.

Segment 7 Impact Summary: Actions to protect and enhance river values within Segments 6 & 7 would have regional and local, short-term, negligible to minor, adverse air quality impacts. Over the long-term, these actions would contribute to a local, negligible, beneficial impact. Actions to manage user capacities, land use, and facilities within Segment 7 would have local, long-term, minor, beneficial impacts on air quality.

Summary of Impacts from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Impacts associated with implementation of Alternative 6 would be similar to those described above for the analysis common to Alternatives 2–6. In summary, compliance with mitigation measures MM-AIR-1 and -2 (included in Appendix C) for applicable actions would reduce potential short-term adverse impacts associated with construction emissions to the extent feasible. Even after mitigation, regional and local, short-term, negligible to moderate, adverse impacts from construction would be anticipated. With regard to long-term operations, increased housing, campsites, or lodging would result in a proportional increase in area source emissions (e.g., from consumer products, maintenance/landscaping, natural gas combustion for heating/cooling) and campfire emissions. In addition, increasing the overall visitor capacity would result in a regional and local, long-term, negligible to minor, adverse impact on the air

quality environment associated with on-road vehicles. Regional and local, impacts to AQRVs (such as pine injury from ozone, visibility, and lichen sensitivity to nitrogen deposition) would also be long-term, negligible to minor, and adverse. A greater number of potential campfires associated with increased overnight accommodations in Yosemite Valley would result in a potentially local, long-term, moderate, adverse impact owing to particulate emissions.

Cumulative Impacts from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

The past, present, and reasonably foreseeable future actions in the Yosemite region considered for the following air quality analysis are the same as those identified for Alternative 1.

Overall Cumulative Impact from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Because management action under Alternative 6 and actions common to Alternatives 2-6 involve substantial construction activity, it would be expected to contribute to regional and local, short-term, negligible to moderate adverse impacts on air quality resulting from construction activities.

Over the long term, with respect to ozone, conditions in the Merced River corridor would continue to be determined almost entirely by regional emissions trends instead of by local emissions sources. The regional, long-term impact would most likely be beneficial, owing to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. However, with increased overall visitor capacity, Alternative 6 would result in a regional and local, long-term, negligible to minor cumulatively adverse impact on air quality from increased VMT (ozone and particulate emissions) and increased campfire usage (particulate emissions). The continued management of traffic and encouragement of alternative forms of transportation would have regional and local, long-term, negligible to minor beneficial impacts on air quality.