C.2 Air Quality and Climate Change

This section presents information on ambient air quality conditions in the vicinity of the Project site and identifies potential impacts to air quality as a result of the construction and operation of the Project. As discussed in Section B (Description of Proposed Action/Project and Alternatives), construction activities restoring the Reservoir storage capacity are estimate to last 7 to 12 years for the proposed Project and a minimum of 13 years for Alternative 1. To ensure worst-case impacts are evaluated, the emission estimates utilized within this section assumed a 7-year construction scenario for the proposed Project and a 13-year construction scenario for Alternative 1. While construction activities may last longer, these durations represent worst-case daily and total emissions. The air quality and greenhouse gas (GHG) emission calculations assumptions and methodologies are provided in Appendix B.

C.2.1 Affected Environment

C.2.1.1 Air Quality

The Project is located in the southwestern part of the Antelope Valley Air Quality Management District (AVAQMD). Additionally, a portion of the Project is located on National Forest Service (NFS) lands within the Angeles National Forest (ANF).

Greenhouse gases cause global climate change impacts, and GHG emissions impacts are not localized near the area of emissions but rather are a long-term globally cumulative impact phenomenon.

C.2.1.2 Meteorological Conditions

The climate of northern Los Angeles County is characterized by hot, dry summers and mild to cold winters with seasonally heavy precipitation that occurs primarily during the winter months. Summer typically has clear skies, high temperatures, and low humidity. The prevailing strong winds in the Project area are generally out of the west and southwest (AVAQMD, 2011). A monthly climate summary for Littlerock, California, was selected to characterize the climate of the project area. As described in Table C.2-1, average summer (June-September) high and low temperatures in the study area range from 97°F to 60°F, respectively. Average winter (December-March) high and low temperatures in the study area range from 67°F to 37°F. The average annual precipitation is 6.77 inches with over 70 percent occurring between December and March.

Table C.2-1. Littlerock Monthly Average Temperatures and Precipitation

Month	Temperature		Precipitation Inches
	Maximum	Minimum	
January	58°F	37°F	1.24
February	61°F	39°F	1.60
March	67°F	42°F	0.92
April	73°F	46°F	0.34
May	82°F	53°F	0.09
June	91°F	60°F	0.04
July	97°F	67°F	0.18
August	96°F	67°F	0.19
September	89°F	62°F	0.17
October	78°F	53°F	0.36
November	65°F	43°F	0.45
December	57°F	37°F	1.19

Source: The Weather Channel, 2014.

C.2.1.3 Existing Air Quality

The United States Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data shows compliance, insufficient data available, or non-compliance with the federal and State ambient air quality standards, respectively. The National and California Ambient Air Quality Standards (NAAQS and CAAQS) relevant to the Project are provided in Table C.2-2.

Table C.2-2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm
Respirable particulate matter (PM_{10})	24-hour	50 µg/m^3	150 µg/m^3
	Annual mean	20 µg/m^3	—
Fine particulate matter ($PM_{2.5}$)	24-hour	—	35 µg/m^3
	Annual mean	12 µg/m^3	12.0 µg/m^3
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	0.10 ppm
	Annual mean	0.030 ppm	0.053 ppm
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm
	24-hour	0.04 ppm	—

Notes: ppm=parts per million; µg/m^3= micrograms per cubic meter; "—" = no standard
Source: CARB, 2013, Ambient Air Quality Standards Table.

The project area is located within the Mojave Desert Air Basin (MDAB), under the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD). Table C.2-3 summarizes the federal and State attainment status of criteria pollutants for the Project area based on the NAAQS and CAAQS, respectively.

Table C.2-3. Attainment Status for Antelope Valley Portion of the MDAB

Pollutant	Federal	State
Ozone	Severe Nonattainment	Nonattainment
CO	Unclassified/Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Unclassified/Attainment	Nonattainment
PM2.5	Unclassified/Attainment	Unclassified

Source: CARB, 2014a; USEPA, 2014a

Ozone, NO_2, CO, PM10, and PM2.5 concentrations are currently recorded at the Lancaster Division Street monitoring station located approximately 15 miles north northwest of the Littlerock Reservoir. This monitoring station also used to monitor CO concentrations. The current nearest operating monitoring station for SO_2 is in the City of Burbank about 30 miles southwest of Littlerock Reservoir, and the closest within the MDAB is Victorville about 40 miles east of the Project site.

Ozone

In the presence of ultraviolet radiation, both nitrogen oxides (NO_x) and volatile organic compounds (VOCs) go through a number of complex chemical reactions to form ozone. Table C.2-4 summarizes the ambient ozone data for the project area collected since 2002 from the Lancaster Division Street monitoring station. The table includes the maximum hourly and 8-hour average concentration and the number of days above the National and State standards. The Los Angeles County portion of the MDAB is classified as a serious nonattainment area for the 8-hour ozone NAAQS and nonattainment of the ozone CAAQS.

Table C.2-4. Ozone Air Quality Summary, 2002-2013

	1-Hr Ozone Summary			8-Hr Ozone Summary			
Year	Maximum 1-Hr Avg. (ppm)	Days Above CAAQS	Days Above NAAQS	Max. State 8-Hr Avg. (ppm)	Days Above CAAQS	Max.Fed. 8-Hr Avg. (ppm)	Days Above NAAQS
2002	0.157	46	5	0.107	87	0.107	70
2003	0.156	50	4	0.120	92	0.120	67
2004	0.121	37	0	0.101	85	0.101	61
2005	0.127	42	1	0.103	73	0.103	60
2006	0.132	22	2	0.106	66	0.105	39
2007	0.118	16	0	0.101	63	0.101	43
2008	0.116	18	0	0.103	59	0.102	35
2009	0.122	22	0	0.102	70	0.102	45
2010	0.107	11	0	0.096	78	0.096	45
2011	0.115	19	0	0.100	76	0.100	53
2012	0.112	13	0	0.096	72	0.095	39
2013	0.108	9	0	0.094	53	0.093	34

Source: CARB, 2014b; USEPA, 2014b
CAAQS: 1-hr, 0.070 ppm; 8-hr, 0.09 ppm
NAAQS: 8-hr, 0.075 ppm

The long-term trends for ozone concentrations and number of days exceeding the standards each year have shown reduction since the mid-1980s; however, ozone continues to be above the State 1-hour and State and federal 8-hour ozone standards. The western MDAB is primarily impacted by ozone and ozone precursor pollutants transported from the SCAB (i.e. Metropolitan Los Angeles) and the San Joaquin Valley Air Basin (SJVAB). The long-term trends in ozone pollutant levels in the western MDAB are inexorably tied to the reduction in ozone precursor pollutant levels in these two upwind air basins.

Carbon Monoxide (CO)

CO is generally found in high concentrations only near a significant source of emissions (i.e., freeway, busy intersection, etc.). The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. Since mobile sources (motor vehicles) are the main cause of CO, ambient concentrations of CO are highly dependent on motor vehicle activity. In fact, the peak CO concentrations occur during the rush hour traffic in the morning and afternoon. Carbon monoxide concentrations in the State have declined significantly due to two statewide programs: (1) the 1992 wintertime oxygenated gasoline program, and (2) Phases I and II of the reformulated gasoline program. Additionally, overall vehicle fleet turnover from higher-emitting older engines to lower-emitting new engines is a significant factor in the declining CO levels.

Table C.2-5 summarizes the ambient carbon monoxide data for the Project area collected over the past 10 years from the Lancaster Division Street monitoring station. The table includes the available maximum 8-hour concentrations.

Most of the project site route area, and proposed sediment removal route and storage areas, would be expected to have even lower CO levels than those presented in Table C.2-5, as they are not located near dense population centers and would experience comparatively vehicle traffic, which is the major contributor to CO emissions. As indicated in the table, there have been no exceedances of CAAQS or NAAQS since at least 2002 for the 8-hour CO standard in Lancaster.

Most of the project site route area, and proposed sediment removal route and storage areas, would be expected to have even lower CO levels than those presented in Table C.2-5, as they are not located near dense population centers and would experience comparatively vehicle traffic, which is the major contributor to CO emissions. As indicated in the table, there have been no exceedances of CAAQS or NAAQS since at least 2002 for the 8-hour CO standard in Lancaster.

Table C.2-5. Carbon Monoxide Air Quality Summary, 2002-2011

Year	Maximum 8-Hr Avg. (ppm)	Month of Max. 8-Hr Avg.
2002	2.24	Sep
2003	1.88	Dec
2004	1.72	Jan
2005	1.54	Dec
2006	1.60	Dec
2007	1.25	Jan
2008	1.04	Nov
2009	1.2	—
2010	1.23	Jan
2011	1.33	Nov
2012	1.4	—
2013	1.2	—

Source: CARB, 2014b; USEPA, 2014b
Note: "—" indicates data not reported by the source.
CAAQS: 1-hr, 9.0 ppm; 8-hr, 20 ppm
NAAQS: 1-hr, 9 ppm; 8-hr, 35 ppm

Nitrogen Dioxide (NO_2)

The majority of the NO_x emitted from combustion sources is in the form of nitric oxide (NO), while the balance is mainly NO_2. NO is oxidized by O_2 (oxygen) in the atmosphere to NO_2 but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO_2 often occur during the fall and not in the winter. While winter atmospheric conditions favor the trapping of ground level releases of NO there is a lack of significant radiation intensity (less sunlight) to oxidize NO to NO_2. In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) disperse pollutants, preventing the accumulation of NO_2 to levels approaching the 1-hour ambient air quality standard. NO is also oxidized by O_3 to form NO_2. The formation of NO_2 in the summer with the help of the ozone occurs according to the following reaction:

$$NO + O_3 \rightarrow NO_2 + O_2$$

In urban areas, ozone concentration level is typically high. That level will drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NO_x emissions) ozone concentrations can remain relatively high.

Table C.2-6 summarizes the ambient nitrogen dioxide data for the Project area collected over the past 12 years from the Lancaster Division Street monitoring station. The table includes the maximum 1-hour and annual concentrations. This table shows that both the short-term and long-term average NO_2 concentrations have been dropping fairly significantly since 2002. The MDAB is either unclassified or in attainment for nitrogen dioxide.

Inhalable Particulate Matter (PM10)

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NO_x, sulfur oxides (SO_x), VOC, and ammonia, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere.

Table C.2-6. Nitrogen Dioxide Air Quality Summary, 2002-2013

Year	Maximum 1-Hr Avg. (ppm)	Maximum Annual Avg. (ppm)
2002	0.101	0.016
2003	0.067	0.015
2004	0.103	0.015
2005	0.074	0.015
2006	0.066	0.015
2007	0.064	0.014
2008	0.062	0.013
2009	0.065	—
2010	0.056	0.012
2011	0.058	0.012
2012	0.049	0.009
2013	0.048	0.008

Source: CARB 2014b.
Note: "—" is for a year with less than representative monitoring data coverage for the year or data not reported by the source.
CAAQS: 1-hr, 0.18 ppm; annual, 0.030 ppm
NAAQS: 1-hr, 0.10 ppm; annual, 0.053 ppm

Table C.2-7 summarizes the ambient particulate matter data collected from the Lancaster Division Street monitoring station. The table includes the maximum 24-hour and annual arithmetic average concentrations. As shown in Table C.2-7, the project area experiences exceedances of the State 24-hour PM10 standards and the State annual arithmetic mean PM10 standards. The western MDAB in the Project area is unclassified for the federal PM10 standard and is nonattainment of the State PM10 standard.

Table C.2-7. PM10 Air Quality Summary, 2002-2013

Year	State Maximum Daily Average (µg/m³)	Days Above Daily CAAQS*	Federal Maximum Daily Average (µg/m³)	Days Above Daily NAAQS*	State Annual Average (µg/m³)
2002	73	6	210	1	29.7
2003	54	6	98	—	23.2
2004	33	—	83	—	—
2005	47	—	55	—	—
2006	58	26	65	—	25.1
2007	181	18	86	—	28.2
2008	70	—	143	—	—
2009	56	—	199	1	—
2010	—	—	43	—	—
2011	49	—	81	—	—
2012	43	—	85	—	18.5
2013	173	—	185	6	—

Source: CARB, 2014b; USEPA, 2014b.
CAAQS: 24-hr, 50 µg/m³; annual arithmetic, 20 µg/m³
NAAQS: 24-hr, 150 µg/m³;
*Days above the State and national standard (calculated): Because PM10 is monitored approximately once every six days; the potential number of exceedance days is typically calculated by multiplying the actual number of days of exceedance by six.
Note: "—" is for a year with less than representative monitoring data coverage for the year or data not reported by the source.

Fine Particulate Matter (PM2.5)

PM2.5, similar to PM10, can be emitted directly or it can be in the form of secondary particulate. Most combustion particulate, including diesel particulate matter, is emitted as fine PM2.5 and most secondary particulate formation is also formed as fine PM2.5. Fugitive dust on the other hand is typically

emitted in high proportions of larger PM fraction sizes, so that ambient PM10 concentrations have a much higher fraction of contribution from fugitive dust than ambient PM2.5 concentrations.

Table C.2-8 summarizes the ambient fine particulate matter data collected over the past 12 years from the Lancaster Division Street monitoring station. The MDAB is unclassified for both the federal and State PM2.5 standards.

Table C.2-8. PM2.5 Air Quality Summary, 2002-2013*

Year	State Maximum Daily Average (µg/m³)	Federal 98th Percentile of Maximum Daily Average (µg/m³)	Days Above 98th Percentile Daily NAAQS	State Annual Average (µg/m³)	Federal Annual Average (µg/m³)
2002	24	23	—	—	10.4
2003	25	21	—	9.4	9.3
2004	18	18	—	—	8.5
2005	28	17	—	8.9	8.9
2006	18	13	—	7.4	7.4
2007	25	16	—	8.0	7.7
2008	24	24	—	—	7.2
2009	20	16	—	7.8	7.7
2010	15	14	—	—	5.9
2011	50	50	—	—	7.1
2012	14	14	—	—	5.4
2013	12	11	—	—	5.8

Source: CARB, 2014b; USEPA, 2014b.
CAAQS: Annual Mean Standard, 12 µg/m³
NAAQS: 24-Hr, 35 µg/m³., Annual Arithmetic Mean, 12 µg/m³;
*Days above the State and national standard (calculated): Because PM10 is monitored approximately once every six days; the potential number of exceedance days is typically calculated by multiplying the actual number of days of exceedance by six.
Note: "—" is for a year with less than representative monitoring data coverage for the year or data not reported by the source.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content such as coal or heavy fuel oils can emit very large amounts of SO_2 when combusted. Sources of SO_2 emissions come from every economic sector and include a wide variety of fuels, gaseous, liquid, and solid.

The MDAB is designated attainment or unclassified for all SO_2 State and federal ambient air quality standards. There are no SO_2 monitoring stations near the Project site or within the MDAB west of Victorville and Trona; therefore, no representative SO_2 ambient air quality data exists.

C.2.1.4 Summary

As discussed above and presented in Table C.2-3, the Project area is in nonattainment of the State and federal ozone standards and the State PM10 standard. The Project area is designated as attainment and/or unclassified for all other criteria pollutant standards. The Project area's attainment status is significantly influenced by pollutant transport from both the south (South Coast Air Basin, i.e. Los Angeles area) and the west (San Joaquin Valley Air Basin). The long-term trends in pollutant levels in the western MDAB are inexorably tied to the reduction in pollutant levels in these two upwind air basins.

C.2.1.5 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases. Impacts from the Project would be localized at the areas of material removal, material hauling, and material storage or disposal. The localized short-term impacts would be greatest to those located adjacent or very close to these areas. Sensitive receptors located more than 0.25 mile from these construction sites would have limited exposure times and concentrations, so only the sensitive receptors located within 0.25 mile of Littlerock Reservoir, the main sediment haul route and sediment storage area are considered those with potentially significant pollutant exposure.

Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods for industrial/commercial areas are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

A land use survey was conducted to identify sensitive receptors (e.g., local residences, schools, hospitals, recreational facilities) in the general vicinity of the Project. There are no residences or other sensitive receptors located within a mile of the main project site at Littlerock Reservoir and recreational activities at the site would be suspended during the Project. There are several dozen residences located within 0.25 mile of the haul routes and there are residences that may be located within 0.25 miles of the primary sediment storage site depending on its exact location within the existing aggregate mines, and residences located within 0.25 miles of the secondary sediment storage site. There are no known public schools, hospitals, or active recreational facilities known to exist within one-half mile of the Project site, the haul routes or sediment storage sites. The air quality analysis will consider the Project impacts to the residential receptors located along the haul route and near the sediment storage site.

C.2.1.6 Climate Change

While climate change has been a concern since at least 1998, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), efforts devoted to greenhouse gas (GHG) emissions reduction, and climate change research and policy have increased dramatically in recent years.

Global climate change (GCC) is expressed as changes in the average weather of the Earth, as measured by change in wind patterns, storms, precipitation, and temperature. Much scientific research has indicated that the human-related emissions of GHGs above natural levels are likely a significant contributor to GCC.

Because the direct environmental effect of GHG emissions is the increase in global temperatures, which in turn has numerous indirect effects on the environment and humans, the area of influence for GHG impacts associated with the Project would be global. However, those cumulative global impacts would be manifested as impacts on resources and ecosystems in California. Additionally, as this analysis concerns cumulative global impacts, there is no separate cumulative impacts analysis for Global Climate Change.

Setting

The Project site is located in Northern Los Angeles County in the MDAB. In California, ARB is designated as the responsible agency for traditional air quality regulations. In addition, Assembly Bill (AB) 32 vested ARB with regulatory authority for GHGs.

Greenhouse Gases

Greenhouse gases are gases that trap heat in the atmosphere and are emitted by natural processes and human activities. Examples of GHGs that are produced both by natural processes and industry include CO_2, Methane (CH_4), and Nitrous Oxide (N_2O). The accumulation of GHGs in the atmosphere regulates the earth's temperature. GHGs have varying amounts of global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. By convention, CO_2 is assigned a GWP of 1. In comparison, CH_4 has a GWP of 25, which means that it has a global warming effect 25 times greater than CO_2 on an equal-mass basis. To account for their GWP, GHG emissions are often reported as CO2e (CO_2 equivalent). The CO2e for a source is calculated by multiplying each GHG emission by its GWP, and then adding the results together to produce a single, combined emission rate representing all GHGs.

C.2.2 Regulatory Framework

The Project includes construction and ongoing operations and maintenance activities but does not include any long-term stationary emission sources, so there are very few direct air quality regulations that specifically regulate the Project's air quality emission sources. The regulations that do apply, such as fugitive dust regulations, tend to be general and allow multiple means of achieving compliance. Similarly, regulations related to climate change and greenhouse gas emissions reductions generally relate to stationary source emissions or development construction standards, so there are very few regulations that directly apply to this project's greenhouse gas emissions sources. A description of the specific and general regulations that apply to the Project is provided below.

Table C.2-9 provides a list of plans and policies that are applicable to air quality and climate change, and includes a discussion of the Project's consistency with each plan or policy.

C.2.2.1 Air Quality

- **United States Environmental Project Agency (USEPA).** USEPA has issued a number of National Ambient Air Quality Standards (NAAQS) (see Section C.2.1.2). The AVAQMD and the California Air Resources Board (CARB) are the responsible agencies for providing attainment plans and meeting attainment with these standards; and the USEPA reviews and approves these plans and regulations that are designed to attain and maintain attainment with the NAAQS. USEPA has a number of other regulations under the authority of the federal Clean Air Act (such as New Source Review (NSR), Prevention of Significant Deterioration (PSD), Title V permitting program, etc.); however, none of these regulations apply to this project because the Project would have no long-term operating stationary emission sources. Therefore, a PSD air quality impact analysis of the Project's impacts to the nearest mandatory Class I areas is not required. The USEPA does have on-road and off-road engine emission reduction programs that indirectly affect the Project's Emissions through the phasing in of cleaner on-road and off-road equipment engines.

- **USDA Forest Service Land Management Plan.** The USDA Forest Service regulates the portion of the Project that is located within the National Forest System lands, and the Angeles National Forest Plan Strategy does not include any air quality strategies that would be significantly impacted by the construction or operation of the Project (USFS, 2005). The Angeles National Forest air quality

strategies are limited to the following: (1) AIR 1: Minimize Smoke and Dust; and (2) AIR 2: Forest Air Quality Emissions. The Angeles National Forest strategy AIR 1 is very general and is directed to "Control and reduce fugitive dust to protect human health, improve safety and moderate or eliminate environmental impacts." The only action item of this of this strategy is to "Incorporate visibility requirements into project plans." The Angeles National Forest air quality strategy AIR 2 relates to providing an air quality inventory for prescribed burns and wildfires and therefore does not directly relate to the Project's emissions.

- **California Air Resources Board (CARB).** CARB has issued a number of California Ambient Air Quality Standards (CAAQS) (see Section C.2.1.2). CARB, like USEPA, also has on-road and off-road engine emission reduction programs that indirectly affect the Project's emissions through the phasing in of cleaner on-road and off-road equipment engines. Additionally, CARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and portable equipment driven by portable engines, such as a portable concrete batch plant or screening plant, to register their units under a Statewide portable program to operate their equipment, which must meet specified program emission requirements, throughout California without having to obtain individual permits from local air districts.
- **Antelope Valley Air Quality Management District (AVAQMD).** The Project is located within the local jurisdiction of the AVAQMD. The local jurisdiction is responsible for planning, implementing, and enforcing federal and State ambient standards within its jurisdiction. The regulations of this agency are focused on stationary sources; therefore, most of the local agency regulations are not relevant to this Project. However, portable engines and portable equipment used during construction that are larger than 50 hp and that are not registered under the CARB Portable Equipment Registration Program would need to be obtain permits from the AVAQMD. The Project's construction and later maintenance activities will also have to comply with AVAQMD visible emissions, nuisance, and fugitive dust regulations, as follows:
  - AVAQMD Rule 401 – Visible Emissions
  - AVAQMD Rule 402 – Nuisance
  - AVAQMD Rule 403 – Fugitive Dust
- These rules limit the visible dust emissions from the Project construction sites, prohibit emissions that can cause a public nuisance, and require the prevention and reduction of fugitive dust emissions. One or more measures are required by the Fugitive Dust rules reduce fugitive dust emissions from specific dust-causing activities. These measures may include, adding freeboard to haul vehicles, covering loose material on haul vehicles, watering, using chemical stabilizers and/or ceasing all activities (such as during periods of high winds). Additionally, any state or locally permitted portable stationary equipment that may be associated with the Project and that would also cause fugitive dust emissions would also have to comply with the following AVAQMD fugitive dust and emission limit rules:
  - AVAQMD Rule 401 – Visible Emissions
  - AVAQMD Rule 402 – Nuisance
  - AVAQMD Rule 403 – Fugitive Dust
  - AVAQMD Rule 404 – Particulate Matter – Concentration
  - AVAQMD Rule 405 – Solid Particulate Matter – Weight

- Any locally permitted portable stationary equipment with internal combustion engines associated with the Project would also have to comply with the following AVAQMD rule:
  - AVAQMD Rule 1110.2 – Emissions From Stationary, Non-road & Portable Internal Combustion Engines
- **County of Los Angeles General Plan.** The County's General Plan includes a long list of air quality related goal and policies. These goals and policies generally relate to future development and transportation improvements to reduce air quality impacts from future growth. There are no air quality policies in the General Plan that directly relate to the actions of the Project.
- Antelope Valley Areawide General Plan. This General Plan does not include an air quality element.
- **County of Los Angeles Draft General Plan 2035.** The draft General Plan includes an air quality element that has several goals and policies; however, none of the air quality measures are applicable to the Project.
- **City of Palmdale General Plan.** This General Plan does not include an air quality element.

C.2.2.2 General Conformity

- **Section 176(c), Clean Air Act Amendments (CAAA).** Per Section 176(c) of the CAAA of 1990, the Forest Service must make a determination of whether the Project (i.e., proposed action) and project alternatives "conforms" with the State Implementation Plan (SIP). However, if the total direct and indirect emissions from the Project and project alternatives are below the General Conformity Rule (40 CFR §93.153) de minimis emission levels, the Project would be exempt from performing a comprehensive Air Quality Conformity Analysis and Determination, and would be considered to be in conformity with the SIP. If an Air Quality Conformity Analysis is necessary it must be certified prior to the Project's Record of Decision (ROD).

C.2.2.3 Climate Change

- **United States Environmental Project Agency.** Under the provisions of the Clean Air Act (CAA) to protect public health and welfare, the USEPA has the authority to regulate GHGs, should a finding be made that GHGs have the potential for adverse impacts. In response to the Supreme Court decision on December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:
  - Endangerment Finding: That the current and projected concentrations of the GHGs in the atmosphere threaten the public health and welfare of current and future generations, and
  - Cause or Contribute Finding: That the combined emissions of GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

  USEPA has enacted a number of GHG regulations and other environmental regulations that will impact GHG emissions, including: (1) Mandatory GHG Reporting, (2) GHG Tailoring Rule for PSD Permits, (3) GHG Vehicle Emissions Standards, (4) Corporate Average Fuel Economy Standards, and (5) Renewables Fuel Standard. None of these federal regulations are specifically relevant to the Project. However, the vehicles/fuels used for project activities will have reduced GHG emissions due to the implementation of some of these regulations.
- **California Air Resources Board (CARB).** California is one of several states that have set GHG emission targets. Executive Order S-3-05 and Assembly Bill 32 (AB 32), the California Global Warming Solutions

Act of 2006, promulgated targets to achieve reductions in GHG to 1990 GHG levels by the year 2020. This target-setting approach allows progress to be made in addressing climate change, and is a forerunner to setting emission limits. CARB is the agency in charge of promulgating and enforcing most of the statewide climate change/GHG emissions limit regulations. CARB, and other state agencies, have enacted a number of GHG regulations and other environmental regulations that will impact California GHG emissions, including: (1) Mandatory GHG Reporting, (2) Cap and Trade, (3) Advanced Clean Cars Program, (4) Electricity Renewable Portfolio Standard (RPS), and (5) Power Plant Emissions Performance Standard (EPS). None of these State regulations are specifically relevant to the Project. However, the vehicles/fuels used for project activities will have reduced GHG emissions due to the implementation of some of these regulations.

- **Office of the California Attorney General.** The Office of the California Attorney General maintains a website that addresses mitigation for greenhouse gases (OAG, 2014). This website provides links to documents that list potential CEQA mitigations for global climate change impacts (OPR, 2008; CAPCOA, 2009). These documents tend to focus on the discussion of measures that are recommended to be added to planning documents, rather than the identification of measures that would be applicable to specific types of development projects. From these documents, specific mitigation measures that could be relevant to the Project have been identified and listed below in Table C.2-14.
- **City of Palmdale Energy Action Plan.** The City of Palmdale's Energy Action Plan includes a large number of GHG emission reduction goals and measures meant to achieve a citywide GHG emission reduction of 15 percent from 2005 year levels by the year 2020. However, most of these goals and measures do not apply to the Project. The one specific goal that indirectly applies is the municipal and community goal to reduce GHG emissions related to water consumption.

Table C.2-9. Consistency with Applicable Air Quality and Climate Change Plans and Policies

Plan/Policy	Consistency	Explanation
State of California GHG Reduction Strategies		
Vehicle Climate Change Standards	Consistent	These are ARB enforced standards; vehicles that access the Project that are required to comply with the standards would comply with these strategies.
Limit Idling Time for Commercial Vehicles	Consistent	Project vehicles would be required to comply with ARB idling restriction regulations.
Construction and Demolition Waste Reduction	Consistent	The Project's primary waste stream, sand/aggregate, would be stored in existing aggregate mining pits or on a City of Palmdale owned property for later re-use. Lesser waste streams, including waste asphalt or concrete would be recycled. (See Appendix A)
Increase Water Use Efficiency	Consistent	The Project would allow PWD operations to be more efficient by increasing the use of local surface water and reducing the amount of needed imported water.
County of Los Angeles Draft General Plan 2035		
Climate Change Policy AQ 3.5: Encourage maximum amount of energy conservation in new development and municipal operations.	Consistent	The Project would allow PWD operations to be more efficient by increasing the use of local surface water and reducing the amount of needed imported water.
County of Los Angeles Unincorporated Los Angeles County Community Climate Action Plan 2020		
CCAP Measure LUT-9: Encourage idling limits of 3 minutes for heavy-duty construction equipment, as feasible within manufacturer's specifications.	Consistent	This idling restriction is a stated project commitment (See Appendix A).

Table C.2-9. Consistency with Applicable Air Quality and Climate Change Plans and Policies

Plan/Policy	Consistency	Explanation
CCAP Measure LUT-11: Reduce energy consumption and waste generation associated with pavement maintenance and rehabilitation.	Consistent	Pavement will be replaced/resurfaced only as necessary and asphalt waste will be recycled (See Appendix A)
CCAP Measure LUT-12: Utilize electric equipment wherever feasible for construction projects.	Consistent	Measure requires use of electric equipment were feasible. The use of electric equipment is generally not feasible in the remote project site location due to the lack of electrical infrastructure at the project site and the size/energy requirements of the heavy construction equipment needed to complete the Project.
CCAP Measure WAW-2: Promote the use of wastewater and gray water to be used for agricultural, industrial, and irrigation purposes. Manage stormwater, reduce potential treatment, and protect local groundwater supplies.	Consistent	Imported water use and related energy based GHG emissions would be reduced by the increased use in local surface water resources.
CCAP Measure SW-1: For the County's unincorporated areas, adopt a waste diversion goal to comply with all state mandates to divert at least 75% of waste from landfill disposal by 2020.	Consistent	The Project's primary waste stream, sand/aggregate, would be stored in existing aggregate mining pits or on a City of Palmdale owned property for later re-use. Lesser waste streams, including waste asphalt or concrete would be recycled to the extent feasible. (See Appendix A).
City of Palmdale Energy Action Plan		
Municipal and Community Goal 2: Reduce Water Consumption for Energy Conservation	Consistent	The measures specified under these goals do not specifically apply to the Project; however, imported water use and related energy based GHG emissions would be reduced by the increased use in local water resources. Additionally water used for fugitive dust control would be obtained from the local surface water available at the reservoir.

Source: USFS, 2005: OPR, 2008: CAPCOA, 2009: LAC, 2014a: LAC, 2014b; City of Palmdale, 2011.

C.2.3 Issues Identified During Scoping

There were no air quality or climate change issues identified during the public scoping period. See Appendix E (Summary of Scoping Process) for a summary of issues relevant to the entire Project that were raised during the scoping process.

C.2.4 Environmental Consequences

C.2.4.1 Air Quality

Significance Criteria. The following significance criteria for Air Quality were derived from the AVAQMD CEQA Guidelines (AVAQMD, 2011), the Angeles National Forest Strategy (USFS, 2005) and from Federal air quality regulations (40 CFR Part 93 Subpart B). Impacts of the proposed action/project or alternatives would be considered significant and would require mitigation if:

- Criterion AIR1: The Project would be inconsistent with the current approved Air Quality Management Plan.
- Criterion AIR2: The Project would generate emissions of air pollutants that would exceed any AVAQMD regional air quality standard as defined in Table C.2-10.

Table C.2-10. AVAQMD Significance Thresholds

	Daily Emissions (lbs/day)						Annual Emissions (Tons)					
	VOC	CO	NOx	SOx	PM10	PM2.5	VOC	CO	NOx	SOx	PM10	PM2.5
AVAQMD Significance Thresholds	137	548	137	137	82	82	25	100	25	25	15	15

Source: AVAQMD, 2011.

Per direct guidance from MDAQMD staff, where MDAQMD and AVAQMD share staff and have the same significance thresholds and nearly identical CEQA guidance, emissions from very short-term projects that exceed daily MDAQMD emissions thresholds would not be considered significant under the following circumstances or conditions: (MDAQMD, 2014)

- The Project does not create any localized pollutant hot spots (required).
- The Project does not exceed the annual emissions thresholds (required).
- The Project is applying reasonably feasible control measure for the pollutants exceeding the daily emissions thresholds (required depending on project circumstances).
- The Project's construction schedule is altered, in a manner that increases air quality emissions, in order to reduce other project impacts (consideration for review).
- The Project's emissions are included in attainment plans (if true then only this item is needed to identify impacts as less than significant).
  - Criterion AIR3: The Project would expose sensitive receptors to substantial pollutant concentrations.
  - Criterion AIR4: The Project would result in non-compliance with the Federal General Conformity Rule (40 CFR Parts 6, 51, and 93) requirements.
  - Criterion AIR5: The Project would expose a substantial number of people to objectionable odors.
  - Criterion AIR6: The Project would conflict with air quality provisions of the Angeles National Forest Strategy.

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

Emissions Calculations Methodology. The air quality emissions resulting from Project and project action alternative activities were calculated using the most recent available emission factors from CARB for on-road and off-road vehicles/equipment and the most recent fugitive dust emission calculation methodologies from the United States Environmental Protection Agency (USEPA, 2014c). Detailed Project schedules, equipment use, and material transport quantities were used to develop the activity estimates used in the emission calculations. Due to the scope and complexity of this Project, simplified construction project emission calculation programs (such as the California Emissions Estimator Model software CalEEMod) were not used.

As discussed earlier, the emission estimates utilized within this section assumed a 7-year construction scenario for the proposed Project and a 13-year construction scenario for Alternative 1. While construction activities may last longer, these durations represent worst-case daily and total emissions. The detailed construction schedule, equipment use, and vehicle trip assumptions used within the emission calculations are provided in Appendix B (Air Quality Calculations).

C.2.4.2 Climate Change

Significance Criteria. Appendix G of the CEQA Guidelines allows the lead agency discretion in how to address and evaluate significance based on these criteria. According to these Guidelines the following criteria may be considered to establish the significance of GCC emissions (AEP, 2011).

Would the Project:

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

The AVAQMD CEQA Guidelines provide an annual GHG emissions threshold of 100,000 tons per year (AVAQMD, 2001). This guideline also provides for a short-term threshold that is proportional to the annual threshold; however, the annual threshold is more appropriate both for this long-term project and for the evaluation of GHG emissions impacts in general. Construction GHG emissions are included, amortized over the Project's life, in the Project's annual GHG emissions totals.

Considering these guidelines, the following criteria are used in this EIR to determine the significance of Project GCC impacts:

- Criterion GHG1: The Project would produce GHG emissions that exceed the AVAQMD CO2e annual emissions threshold.
- Criterion GHG2: The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Emissions Calculations Methodology. Direct GHG emissions would result from fuel use from proposed construction and operation activities. Indirect emissions could occur from an increase in on-site electricity use during construction or operation or from the increased use of water. However, for this Project there is not assumed to be an incremental increase in on-site electricity consumption from construction and operation activities; and this Project would allow the increased use of local water supplies that would cause a reduction in GHG emissions from water management. Therefore, indirectly the Project would reduce GHG emissions; however, the potential magnitude of this GHG emissions reduction was not estimated.

GHG emissions were calculated based on methodologies provided in The Climate Registry – General Reporting Protocol (TCR, 2013) (TCR Protocol), and emissions factors for the TCR Protocol updated in 2014 (TCR, 2014). The TCR Protocol is the guidance document that TCR members, which includes the State of California, use to prepare annual GHG inventories for the Registry.

The assumptions used to create the air pollutant emissions and vehicle and equipment use were used to create diesel and gasoline fuel use estimates during Project construction and operation. These fuel use estimates along with the TCR GHG emissions factors for diesel and gasoline were used to determine the GHG emissions estimates.

C.2.4.3 Proposed Action/Project

Direct and Indirect Effects Analysis

The Project would include the following separate construction and operation activities:

Construction

- Site preparation, equipment, and material receipt and storage at the lay down area;
- Grade control structure excavation and refilling construction, including temporary screening plant and concrete batch plant;
- Sediment stockpiling and removal (1,165,000 cubic yards total, as much as 172,800 cubic yards/year for seven years, as much as 2,880 cubic yards per day using 16 dump trucks that haul 12 cubic yards/trip);
- Sediment hauling to the storage area in the existing sand and gravel pit area, or the alternative storage site on PWD owned land;
- Sediment storage area sediment pushing;
- Maintenance of unpaved and paved access roads; and
- Cleanup and demobilization.

Operation

- Site preparation, equipment and material receipt and storage at the lay down area;
- Sediment stockpiling and removal (38,000 cubic yards total per year, as much as 1,080 cubic yards per day using 6 dump trucks that haul 12 cubic yards/trip);
- Sediment hauling to the storage area in the existing sand and gravel pit area, or the alternative storage site on PWD owned land;
- Sediment storage area sediment pushing;
- Maintenance of unpaved and paved access roads; and
- Cleanup and demobilization.

The removed sediment would be placed into the storage area and a stabilized surface would be created at the end of each year's construction or operation excavation period. The detailed construction activity assumptions, including the construction equipment use, on-road traffic, and construction schedule are provided in Appendix B (Air Quality Calculations).

Air Quality

The Project would be inconsistent with the current approved Air Quality Management Plan (Criterion AIR1)

Impact AQ-1: Project Construction and Operation would conflict with the approved AVAQMD Air Quality Management Plans

The Project is located in the MDAB under the jurisdiction of the AVAQMD. The Antelope Valley portion of the MDAB is in non-attainment of the federal and State ozone standards and the State PM10 standard. The AVAQMD has developed a 2004 Ozone Attainment Plan (State and federal attainment) and a 2014 update to the Reasonably Available Control Technology State Implementation Plan (RACT SIP) analysis, and has prepared a list of measures to reduce PM emissions to meet State planning requirements.

Ozone

The AVAQMD 2004 Ozone Attainment Plan (AVAQMD, 2004) does not propose any new control measures beyond those in their current rules and regulations. The Project commitments for off-road equipment (See Appendix A) would meet or exceed the requirements of the only potentially project applicable ozone precursor reduction related rule (Rule 1110.2), and the construction contractor would have to ensure that permitted portable equipment also comply with this rule. The 2014 RACT SIP Analysis (AVAQMD, 2014) does not include any actions that are relevant to project emissions sources. Therefore, the Project would be consistent with the Ozone Air Quality Management Plan for Antelope Valley.

PM10

The AVAQMD prepared a list of measures to reduce PM emissions in 2005 (AVAQMD, 2005). Of the new control measures listed, the only applicable measures are fugitive dust control measures that would be integrated into Rule 403 – Fugitive Dust. The construction contractor would be required to comply with all AVAQMD rules and regulations; therefore, the Project would comply with the AVAQMD State PM attainment control measures.

Summary

The Project would have to comply with all rules and regulations applicable at the time of the Project's construction and operation and would implement the air quality project commitments (see Appendix A) that would reduce air pollutant emissions during Project construction and operation. Therefore, the Project would not conflict with the approved AVAQMD Air Quality Management Plans.

CEQA Significance Conclusion

Project construction, operations, and maintenance would be required to comply with AVAQMD rule and regulations. Therefore, the Project would have less than significant impacts in regards to applicable air quality plan conformance (Class III).

The Project would generate emissions of air pollutants that would exceed any AVAQMD regional air pollutant emissions threshold as defined in Table C.2-10. (Criterion AIR2)

Impact AQ-2: The Project's Construction Emissions Would Exceed AVAQMD Significance Criteria

Using vehicle and equipment assumptions developed for the Project, the air pollutant emissions were estimated for the two construction phases of the Project, grade control structure construction and excavation. The grade control structure construction will occur during a 3-month period in the first year of the Project life, and the excavation phase will occur for approximately 2.5 months each year for 7 years of the Project life starting the year after the grade control structure is constructed. As discussed earlier, a 7-year construction scenario for the proposed Project represents worst-case daily and total emissions. Tables C.2-11 and C.2-12 provide the average daily and annual air pollutant emissions estimates for the grade control structure construction.

Table C.2-11. Project Grade Control Structure – Average Daily Construction Emissions (lbs/day)						
	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.64	5.46	3.20	0.01	0.21	0.13
Off-road equipment	9.58	33.64	114.83	0.11	5.42	4.99
Fugitive dust	—	—	—	—	27.71	6.28
Total	10.21	39.10	118.03	0.12	33.34	11.41
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011.

Table C.2-12. Project Grade Control Structure – Average Construction Emissions (tons/yr)						
	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.02	0.20	0.12	0.00	0.01	0.00
Off-road equipment	0.35	1.24	4.25	0.00	0.20	0.18
Fugitive dust	—	—	—	—	1.03	0.23
Total	0.38	1.45	4.37	0.00	1.23	0.42
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Tables C.2-11 and C.2-12 show that the GCS construction emissions are estimated to be below all AVAQMD daily and annual emissions thresholds.

Tables C.2-13 and C.2-14 provide the average daily air pollutant emissions estimates for the excavation phase construction, with Table C.2-13 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-14 assuming that the sediment transport will be to the alternate sediment storage site.

Table C.2-13. Project Excavation Phase – Average Daily Construction Emissions (lbs/day)						
	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	5.82	28.44	40.26	0.13	2.30	1.68
Off-road equipment	12.90	25.26	84.77	7.89	10.76	9.90
Fugitive dust	—	—	—	—	129.26	37.14
Total	18.72	53.70	125.03	8.02	142.32	48.72
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	Yes	No

Source: Appendix B; AVAQMD, 2011

Table C.2-14. Project Excavation Phase Alternate Sediment Storage Site – Average Daily Construction Emissions (lbs/day)						
	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	4.19	22.06	28.13	0.09	1.63	1.17
Off-road equipment	12.90	25.26	84.77	7.89	10.76	9.90
Fugitive dust	—	—	—	—	106.34	22.11
Total	17.09	47.32	112.90	7.98	118.73	33.19
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	Yes	No

Source: Appendix B; AVAQMD, 2011

As these two tables show, the PM10 emissions exceed the AVAQMD daily emissions thresholds. All other air pollutant emissions estimates are below the AVAQMD daily emissions thresholds.

Tables C.2-15 and C.2-16 provide the annual air pollutant emissions estimates for the excavation phase construction, with Table C.2-15 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-16 assuming that the sediment transport will be to the alternate sediment storage site.

Table C.2-15. Project Excavation Phase – Annual Construction Emissions (tons/yr)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.19	0.91	1.29	0.00	0.07	0.05
Off-road equipment	0.41	0.81	2.71	0.25	0.34	0.32
Fugitive dust	—	—	—	—	4.14	1.19
Total	0.60	1.72	4.00	0.26	4.55	1.56
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Table C.2-16. Project Excavation Phase Alternate Sediment Storage Site – Annual Construction Emissions (tons/yr)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.13	0.71	0.90	0.00	0.05	0.04
Off-road equipment	0.41	0.81	2.71	0.25	0.34	0.32
Fugitive dust	—	—	—	—	3.40	0.71
Total	0.55	1.51	3.61	0.26	3.80	1.06
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

As these two tables show, the air pollutant emissions estimates for the excavation phase of construction are well below the AVAQMD annual emissions thresholds.

SPCs Applicable to Impact AQ-2

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

All of the average daily and annual emissions are estimated to be below the AVAQMD emissions thresholds, except for average daily PM10 emissions during the excavation phase of construction.

While the Project's average daily PM10 emissions exceed the AVAQMD threshold during the excavation phase of the Project, per guidance from AQMD staff, emissions from very short-term projects that exceed daily AVAQMD emissions thresholds would not be considered significant under the following circumstances or conditions: (MDAQMD, 2014)

- The Project does not create any localized pollutant hot spots (required).
- The Project does not exceed the annual emissions thresholds (required).
- The Project is applying reasonably feasible control measure for the pollutants exceeding the daily emissions thresholds (required depending on project circumstances).
- The Project's construction schedule is altered, in a manner that increases air quality emissions, in order to reduce other project impacts (consideration for review).
- The Project's emissions are included in attainment plans (if true then only this item is needed to identify impacts as less than significant).

The Project would not create any localized pollutant hotspots that would impact any sensitive receptors (see the discussion below under Impact AQ-4), the Project's excavation phase construction PM10 emissions do not exceed the AVAQMD annual emissions thresholds, and the Project's schedule is altered to reduce impacts on biology (bird breading season) and to recreation that would occur if the reservoir was closed and drained to dead pool level for greater periods of the year. The Project meets the two required considerations noted above, which might be enough for AVAQMD to agree that the Project's emissions are less than significant. However, to ensure that these cumulative emissions impacts are less than significant, feasible mitigation of PM10 emissions will also be implemented during the excavation phase of the Project (please see SPCs AQ-1 through AQ-5 provided in Appendix A).

Therefore, all construction period pollutant emissions impacts are less than significant (Class III).

Impact AQ-3: The Project's Operation Emissions Would Exceed AVAQMD Significance Criteria

Tables C.2-17 and C.2-18 provide the average daily air pollutant emissions estimates for the ongoing annual excavation, with Table C.2-17 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-18 assuming that the sediment transport will be to the alternate sediment storage site.

Table C.2-17. Project Ongoing Annual Sediment Removal – Average Daily Emissions (lbs/day)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	2.34	13.15	15.27	0.05	0.89	0.64
Off-road equipment	8.99	16.18	49.02	5.94	7.65	7.04
Fugitive dust	—	—	—	—	49.05	13.15
Total	11.33	29.34	64.29	5.99	57.60	20.82
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Table C.2-18. Project Ongoing Annual Sediment Removal Alternate Sediment Storage Site – Average Daily Emissions (lbs/day)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	1.75	10.86	10.90	0.04	0.65	0.46
Off-road equipment	8.99	16.18	49.02	5.94	7.65	7.04
Fugitive dust	—	—	—	—	40.32	7.94
Total	10.74	27.04	59.92	5.98	48.62	15.44
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Tables C.2-17 and C.2-18 show that the ongoing annual excavation emissions are estimated to be below all AVAQMD daily emissions thresholds.

Tables C.2-19 and C.2-20 provide the annual air pollutant emissions estimates for the ongoing annual excavation, with Table C.2-19 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-20 assuming that the sediment transport will be to the alternate sediment storage site.

Table C.2-19. Project Ongoing Annual Sediment Removal – Annual Emissions (tons/yr)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.05	0.26	0.31	0.00	0.02	0.01
Off-road equipment	0.18	0.32	0.98	0.12	0.15	0.14
Fugitive dust	—	—	—	—	0.98	0.26
Total	0.23	0.59	1.29	0.12	1.15	0.42
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Table C.2-20. Project Ongoing Annual Sediment Removal Alternate Sediment Storage Site – Annual Emissions (tons/yr)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.03	0.22	0.22	0.00	0.01	0.01
Off-road equipment	0.18	0.32	0.98	0.12	0.15	0.14
Fugitive dust	—	—	—	—	0.81	0.16
Total	0.21	0.54	1.20	0.12	0.97	0.31
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

As these two tables show, the air pollutant emissions estimates for the ongoing annual excavation are well below the AVAQMD annual emissions thresholds.

SPCs Applicable to Impact AQ-3

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

All operation air pollutant emissions impacts are well below AVAQMD emissions thresholds, resulting in a less than significant impact (Class III).

The Project would expose sensitive receptors to substantial pollutant concentrations. (Criterion AIR3)

Impact AQ-4: The Project's Construction or Operations Emissions Would Create Health Risks

The Project's emissions would not include a large amount of toxic air pollutant emissions. The primary toxic air pollutant emitted is diesel particulate matter (DPM) from the Project's trucks and off-road equipment; however, even those emissions would be limited and the on-road DPM emissions would be spread along the primary sediment hauling route. Additionally, the majority of the off-road equipment DPM emissions from the Project and initial construction or maintenance, would occur at Littlerock reservoir, which is located more than a mile from any residences or other sensitive receptors. Due to the lack of schools or other significantly sensitive receptors near active project areas, the distance from residences to the main construction areas, the DPM emissions from on-road vehicles being spread out over several miles, and considering SPCs AQ-1 through AQ-5 (See Appendix A) would reduce diesel particulate matter (DPM) emissions, it is concluded that no adverse impacts to sensitive receptors would occur from toxic air pollutant emissions.

Please also see Section C.6 (Hazards and Public Safety) for a discussion of the potential for the Project to cause Valley Fever related health effects.

SPCs Applicable to Impact AQ-4

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

Toxic air pollutant emissions are located far from sensitive receptors or spread out over a large area and so Project emissions of toxic air pollutants would not create substantial concentrations at sensitive receptor locations. Therefore, the impacts to sensitive receptors would be less than significant (Class III).

The Project would result in non-compliance with the Federal General Conformity Rule (40 CFR Parts 6, 51, and 93) requirements. (Criterion AIR4)

Impact AQ-5: The Project's Construction or Operations Emissions within the Angeles National Forest would exceed Applicable General Conformity Thresholds

The Project would potentially result in adverse impacts if the Project were to cause annual emissions that exceed the General Conformity *de minimis* thresholds. The current general conformity thresholds for the Antelope Valley portion of the MDAB, which is in severe nonattainment of the federal ozone standard, are as follows:

- NOx – 25 tons/year
- VOC – 25 tons/year

As the annual emissions estimates for construction (Tables C.2-12, C.2-15, and C.2-16) and operation (Tables C.2-19 and C.2-20) show the Project's estimated annual NOx and VOC emissions are well below the General Conformity applicability thresholds. A General Conformity analysis is not required for this project.

SPCs Applicable to Impact AQ-5

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

General Conformity would not be triggered; therefore, impacts are less than significant (Class III).

The Project would expose a substantial number of people to objectionable odors. (Criterion AIR5)

Impact AQ-6: The Project's Construction or Operations would create odors

Construction equipment and construction activities may create mildly objectionable odors. Additionally, biological decomposition odors may occur as the result of removing potentially wet sediments from the reservoir. These odors would be temporary, would occur far from populations, and would not affect a substantial number of people.

SPCs Applicable to Impact AQ-6

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

Odor impacts would be less than significant (Class III).

The Project would conflict with air quality provisions of the Angeles National Forest Strategy. (Criterion AIR6)

Impact AQ-7: The Project would conflict with Angeles National Forest Air Quality Strategies

The Angeles National Forest Strategy does not include any air quality strategies that would be adversely impacted by the construction or operation of the Project. The Angeles National Forest air quality strategies are limited to the following:

- AIR 1: Minimize Smoke and Dust
- AIR 2: Forest Air Quality Emissions

The Angeles National Forest strategy AIR 1 is very general and is directed to "Control and reduce fugitive dust to protect human health, improve safety and moderate or eliminate environmental impacts." The only action item of this of this strategy is to "Incorporate visibility requirements into project plans." The Project construction smoke and dust would be reduced through conformance with AVAQMD fugitive dust rules and additionally mitigated to the extent feasible by SPCs AQ-1 through AQ-5 (see Appendix A). Therefore, this ANF air quality strategy would be complied with and no adverse impacts would occur.

The Angeles National Forest air quality strategy AIR 2 relates to providing an air quality inventory for prescribed burns and wildfires and therefore does not directly relate to the Project's construction and operation emissions. The Project's fire safety requirements are addressed separately.

Table C.2-21. Project – Summary of Project Greenhouse Gas Emission Estimates

Emissions Source	Annual CO2e (tons)
Construction Emissions	
On-Road Emissions	3,086
Off-Road Emissions	2,943
Subtotal Emissions	6,029
Amortized Construction Emissions (50-year life)	121
Operation Emissions	
On-Road Emissions	4,593
Off-Road Emissions	3,968
Subtotal Emissions	8,561
Amortized Operation Emissions (50 year-life)	171
Total Annualized Emissions	292
AVAQMD Significance Threshold	100,000
Exceeds Threshold?	NO

Source: Appendix B; AVAQMD, 2011.

SPCs Applicable to Impact AQ-7

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

There would be no conflict with Angeles National Forest Air Quality Strategies; therefore, impacts are less than significant (Class III).

Greenhouse Gases

The Project would produce GHG emissions that exceed the AVAQMD CO2e annual emissions threshold. (Criterion GHG1)

Impact GHG-1: The Project would produce GHG emissions that exceed the AVAQMD CO2e annual emissions threshold.

Using the same vehicle and equipment assumptions used to calculate the Project's air pollutant emissions, the fuel use was estimated for the on-road vehicle traffic and the off-road equipment to determine the direct GHG emissions from the Project. The Project has limited indirect emissions, and as noted previously may cause reductions in indirect emissions, and those secondary emissions were not calculated. Table C.2-21 provides the annualized direct CO2e emissions estimate for the Project.

Table C.2-21 shows the emissions totals for one year of GCS construction, 7 years of excavation (worst-case/maximum construction scenario), and 42 years of operation maintenance excavation. The amortized annual emissions divide these Project-life emissions by the 50-year Project life to obtain the Project's annualized emissions. The amortized Project life annual emissions are orders of magnitude below the AVAQMD significance threshold

Table C.2-22 provides the annualized direct CO2e emissions estimate for the Project assuming exclusive use of the alternate sediment storage site. The Project may use both storage locations, so these two tables represent the range of expected GHG emissions.

The shorter haul distance to the alternate sediment disposal location results is slightly lower GHG emissions than shown for the primary sediment disposal location as shown in Table C.2-21.

Table C.2-22. Project – Alternate Sediment Storage Site – Summary of Project Greenhouse Gas Emission Estimates

Emissions Source	Annual CO2e (tons)
Construction Emissions	
On-Road Emissions	2,236
Off-Road Emissions	2,943
Total Emissions	5,179
Amortized Emissions (50-year life)	104
Operation Emissions	
On-Road Emissions	3,445
Off-Road Emissions	3,968
Subtotal Emissions	7,413
Amortized Operation Emissions (50 year-life)	148
Total Annualized Emissions	252
AVAQMD Significance Threshold	100,000
Exceeds Threshold?	NO

Source: Appendix B; AVAQMD, 2011.

SPCs Applicable to Impact GHG-1

SPC GHG-1 (Recycle Construction Wastes)

CEQA Significance Conclusion

GHG emissions for the Project are estimated to be well below AVAQMD GHG emissions thresholds and are less than significant (Class III).

The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. (Criterion GHG2)

Impact GHG-2: The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

As shown above in Table C.2-9, the Project would not conflict with applicable GHG emission reduction plans, policies, and regulations. The Project would use, re-use, or recycle all project waste streams, including the sediment, to the extent feasible (see Appendix A). Additionally, the Project would create the potential for increased beneficial use of a local potable water source.

SPCs Applicable to Impact GHG-2

SPC GHG-1 (Recycle Construction Wastes)

CEQA Significance Conclusion

The Project would conform to GHG emissions reductions policies, goals, and regulations, so impacts are less than significant (Class III).

C.2.4.4 Alternative 1: Reduced Sediment Removal Intensity Alternative

Direct and Indirect Effects Analysis

Alternative 1, which would differ from the Project only during the construction excavation phase, includes the following construction and operation activities:

Construction

- Sediment stockpiling and removal (1,400,000 cubic yards total, as much as 109,080 cubic yards/year for 13 years, as much as 1,080 cubic yards per day using 6 dump trucks that haul 12 cubic yards/trip)
- All other aspects of the Project construction, such as the grade control structure construction and the mobilization/demobilization/cleanup requirements would be identical or similar in nature to that noted for the Project.

Operation

- Identical to the Project, except that it would start 6 years later due to the longer construction excavation phase.

The detailed construction activity assumptions for Alternative 1, including the construction equipment use, on-road traffic, and construction schedule are provided in Appendix B (Air Quality Calculations).

Air Quality

The Project would be inconsistent with the current approved Air Quality Management Plan (Criterion AIR1)

Impact AQ-1: Project Construction and Operation would conflict with the approved AVAQMD Air Quality Management Plans

Alternative 1 would have the same types of emissions sources and so would be identical to the Project in relation to conformance with air quality management plans as described previously.

Summary

Alternative 1 would have to comply with all rules and regulations applicable at the time of the Project's construction and operation. Therefore, the Alternative 1 would not conflict with the approved AVAQMD Air Quality Management Plans.

CEQA Significance Conclusion

Project construction and operations and maintenance would be required to comply with AVAQMD rule and regulations and would implement the air quality project commitments that would reduce air pollutant emissions during Project construction and operation. Therefore, Alternative 1 would have less than significant impacts in regards to applicable air quality plan conformance (Class III).

The Project would generate emissions of air pollutants that would exceed any AVAQMD regional air pollutant emissions threshold as defined in Table C.2-10. (Criterion AIR2)

Impact AQ-2: The Project's Construction Emissions Would Exceed AVAQMD Significance Criteria

Using vehicle and equipment assumptions developed for the Project and Alternative 1, the air pollutant emissions were estimated for the two construction phases of the Project, grade control structure construction and excavation. The grade control structure construction would be the same for both alternatives and would occur during a 3-month period in the first year of the Project life, and the excavation phase for Alternative 1 would occur, at a much lower daily excavation rate compared to the Project, for approximately 5 months for 13 years of the Project life starting the year after the grade control structure is constructed. As discussed earlier, a 13-year construction scenario for Alternative 1 represents

worst-case daily and total emissions. Tables C.2-11 and C.2-12, provided previously, provide the average daily and annual air pollutant emissions estimates for the grade control structure construction.

Tables C.2-11 and C.2-12 show that the GCS construction emissions are estimated to be below all AVAQMD daily and annual emissions thresholds.

Tables C.2-23 and C.2-24 provide the average daily air pollutant emissions estimates for the excavation phase construction for Alternative 1, with Table C.2-23 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-24 assuming that the sediment transport will be to the alternate sediment storage site.

Table C.2-23. Alternative 1 Excavation Phase – Average Daily Construction Emissions (lbs/day)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	2.45	13.76	16.04	0.05	0.94	0.67
Off-road equipment	8.95	15.85	49.78	6.00	7.73	7.11
Fugitive dust	—	—	—	—	50.65	13.55
Total	11.40	29.61	65.81	6.06	59.32	21.33
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Table C.2-24. Alternative 1 Excavation Phase Alternate Sediment Storage Site – Average Daily Construction Emissions (lbs/day)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	1.82	11.30	11.37	0.04	0.68	0.48
Off-road equipment	8.95	15.85	49.78	6.00	7.73	7.11
Fugitive dust	—	—	—	—	42.30	8.31
Total	10.77	27.15	61.14	6.04	50.71	15.90
AVAQMD Significance Thresholds	137	548	137	137	82	82
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

As these two tables show none of the excavation-phase construction emissions for Alternative 1 exceed the AVAQMD daily emissions thresholds.

Tables C.2-25 and C.2-26 provide the annual air pollutant emissions estimates for the excavation phase construction for Alternative 1, with Table C.2-25 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-26 assuming that the sediment transport will be to the alternate sediment storage site.

Table C.2-25. Alternative 1 Excavation Phase – Annual Construction Emissions (tons/yr)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.13	0.72	0.84	0.00	0.05	0.04
Off-road equipment	0.47	0.83	2.61	0.32	0.41	0.37
Fugitive dust	—	—	—	—	2.66	0.71
Total	0.60	1.55	3.46	0.32	3.11	1.12
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

Table C.2-26. Alternative 1 Excavation Phase Alternate Sediment Storage Site – Annual Construction Emissions (tons/yr)

	VOC	CO	NO_x	SO_x	PM10	PM2.5
On-road equipment	0.10	0.59	0.60	0.00	0.04	0.02
Off-road equipment	0.47	0.83	2.61	0.32	0.41	0.37
Fugitive dust	—	—	—	—	2.22	0.44
Total	0.57	1.43	3.21	0.32	2.66	0.83
AVAQMD Significance Thresholds	25	100	25	25	15	15
Significant?	No	No	No	No	No	No

Source: Appendix B; AVAQMD, 2011

As these two tables show, the air pollutant emissions estimates for the excavation phase of construction for Alternative 1 are well below the AVAQMD annual emissions thresholds.

SPCs Applicable to Impact AQ-2

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

All construction air pollutant emissions impacts for Alternative 1 are well below AVAQMD emissions thresholds and are less than significant (Class III).

Impact AQ-3: The Project's Operation Emissions Would Exceed AVAQMD Significance Criteria

The Project goes into its operation and maintenance phase once the excavation phase is over. The operation and maintenance phase for Alternative 1 and the Project are identical, namely the removal of annual sediment accumulations. Therefore, Tables C.2-17 and C.2-18 also provide the average daily air pollutant emissions estimates for the ongoing annual excavation for Alternative 1, with Table C.2-17 assuming the sediment transport will be to in the primary sediment storage site (existing aggregate pits) and Table C.2-18 assuming that the sediment transport will be to the alternate sediment storage site.

As these two tables show, the air pollutant emissions estimates for the ongoing annual excavation are well below the AVAQMD annual emissions thresholds.

SPCs Applicable to Impact AQ-3

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

All operation air pollutant emissions impacts for Alternative 1 are well below AVAQMD emissions thresholds and are less than significant (Class III).

The Project would expose sensitive receptors to substantial pollutant concentrations. (Criterion AIR3)

Impact AQ-4: The Project's Construction or Operations Emissions Would Create Health Risks

Alternative 1 would have the same types of toxic air emissions from the same types of emissions sources as the Project, although Alternative 1 would have lower maximum daily and annual emissions. The same analysis factors as noted for the Project apply to the Alternative 1. Therefore, due to the lack of schools or other significantly sensitive receptors near active Project areas, the distance from residences to the main construction areas, the DPM emissions from on-road vehicles being spread out over several miles, and considering the Project commitments (See Appendix A) that would reduce diesel particulate matter (DPM) emissions, it is concluded that no adverse impacts to sensitive receptors would occur from Alternative 1's toxic air pollutant emissions.

Please also see Section C.6 (Hazards and Public Safety) for a discussion of the potential for the Project to cause Valley Fever–related health effects.

SPCs Applicable to Impact AQ-4

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

Toxic air pollutant emissions are located far from sensitive receptors or spread out over a large area and so project emissions of toxic air pollutants would not create substantial concentrations at sensitive receptor locations. Therefore, the impacts to sensitive receptors would be less than significant (Class III).

The Project would result in non-compliance with the Federal General Conformity Rule (40 CFR Parts 6, 51, and 93) requirements. (Criterion AIR4)

Impact AQ-5: The Project's Construction or Operations Emissions within the Angeles National Forest would exceed Applicable General Conformity Thresholds

Alternative 1 would potentially result in adverse impacts if the Project were to cause annual emissions that exceed the General Conformity *de minimis* thresholds. The current general conformity thresholds for the Antelope Valley portion of the MDAB, which is in severe nonattainment of the federal ozone standard, are as follows:

- NOx – 25 tons/year
- VOC – 25 tons/year

As the annual emissions estimates for Alternative 1 construction (Tables C.2-12, C.2-23, and C.2-24) and operation (Tables C.2-19 and C.2-20) show Alternative 1's estimated NOx and VOC emissions are well below the General Conformity applicability thresholds. A General Conformity analysis is not required for this Project.

SPCs Applicable to Impact AQ-5

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

General Conformity would not be triggered; therefore impacts are less than significant (Class III).

The Project would expose a substantial number of people to objectionable odors. (Criterion AIR5)

Impact AQ-6: The Project's Construction or Operations would create odors

Alternative 1 construction equipment and construction activities may create mildly objectionable odors. Additionally, biological decomposition odors may occur as the result of removing potentially wet sediments from the reservoir. These odors would be temporary, would occur far from populations, and would not affect a substantial number of people.

SPCs Applicable to Impact AQ-6

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

Odor impacts would be less than significant (Class III).

The Project would conflict with air quality provisions of the Angeles National Forest Strategy. (Criterion AIR6)

Impact AQ-7: The Project would conflict with Angeles National Forest Air Quality Strategies

The Angeles National Forest Strategy does not include any air quality strategies that would be adversely impacted by the construction or operation of Alternative 1. The Angeles National Forest air quality strategies are limited to the following:

- AIR 1: Minimize Smoke and Dust
- AIR 2: Forest Air Quality Emissions

The Angeles National Forest strategy AIR 1 is very general and is directed to "Control and reduce fugitive dust to protect human health, improve safety and moderate or eliminate environmental impacts." The only action item of this of this strategy is to "Incorporate visibility requirements into project plans." The construction smoke and dust from Alternative 1 would be reduced through conformance with AVAQMD fugitive dust rules and additionally mitigated to the extent feasible by the Project commitments (see Appendix A). Therefore, this ANF air quality strategy would be complied with and no adverse impacts would occur.

The Angeles National Forest air quality strategy AIR 2 relates to providing an air quality inventory for prescribed burns and wildfires and therefore does not directly relate to the Alternative 1's construction and operation emissions. Fire safety requirements for Alternative 1 are addressed separately.

SPCs Applicable to Impact AQ-7

SPC AQ-1 (Limit Engine Idling)

SPC AQ-2 (Fugitive Dust Controls)

SPC AQ-3 (Off-Road Engine Specifications)

SPC AQ-4 (On-Road Engine Specifications)

SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

CEQA Significance Conclusion

There would be no conflict with Angeles National Forest Air Quality Strategies; therefore, impacts are less than significant (Class III).

The Project would produce GHG emissions that exceed the AVAQMD CO2e annual emissions threshold. (Criterion GHG1)

Greenhouse Gases

Impact GHG-1: The Project would produce GHG emissions that exceed the AVAQMD CO2e annual emissions threshold.

Table C.2-27 provides the annualized direct CO2e emissions estimate for Alternative 1.

Table C.2-27 shows the emissions totals for one year of GCS construction, 13 years of excavation (worst-case/maximum construction scenario), and 36 years of operation maintenance excavation. The amortized annual emissions divide these project life emissions by the 50-year project life to obtain the Alternative 1 annualized emissions. The amortized project life annual emissions are orders of magnitude below the AVAQMD significance threshold, but are somewhat higher than those for the Project.

Table C.2-27. Alternative 1 – Summary of Project Greenhouse Gas Emission Estimates

Emissions Source	Annual CO2e (tons)
Construction Emissions	
On-Road Emissions	3,969
Off-Road Emissions	3,733
Subtotal Emissions	7,702
Amortized Emissions (50 year-life)	154
Operation Emissions	
On-Road Emissions	3,937
Off-Road Emissions	3,401
Subtotal Emissions	7,338
Amortized Operation Emissions (50 year-life)	147
Total Annualized Emissions	301
AVAQMD Significance Threshold	100,000
Exceeds Threshold?	NO

Source: Appendix B; AVAQMD, 2011.

Table C.2-28 provides the annualized direct CO2e emissions estimate for Alternative 1 assuming exclusive use of the alternate sediment storage site. The Project may use both storage locations, so these two tables represent the range of expected GHG emissions.

The shorter haul distance to the alternate sediment disposal location results is slightly lower GHG emissions than shown for the primary sediment disposal location as shown in Table C.2-27. However, the GHG emissions from Alternative 1 have been estimated to be slightly higher than those for the Project. The higher project-life GHG emissions for Alternative 1 are due to the expected higher efficiencies that can occur for the Project's higher daily volume sediment hauling.

Table C.2-28. Alternative 1 – Alternate Sediment Storage Site – Summary of Project Greenhouse Gas Emission Estimates

Emissions Source	Annual CO2e (tons)
Construction Emissions	
On-Road Emissions	2,972
Off-Road Emissions	3,733
Total Emissions	6,705
Amortized Emissions (50 year-life)	134
Operation Emissions	
On-Road Emissions	2,953
Off-Road Emissions	3,401
Subtotal Emissions	6,354
Amortized Operation Emissions (50 year-life)	127
Total Annualized Emissions	261
AVAQMD Significance Threshold	100,000
Exceeds Threshold?	NO

Source: Appendix B; AVAQMD, 2011.

SPCs Applicable to Impact GHG-1

SPC GHG-1 (Recycle Construction Wastes)

CEQA Significance Conclusion

GHG emissions for Alternative 1 are estimated to be well below AVAQMD GHG emissions thresholds and are less than significant (Class III).

The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. (Criterion GHG2)

Impact GHG-2: The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Alternative 1 is essentially identical to the Project in terms of conformance with GHG emissions reduction plans, policies, and regulations. Therefore, Alternative 1 would not conflict with applicable GHG emissions reduction plans, policies, and regulations.

SPCs Applicable to Impact GHG-2

SPC GHG-1 (Recycle Construction Wastes)

CEQA Significance Conclusion

Alternative 1 would conform to GHG emissions reductions policies, goals, and regulations, so impacts are less than significant (Class III).

C.2.4.5 Alternative 2: No Action/No Project Alternative

Air Quality

Direct and Indirect Effects Analysis

Under the No Action/No Project Alternative, sediment removal activities would not occur and sediment would continue to accumulate upstream of Littlerock Dam at an annual average rate of 38,000 cubic yards per year. Palmdale Water District (PWD) would not undertake any activities to remove sediment. Therefore, no air pollutant emissions would be generated.

At full capacity, sediment accumulated behind the dam would be approximately 7.4 million cubic yards. In the event sediment buildup led to safety issues and required demolition/removal of the Dam, construction activities (and related air pollutant emissions) are expected to be greater than that of the Project or Alternative 1. Demolition of the dam and restoration of the waterway would require the removal of 2.8 million cubic yards of sediment and dam concrete be removed. Such activities would result in a project similar to, but larger than, the Project, with the location(s) that could handle all of the material storage and disposal being uncertain and likely more distant that proposed for the Project or Alternative 1. Additionally, demolition and removal of the concrete dam would require extensive construction. While many activities would occur within the Reservoir and not proximate to sensitive receptors, the hauling and disposal of up to 2.8 million cubic yards of sediment and dam debris would generate air pollutant emissions similar to, but likely greater in quantity, than that of the Project or Alternative 1.

In the event the Reservoir became filled with sediment and the Dam was left, it is likely some sort of downstream flood-control channeling would need to be constructed. Air pollutant emissions from such construction activities would be temporary and are expected to be similar in quantity to that occurring during grade control construction. However, depending on the location of such flood control facilities, the air quality emissions may be emitted proximate to downstream residential receptors.

CEQA Significance Conclusion

Air pollutant emissions generated from the potential eventual dam removal construction activities may exceed AVAQMD emissions thresholds. While such a determination is speculative, the possibility exists. Therefore, air quality impacts related to Impact AQ-2 for the No Action/No Project Alternative are considered significant and unavoidable (Class I). All other air quality impacts would be less than significant (Class III).

Greenhouse Gases

Direct and Indirect Effects Analysis

Under the No Action/No Project Alternative, sediment removal activities would not occur and sediment would continue to accumulate upstream of Littlerock Dam at an annual average rate of 38,000 cubic yards per year. PWD would not undertake any activities to remove sediment. Therefore, no greenhouse gas emissions would be directly generated.

At full capacity, sediment accumulated behind the dam would be approximately 7.4 million cubic yards. In the event sediment buildup led to safety issues and required demolition/removal of the Dam, demolition of the dam and restoration of the waterway would require the removal of 2.8 million cubic yards of sediment and dam concrete be removed. Therefore, construction activities (and related greenhouse gas emissions) are expected to be greater than that of the Project or Alternative 1. Such activities would result

in a project similar to, but larger than, the Project, with the location(s) that could handle all of the material storage and disposal being uncertain and likely more distant that proposed for the Project or Alternative 1. While many activities would occur within the Reservoir and not proximate to sensitive receptors, the hauling and disposal of up to 2.8 million cubic yards of sediment and dam debris would generate greenhouse gas emissions similar to, but likely greater in quantity, than that of the Project or Alternative 1.

In the event the Reservoir became filled with sediment and the Dam was left, it is likely some sort of downstream flood-control channeling would need to be constructed. Greenhouse gas emissions from such construction activities would be temporary and are expected to be similar in quantity to that occurring during grade control construction.

While the greenhouse gas emissions from dam removal activities may not exceed the AVAQMD thresholds, the loss of this water resource would not comply with GHG emissions reductions policies and goals that seek to maximize local water resources and reduce the GHG emissions associated with long distance water importing. It is assumed that construction wastes, including the sediment removed, would be recycled or re-used to the extent feasible.

CEQA Significance Conclusion

The direct greenhouse gas emissions generated from the potential eventual dam removal construction are not expected to exceed AVAQMD emissions thresholds. However, the No Action/No Project Alternative would cause the loss of the local water resource which would not comply with all applicable GHG emissions reduction policies and goals. Therefore, the GHG emissions impacts related to Impacts GHG-1 and GHG-2 for the No Action/No Project Alternative are considered significant and unavoidable (Class I).

C.2.5 Impact Summary

C.2.5.1 Air Quality

The air quality impacts associated with the Project and Alternative 1 would be less than significant. While such a determination is speculative for the No Action/No Project Alternative, the possibility exists that significant and unavoidable air quality impacts may occur from construction from removal of Littlerock Dam if the Reservoir were allowed to fill up with sediment and Dam safety became compromised.

Table C.2-29 summarizes the direct and indirect environmental impacts of the proposed action and the alternatives on air quality. Refer to Appendix A for the air quality project commitments.

Table C.2-29. Summary of Impacts and Mitigation Measures – Air Quality

Impact	Impact Significance				Mitigation Measures/SPC
	Proposed Action	Alt. 1	Alt. 2: No Action	NFS Lands[1, 2]	
AQ-1: Project Construction and Operation would conflict with the approved AVAQMD Air Quality Management Plans	Class III	Class III	Class III	Yes	None
AQ-2: The Project's Construction Emissions Would Exceed AVAQMD Significance Criteria	Class III	Class III	Class I	Yes	SPC AQ-1 (Limit Engine Idling) SPC AQ-2 (Fugitive Dust Controls) SPC AQ-3 (Off-Road Engine Specifications) SPC AQ-4 (On-Road Engine Specifications) SPC AQ-5 (Reduce Off-Road Vehicle Speeds)
AQ-3: The Project's Operation Emissions Would Exceed AVAQMD Significance Criteria	Class III	Class III	Class III	Yes	SPC AQ-1 (Limit Engine Idling) SPC AQ-2 (Fugitive Dust Controls) SPC AQ-3 (Off-Road Engine Specifications) SPC AQ-4 (On-Road Engine Specifications) SPC AQ-5 (Reduce Off-Road Vehicle Speeds)
AQ-4: The Project's Construction or Operations Emissions Would Create Health Risks	Class III	Class III	Class III	Yes	SPC AQ-1 (Limit Engine Idling) SPC AQ-2 (Fugitive Dust Controls) SPC AQ-3 (Off-Road Engine Specifications) SPC AQ-4 (On-Road Engine Specifications) SPC AQ-5 (Reduce Off-Road Vehicle Speeds)
AQ-5: The Project's Construction or Operations Emissions within the Angeles National Forest would exceed Applicable General Conformity Thresholds	Class III	Class III	Class III	Yes	SPC AQ-1 (Limit Engine Idling) SPC AQ-2 (Fugitive Dust Controls) SPC AQ-3 (Off-Road Engine Specifications) SPC AQ-4 (On-Road Engine Specifications) SPC AQ-5 (Reduce Off-Road Vehicle Speeds)
AQ-6: The Project's Construction or Operations would create odors	Class III	Class III	Class III	Yes	SPC AQ-1 (Limit Engine Idling) SPC AQ-2 (Fugitive Dust Controls) SPC AQ-3 (Off-Road Engine Specifications) SPC AQ-4 (On-Road Engine Specifications) SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

Table C.2-29. Summary of Impacts and Mitigation Measures – Air Quality					
	Impact Significance				
Impact	Proposed Action	Alt. 1	Alt. 2: No Action	NFS Lands[1, 2]	Mitigation Measures/SPC
AQ-7: The Project would conflict with Angeles National Forest Air Quality Strategies	Class III	Class III	Class III	Yes	SPC AQ-1 (Limit Engine Idling) SPC AQ-2 (Fugitive Dust Controls) SPC AQ-3 (Off-Road Engine Specifications) SPC AQ-4 (On-Road Engine Specifications) SPC AQ-5 (Reduce Off-Road Vehicle Speeds)

Notes:
1 - Indicates whether this impact is applicable to National Forest System lands.
2 – Determination based on non-biological resource sensitive receptors.

C.2.5.2 Greenhouse Gases

The greenhouse gas emissions impacts associated with the Project and Alternative 1 would be less than significant. While such a determination is speculative for the No Action/No Project Alternative, the possibility exists that significant and unavoidable greenhouse gas impacts may occur from the loss of the water resource, from a GHG emission reduction policy perspective, if the Reservoir were allowed to fill up with sediment and the water resource was lost.

Table C.2-30 summarizes the direct and indirect environmental impacts of the proposed action and the alternatives on greenhouse gases. Refer to Appendix A for the greenhouse gas Project commitments.

Table C.2-30. Summary of Impacts and Mitigation Measures – Greenhouse Gases					
	Impact Significance				
Impact	Proposed Action	Alt. 1	Alt. 2: No Action	NFS Lands[1, 2]	Mitigation Measures/SPC
GHG-1: The Project would produce GHG emissions that exceed the AVAQMD CO2e annual emissions threshold	Class III	Class III	Class I	Yes	SPC GHG-1 (Recycle Construction Wastes)
GHG-2: The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.	Class III	Class III	Class I	Yes	SPC GHG-1 (Recycle Construction Wastes)

Notes:
1 - Indicates whether this impact is applicable to National Forest System lands.
2 – Determination based on non-biological resource sensitive receptors.