Chapter 22
Air Quality and Greenhouse Gases

22.1 Summary Comparison of Proposed Project

The proposed project would not result in new impacts or a substantial increase in the severity of previously identified air quality or greenhouse gas (GHG) impacts. Because the air quality and greenhouse gas emissions effects associated with the proposed project would be similar to those of the approved project, no impact summary figure is provided. This chapter contains the information necessary to make the Final EIR/EIS adequate for the approved project as revised.

22.2 Environmental Setting/Affected Environment

The affected environment for air quality and GHG resources that would be affected by construction of the proposed project would be similar to what is described in Final EIR/EIS Chapter 22, *Air Quality and Greenhouse Gases*, Section 22.1, *Environmental Setting/Affected Environment*. The Final EIR/EIS provides a discussion of regional climate and meteorology, climate change and global warming, pollutants relevant to the study area and impact analyses, ambient air quality concentrations, regional attainment status, and sensitive receptors. The modifications to the approved project would be located entirely within the previously analyzed project area. All information related to affected environment described in the Final EIR/EIS has not changed, except for ambient air quality concentrations and air basin attainment status, which are described further below.

The Final EIR/EIS summarized background ambient air quality concentrations within the plan area from 2011 to 2013, which were the latest three years of data available at the time of the Final EIR/EIS analysis. Since preparation of the Final EIR/EIS, the California Air Resources Board (ARB) has released monitoring data through 2016. Table 22-1 presents updated ambient air quality concentrations from monitoring stations in the Sacramento Valley Air Basin (SVAB), San Joaquin Valley Air Basin (SJVAB), and San Francisco Bay Area Air Basin (SFBAAB) for the last 3 years for which complete data are available (2014–2016). Air quality concentrations are expressed in terms of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Similar to the data reported in the Final EIR/EIS, the monitoring stations have experienced violations of the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for all pollutants except carbon monoxide (CO) and nitrogen dioxide (NO_2).

Table 22-1. Ambient Air Quality Monitoring Data for the Sacramento Valley Air Basin and San Joaquin Valley Air Basin (2014–2016)

	SVAB (T Street; Del Paso Manor for SO_2, Sacramento)			SJVAB (Stockton)			SFBAAB (Bethel Island & Concord)			Yolo County (Davis-UCD Campus for O_3; and Woodland-Gibson Road for PM10/PM2.5)		
Pollutant Standards	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Ozone (O_3)												
Maximum 1-hour concentration (ppm)	0.085	0.092	0.094	0.090	0.094	0.102	0.095	0.088	0.095	0.081	0.081	0.083
Maximum 8-hour concentration (ppm)	0.072	0.076	0.074	0.077	0.078	0.078	0.080	0.073	0.074	0.067	0.071	0.072
Number of days standard exceeded[a]												
CAAQS 1-hour (>0.09 ppm)	0	0	0	0	0	2	1	0	0	0	0	0
CAAQS 8-hour (>0.070 ppm)	3	4	3	4	2	2	2	2	2	0	1	1
NAAQS 8-hour (>0.070 ppm)	3	4	3	4	2	2	2	2	2	0	1	1
Carbon Monoxide (CO)												
Maximum 8-hour concentration (ppm)	2.1	–	–	2.1	1.5	1.3	1.1	1.3	1.0	–	–	–
Maximum 1-hour concentration (ppm)	2.5	–	–	2.8	2.3	1.7	1.4	1.4	2.0	–	–	–
Number of days standard exceeded[a]												
NAAQS 8-hour (≥9 ppm)	0	0	0	0	0	0	0	0	0	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0	0	0	0	0	0	0	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0	0	0	0	0	0	0	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide (NO_2)												
State[b] maximum 1-hour concentration (ppm)	0.065	0.055	0.055	0.067	0.058	0.064	0.048	0.033	0.034	–	–	–
National[c] 98 percentile of the 1-hour max daily concentration (ppm)	0.055	0.046	0.044	0.054	0.048	0.045	0.038	0.031	0.029	–	–	–
Annual average concentration (ppm)	0.011	0.011	0.010	0.013	0.012	0.012	0.008	0.007	0.006	–	–	–
Number of days exceeded[a] 1-hour standard												
CAAQS 1-hour (0.18 ppm)	0	0	0	0	0	0	0	0	0	0	0	0
NAAQS 1-hour (0.10 ppm)	0	0	0	0	0	0	0	0	0	0	0	0
Particulate Matter (PM10)[d]												
National[c] second-highest 24-hour concentration (μg/m^3)	83.5	56.2	46.4	67.8	51.8	54.1	31.4	30.4	25.5	37.5	56.7	53.5
State[b] maximum 24-hour concentration (μg/m^3)	106.4	59.1	51.4	94.0	55.3	66.5	61.3	33.0	26.0	47.5	69.4	68.7
State[b] annual average concentration (μg/m^3)[e]	–	–	19.6	24.5	28.0	26.5	16.6	–	–	17.4	21.8	19.7

	SVAB (T Street; Del Paso Manor for SO_2, Sacramento)			SJVAB (Stockton)			SFBAAB (Bethel Island & Concord)			Yolo County (Davis-UCD Campus for O_3; and Woodland-Gibson Road for PM10/PM2.5)		
Pollutant Standards	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Number of days standard exceeded[a]												
NAAQS 24-hour (>150 µg/m³)[f]	0	0	0	0	0	0	0	0	0	0	0	0
CAAQS 24-hour (>50 µg/m³)[f]	4	6	1	3	4	5	1	0	0	0	2	2
Particulate Matter (PM2.5)[d]												
National[c] 98th percentile of the 24-hour concentration (µg/m³)	24.1	29.6	23.7	44.5	39.1	32.4	20.5	28.0	16.2	13.2	20.8	13.3
State[b] maximum 24-hour concentration (µg/m³)	33.2	42.1	39.8	56.8	58.8	43.7	30.6	31.0	20.7	14.6	29.4	16.4
National[c] annual average concentration (µg/m³)	8.0	9.5	7.6	12.1	12.6	11.7	6.7	8.8	6.1	5.9	7.5	6.3
State[b] annual average concentration (µg/m³)[e]	8.1	9.6	7.7	12.3	12.3	–	6.7	–	–	–	7.6	6.4
Number of days standard exceeded[a]												
NAAQS 24-hour (>35 µg/m³)[f]	0	1	1	16	12	4	0	0	0	0	0	0
Sulfur Dioxide (SO_2)												
99th percentile of the 1-hour concentration (ppm)	–	–	–	–	–	–	0.009	0.006	0.004	–	–	–
Highest 24-hour concentration (ppm)	–	–	–	–	–	–	0.004	0.003	0.002	–	–	–
Number of days standard exceeded[a]												
NAAQS 1-hour (> 0.075 ppm) or CAAQS 1-hour (> 0.250 ppm)	–	–	–	–	–	–	0	0	0	–	–	–
CAAQS 24-hour (>0.140 ppm)	–	–	–	–	–	–	0	0	0	–	–	–

Sources: California Air Resources Board 2018; U.S. Environmental Protection Agency 2018.

ppm = parts per million.
NAAQS = National Ambient Air Quality Standards.
CAAQS = California Ambient Air Quality Standards.
µg/m³ = micrograms per cubic meter.
mg/m³ = milligrams per cubic meter.
> = greater than.
NA = not applicable.

[a] An exceedance is not necessarily a violation.

[b] State statistics are based on local conditions data. In addition, State statistics are based on California approved samplers.

[c] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[d] Measurements usually are collected every 6 days.

[e] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[f] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

1

The Final EIR/EIS identified a portion of the project area as "maintenance"[1] with respect to the CO NAAQS. The maintenance designation for these areas applies for 20 years after the effective date of EPA's approval of the first 10-year maintenance plan (i.e., the maintenance plan expired on June 1, 2018). Consequently, all areas of the project are classified as "attainment" for the CO NAAQS and are no longer subject to the maintenance plan or CO general conformity requirements.

22.3 Additional Regulatory Information

This section summarizes new, additional, or updated regulatory information that has been produced since preparation of the Final EIR/EIS and that is relevant to the proposed project. Regulations described in Final EIR/EIS Chapter 22, *Air Quality and Greenhouse Gases*, Section 22.2, *Regulatory Setting*, that have not changed since preparation of the Final EIR/EIS are incorporated by reference and are not repeated in this section. Consequently, this section only includes new relevant regulatory information since preparation of the Final EIR/EIS.

22.3.1 Federal

As discussed in the Final EIR/EIS, the White House Council on Environmental Quality (CEQ) released draft guidance regarding the consideration of GHG emissions in NEPA documents for federal actions on February 18, 2010. The CEQ issued revised draft guidance in December 2014 and final guidance in August 2016 (White House Council on Environmental Quality 2016).[2] The 2016 guidance:

- Encourages agencies to draw from their experience and expertise to determine the appropriate level (broad, programmatic, or project- or site-specific) and type (quantitative or qualitative) of analysis required to comply with NEPA.
- Discusses methods to appropriately analyze reasonably foreseeable direct, indirect, and cumulative GHG emissions and climate effects.
- Recommends that agencies quantify a proposed action's projected direct and indirect GHG emissions, taking into account available data and GHG quantification tools that are suitable for the proposed agency action.
- Recommends that agencies use projected GHG emissions (to include, where applicable, carbon sequestration implications associated with the proposed agency action) as a proxy for assessing potential climate change effects when preparing a NEPA analysis for a proposed agency action.
- Counsels agencies to use the information developed during the NEPA review to consider alternatives that are more resilient to the effects of a changing climate.

[1] A "maintenance" designation is assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.

[2] On March 28, 2017, President Trump signed an executive order directing the CEQ to rescind the final GHG guidance. However, nullifying the guidance does not take away an agency's legal obligation to review GHG emissions and climate change impacts under NEPA.

22.3.2 State

The state legislature has approved two senate bills (SB) since preparation of the Final EIR/EIS that are relevant to the analysis of GHG emissions generated by the proposed project—SB 350 and SB 32. SB 350 requires the following by 2030: (1) a renewables portfolio standard of 50% and (2) a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of the California Public Utilities Commission (CPUC) and California Energy Commission (CEC).

SB 32 requires the ARB ensure that statewide GHG emissions are reduced to at least 40 percent below 1990 levels by 2030. The companion bill, Assembly Bill (AB) 197, creates requirements to form a Joint Legislative Committee on Climate Change Policies, requires ARB to prioritize direct emission reductions and consider social costs when adopting regulations to reduce GHG emissions beyond the 2020 statewide limit, requires ARB to prepare reports on sources of GHGs and other pollutants, establishes 6-year terms for voting members of ARB, and adds two legislators as non-voting members of ARB. In November 2017, ARB adopted the *2017 Climate Change Scoping Plan Update*, which outlines policies and actions to meet SB 32 reduction target.

22.3.3 Regional and Local

The proposed project falls under the jurisdiction of three air districts—Sacramento Metropolitan Air Quality Management District (SMAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and the Bay Area Air Quality Management District (BAAQMD). Although no physical features are located in Yolo-Solano Air Quality Management District (YSAQMD), material hauling would occur in the air district, and this analysis therefore considers relevant regulations of the YSAQMD.

All air districts except YSAQMD have adopted updated CEQA guidelines since preparation of the Final EIR/EIS. The updated CEQA guidelines include new advisory thresholds and/or revised guidance to assist CEQA lead agencies in evaluating project-level air quality and GHG impacts. Air district thresholds and analysis guidance are discussed further in Section 22.4.2, *Determination of Effects*.

All four air districts develop air quality plans to improve air quality, improve public health, and protect the climate. Since preparation of the Final EIR/EIS, SJVAPCD has adopted the *2016 Moderate Area Plan for the 2012 PM2.5 Standard, 2015 Plan for the 1997 PM2.5 Standard*, and *2016 Plan for the 2008 8-Hour Ozone Standard*. These plans address federal mandates for nonattainment areas with respect to the NAAQS. The BAAQMD updated its Clean Air Plan with release of the *2017 Clean Air Plan: Spare the Air, Cool the Climate*. The 2017 plan includes control measures designed to reduce criteria pollutants and GHG emissions with the SFBAAB. SMAQMD and YSAQMD have adopted the *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan*, which describes how the Sacramento Federal Nonattainment Area (SFNA)[3] will meet the ozone NAAQS. Counties in the SFNA have also adopted the *Northern Sacramento Valley Planning Area 2015 Triennial Air Quality Attainment Plan*.

[3] The SFNA includes all of Sacramento and Yolo counties and portions of Placer, El Dorado, Solano, and Sutter counties. This area is designated a nonattainment area for the federal 8-hour ozone standard.

22.4 Environmental Consequences

This section describes the potential effects of the modifications to the approved project on air quality and GHGs within the plan area. Potential direct and reasonably foreseeable indirect effects on air quality and GHG resources that would result from construction of the proposed project are assessed. No additional discussion of operational effects is presented for the proposed project because the proposed project and approved project operations would be identical. Please refer to Chapter 22, *Air Quality and Greenhouse Gases*, of the Final EIR/EIS for those operational-based air quality analyses. Similarly, no additional discussion of impacts associated with the Environmental Commitments is presented because restoration acreages under the proposed project and approved project would be approximately the same and construction-related air quality effects would not change.

22.4.1 Methods for Analysis

The effects of the proposed project on air quality and GHG emissions were assessed using the same general methods and models as described in the Final EIR/EIS. The analysis focuses on the following three types of air pollutants that are of greatest concern for the project:

- **Criteria pollutants** – Pollutants for which the EPA and CARB have set ambient air quality standards or that are chemical precursors to compounds for which ambient standards have been set. The criteria pollutants associated with the proposed project are ozone, particulate matter (PM) (PM10 is PM smaller than or equal to 10 microns in diameter and PM2.5 is PM smaller than or equal than 2.5 microns in diameter), CO, NO_2, and sulfur dioxide (SO_2).
- **Toxic air containments (TAC)** – The TACs of concern for construction of the proposed project are diesel particulate matter (DPM) and asbestos. These pollutants are known or suspected to cause cancer or other serious health and environmental effects.
- **GHGs** – GHGs are gaseous compounds that limit the transmission of Earth's radiated heat out to space. GHGs include ozone, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (e.g., chlorofluorocarbons, hydrofluorocarbons [HFC], and sulfur hexafluoride [SF_6]). The GHGs of concern for construction of the proposed project are CO_2, CH_4, N_2O, HFC-134a, and SF_6.

Under the proposed project, only the new Byron Tract Forebay and conveyance would affect construction activity (i.e., required equipment, operating hours) and resulting emissions. Assuming no changes to any modeling assumptions or methods from the Final EIR/EIS, the incremental change in emissions associated with the proposed project would therefore be limited to the Byron Tract Forebay. However, since other features of the project (e.g., tunnel reaches) would be constructed concurrently with the Byron Tract Forebay, the impact determinations are based on emissions across the entire conveyance facility and consider emissions generated by elements previously evaluated in the Final EIR/EIS that have not changed because of the footprint revision. This approach to do a comprehensive analysis of the entire project and not just an analysis of the changes under the proposed project ensures that total emissions and air quality impacts associated with the complete project are accurately assessed in accordance with air district guidance and thresholds. The approach also ensures the air quality analysis is consistent with current models and guidance, as recommended by the local air districts and CARB, and enables total emissions to be evaluated consistent with refined engineering assumptions based on the current construction schedule and level of available design.

A summary of analysis methods is provided below. Appendix 22A, *Air Quality Analysis Methodology*, and Appendix 22B, Air Quality Assumptions, provide additional detail on the analysis, including modeling assumptions and outputs. Refer also to Chapter 22, *Air Quality and Greenhouse Gases*, of the Final EIR/EIS for additional information.

22.4.1.1 Mass Emissions Modeling

Consistent with the Final EIR/EIS, analysts estimated combustion exhaust, fugitive dust (PM10 and PM2.5), and fugitive off-gassing (ROG) based on project-specific construction data (e.g., schedule, equipment, truck volumes) provided by the project engineer (Gillespie pers. comm.) and a combination of emission factors and methodologies from CalEEMod, version 2016.3.2; the CARB's EMFAC2017 model[4]; the EPA's AP-42 Compilation of Air Pollutant Emission Factors, and several other industry accepted tools. Daily and annual criteria pollutant and GHG emissions were quantified based on concurrent construction activity. Emissions estimates for activities that span more than one air district were apportioned based on the location of construction activity. The construction impact analysis and emissions modeling accounts for emissions benefits achieved by the Construction Equipment Exhaust Reduction Plan and Fugitive Dust Control Plan, as described in Appendix 3B, *Environmental Commitments, AMMs, and CMs*.

22.4.1.2 Health Risk Analysis

Consistent with the Final EIR/EIS, a health risk assessment (HRA) was conducted to assess the potential impacts associated with public exposure to DPM[5] and localized PM2.5 exhaust. The HRA was conducted using the guidelines provided by the Office of Environmental Health Hazard Assessment (OEHHA) (2015), California Air Pollution Control Officers Association (2009), and local air districts (San Joaquin Valley Air Pollution Control District 2015; Sacramento Metropolitan Air Quality Management District 2017; Yolo-Solano Air Quality Management District 2007; Bay Area Air Quality Management District 2012, 2017; Kirk pers. comm.). The EPA's AERMOD dispersion model was used to quantify annual average PM concentrations at nearby receptor locations for each feature. Three representative meteorological datasets, which broadly cover the different meteorological conditions found along the project alignment, were used in the analysis. Eight types of construction work areas were assumed to characterize construction activities and emissions. Cancer and noncancer health impacts to the surrounding community were calculated based on the results of the dispersion modeling and OEHHA's (2015) guidance on risk calculations.

[4] EPA approval of EMFAC2017 is forthcoming and expected prior to the record of decision for the proposed project.

[5] While DPM is a complex mixture of gases and fine particles that includes more than 40 substances listed by the EPA and the ARB as hazardous air pollutants, OEHHA guidance (2015) indicates that the cancer potency factor developed to evaluate cancer risks was developed based on total (gas and PM) diesel exhaust.

22.4.1.3 Criteria Pollutant Dispersion Modeling

Analysts conducted a quantitative ambient air quality analysis (AAQA) to assess the potential for construction-generated criteria pollutants to cause new or contribute to existing violations of the NAAQS and CAAQS. The AAQA considers both long-term (annual) emissions and short-term (less than 24 hours) impacts of all criteria pollutants, as applicable based on the established air quality standard. Analysts modeled offsite concentrations of pollutants using the mass emissions modeling results and the AERMOD dispersion model. A representative maximum emission scenario for short-term impacts was developed for major construction features based on maximum activity levels that could take place concurrently. All major design components of the project were quantitatively analyzed. The combined effect of emissions from geographically proximate construction was also assessed.

22.4.1.4 Asbestos, Valley Fever, and Odors

The potential for receptor exposure to asbestos, valley fever, and odors was assessed qualitatively using the same methods as indicated in the Final EIR/EIS.

22.4.2 Determination of Effects

22.4.2.1 Air Quality Resources

Adverse air quality effects under NEPA and significant impacts under CEQA were evaluated using the same criteria as described in the Final EIR/EIS. Table 22-2 identifies air district CEQA guideline thresholds used to evaluate the significance of the project's mass emissions. Both SMAQMD and SJVAPCD have adopted new thresholds since the Final EIR/EIS, which are evaluated in this supplemental analysis. The thresholds for YSAQMD and BAAQMD have not changed since the Final EIR/EIS and are provided for informational purposes.

Table 22-2. SMAQMD, YSAQMD, SJVAPCD, and BAAQMD Mass Emission Thresholds

Analysis	SMAQMD	YSAQMD	SJVAPCD[a]	BAAQMD
Construction	NO_X: 85 lbs/day PM10: 80 lbs/day and 14.6 tons/year[b] PM2.5: 82 lbs/day and 15 tons/year[b]	ROG: 10 tons/year NO_X: 10 tons/year PM10: 80 lbs/day	ROG: 10 tons/year NO_X: 10 tons/year PM10: 15 tons/year PM2.5: 15 tons/year CO: 100 tons/year SO_X: 27 tons/year	ROG: 54 lbs/day NO_X: 54 lbs/day PM10: 82 lbs/day (exhaust only) PM2.5: 54 lbs/day (exhaust only)

Sources: Sacramento Metropolitan Air Quality Management District 2017; Yolo-Solano Air Quality Management District 2007; San Joaquin Valley Air Pollution Control District 2015; Bay Area Air Quality Management District 2017.

BAAQMD = Bay Area Air Quality Management District.
SMAQMD = Sacramento Metropolitan Air Quality Management District.
SJVAPCD = San Joaquin Valley Air Pollution Control District.
YSAQMD = Yolo-Solano Air Quality Management District.
ROG = reactive organic gases.
lbs = pounds.
NO_X = nitrogen oxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
CO = carbon monoxide.
SO_X = sulfur oxide.

[a] SJVAPCD has also established a 100-pound-per-day threshold is a screening-level threshold to help determine whether increased emissions from a proposed project will cause or contribute to a violation of CAAQS or NAAQS. Projects with emissions below the threshold will not be in violation of CAAQS or NAAQS. Projects with emissions above the threshold would require an AAQA to confirm this conclusion (San Joaquin Valley Air Pollution Control District 2015).

[b] Threshold applicable with implementation of all feasible dust control best management practices (BMPs).

Construction activities would result in a significant localized air quality effect if pollutant concentrations exceed the ambient air quality standards or contribute substantially to an existing or projected violation. In areas where background concentrations do not currently exceed the NAAQS or CAAQS, the ambient air quality standard for each respective pollutant is used as the threshold. The increase in pollutant concentration associated with project emissions is added to the background concentration to estimate the total ambient air pollutant concentration for comparison with the threshold. In areas where background concentrations already exceed the NAAQS or CAAQS, a substantial contribution to the existing violations is defined based on the applicable significant impact level (SIL) established by the EPA.

Table 22-3 summarizes the ambient air quality thresholds used in the analysis.

Table 22-3. Localized Ambient Air Quality Thresholds (μg/m³)

District	CO	NO_2	SO_2	PM10	PM2.5
SMAQMD/ YSAQMD	1-hr CAAQS: 23,000	1-hour CAAQS: 339	1-hr CAAQS: 655	24-hr CAAQS SIL: 10.4	24-hr NAAQS: 35
	8-hr CAAQS: 10,000	1-hour NAAQS: 188	24-hr CAAQS: 105	24-hr NAAQS: 150	Annual CAAQS: 12
	1-hr NAAQS: 40,000	Annual CAAQS: 57	1-hr NAAQS: 196	Annual CAAQS SIL: 2.08	Annual NAAQS: 12
SJVAPCD	8-hr NAAQS: 10,000	Annual NAAQS: 100		24-hr CAAQS SIL: 10.4	24-hr NAAQS SIL: 1.2
				24-hr NAAQS: 150	Annual CAAQS and NAAQS SIL: 0.20
				Annual CAAQS SIL: 2.08	
BAAQMD				24-hr CAAQS SIL: 10.4	24-hr NAAQS: 35
				24-hr NAAQS: 150	Annual CAAQS: 12
				Annual CAAQS: 20	Annual NAAQS: 12

Sources: National ambient air quality standards

BAAQMD = Bay Area Air Quality Management District.
SMAQMD = Sacramento Metropolitan Air Quality Management District.
SJVAPCD = San Joaquin Valley Air Pollution Control District.
YSAQMD = Yolo-Solano Air Quality Management District.
μg/m³ = micrograms per cubic meter.
CO = carbon monoxide.
NO_2 = nitrogen dioxide.
SO_2 = sulfur dioxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
CAAQS = California Ambient Air Quality Standards.
NAAQS = National Ambient Air Quality Standards.
SIL = Significant impact level.

The approach used to evaluate whether proposed project construction would result in significant cancer or non-cancer risks is the same as described in the Final EIR/EIS, with the exception of the cancer risk threshold in SJVAPCD, which is now 20 per 1 million (San Joaquin Valley Air Pollution Control District 2015).

The approach used to evaluate whether project construction would result in receptor exposure to significant valley fever, asbestos, and odor impacts is the same as described in the Final EIR/EIS. Likewise, the federal *de minimis* thresholds for ozone, PM10, PM2.5, and SO_2 that are used for the general conformity determination are the same as reported in the Final EIR/EIS.

22.4.2.2 Greenhouse Gas Resources

Adverse GHG effects under NEPA and significant impacts under CEQA were evaluated using the same criteria and threshold (net zero construction emissions) as described in the Final EIR/EIS.

22.4.3 Effects and Mitigation Approaches

Final EIR/EIS Chapter 22, *Air Quality and Greenhouse Gases*, Section 22.3.4, *Effects and Mitigation—Alternatives 4A, 2D, and 5A*, evaluates 32 air quality effects based on the analysis conducted at the time. The scope of the construction air quality analysis has been expanded based on new state and local guidance, as well as to reflect the current state-of-practice (e.g., SJVAPCD's AAQA trigger and recommendation for localized dispersion modeling). The impact statements analyzed in this Supplemental EIR/EIS therefore differ slightly from those in Final EIR/EIS. The revised impact statements are required to fully address the additional air quality analyses. Modifications to the impact statements have also been made to consolidate analyses and improve readability and presentation. Appendix 22B, *Air Quality Assumptions*, compares the impact statements in this Draft Supplemental EIR/EIS with those in the Final EIR/EIS.

22.4.3.1 No Action Alternative

Under the No Action Alternative, the new Byron Tract Forebay, RTM storage and other footprint changes described for the proposed project would not occur. For the purposes of this Supplemental EIR/EIS, the No Action Alternative, against which this proposed project is compared, is consistent with the No Action Alternative Early Long-Term in the Final EIR/EIS. No differing effects on air quality would occur along the proposed project alignment from what was previously described in the No Action Alternative Early Long-Term in the Final EIR/EIS if the No Action Alternative were to occur.

22.4.3.2 Proposed Project

Air Quality Resources

Construction of the proposed project would require the use of electricity, which would be supplied by the California electrical grid. Power plants located throughout the state supply the grid with power, which will be distributed to the study area to meet project demand. Power supplied by statewide power plants will generate criteria pollutants. Because these power plants are located throughout the state, criteria pollutant emissions associated with proposed project electricity demand cannot be ascribed to a specific air basin or air district within the study area. Comparing emissions with thresholds shown in Table 22-2, which are established to manage emissions sources under the jurisdiction of individual air districts, would therefore be inappropriate. Criteria pollutant emissions from electricity consumption, which are summarized in Table 22-4, are therefore provided for informational purposes only and are not included in the impact conclusions.

Table 22-4. Criteria Pollutant Emissions from Electricity Consumption during Construction of the Proposed Project (tons/year)[a]

Condition	ROG	NO_X	CO	PM10	PM2.5	SO_2
Construction (average annual)	1	8	11	2	1	2

Source: CA-GREET.
ROG = reactive organic gases.
NO_X = nitrogen oxide.
CO = carbon monoxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
SO_2 = sulfur dioxide.

[a] Power plants located throughout the state supply the grid with power, which will be distributed to the study area to meet project demand. Power supplied by statewide power plants will generate criteria pollutants. Because these power plants are located throughout the state, criteria pollutant emissions associated with the proposed project electricity demand cannot be ascribed to a specific air basin or air district within the study area.

Impact AQ-1: Generation of Criteria Pollutant Emissions in Excess of SMAQMD Thresholds and Potential Temporary Conflicts with Applicable Air Quality Plans as a Result of Constructing the Water Conveyance Facilities

The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or types of activities required to construct the project within the SMAQMD. However, the intensity and amount of anticipated construction emissions has changed as a result of schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total construction emissions generated in the SMAQMD were quantified and compared to SMAQMD thresholds, which have also been revised since the Final EIR/EIS.

Construction-related emissions would be generated by equipment and vehicles, as well as paving, demolition, earthworks, and concrete batching. Emissions vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content. Table 22-5 summarizes criteria pollutant emissions that would be generated in the SMAQMD in pounds per day and tons per year. The emissions estimate includes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Exceedances of air district thresholds are shown in <u>underlined</u> text.

Table 22-5. Criteria Pollutant Emissions from Construction of the Proposed Project in the Sacramento Metropolitan Air Quality Management District (pounds/day and tons/year)

	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
				PM10			PM2.5							PM10			PM2.5			
Year	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2
2018	1	8	19	<1	3	3	<1	<1	<1	<1	<1	1	1	<1	<1	<1	<1	<1	<1	<1
2019	3	19	82	<1	12	12	<1	2	2	<1	<1	2	7	<1	1	1	<1	<1	<1	<1
2020	3	19	82	<1	12	12	<1	2	2	<1	<1	2	10	<1	1	2	<1	<1	<1	<1
2021	7	227	126	1	92	88	1	20	20	1	1	13	11	<1	7	7	<1	1	1	<1
2022	19	336	474	3	186	178	3	34	35	2	2	26	35	<1	13	14	<1	2	3	<1
2023	36	399	874	4	221	214	4	38	41	3	3	30	68	<1	18	18	<1	3	3	<1
2024	59	607	1,655	7	354	350	7	57	61	5	5	48	138	1	29	30	1	5	5	<1
2025	87	606	1,953	12	321	317	12	48	54	5	8	59	210	1	31	32	1	5	6	<1
2026	83	492	1,894	11	225	224	11	34	41	4	7	40	184	1	21	22	1	3	4	<1
2027	74	511	2,049	8	180	182	8	31	38	4	8	60	232	1	23	24	1	4	5	<1
2028	61	432	1,645	7	144	145	7	24	30	3	6	31	162	1	14	15	1	2	3	<1
2029	57	250	1,486	5	125	124	5	19	22	2	5	20	122	<1	10	11	<1	2	2	<1
2030	19	134	519	2	101	93	2	17	17	1	1	12	43	<1	10	10	<1	2	2	<1
2031	5	46	121	<1	52	47	<1	9	9	<1	<1	3	8	<1	4	4	<1	1	1	<1
Threshold	–	*85*	–	–	–	*80*[a]	–	–	*82*[a]	–	–	–	–	–	–	*14.6*[a]	–	–	*15.0*[a]	–

Sources: Gillespie pers. comm.; Valles pers. comm.; U.S. Environmental Protection Agency 2006a, 2006b, 2006c, 2011; California Air Resources Board 2010; EMFAC2017; CalEEMod (version 2016.3.2).

ROG = reactive organic gases.
NO_X = nitrogen oxide.
CO = carbon monoxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
SO_2 = sulfur dioxide.

[a] Threshold applicable with implementation of all feasible dust control BMPs.

NEPA Effects: Even with incorporation of environmental commitments, the proposed project would result in a temporary impact on regional air quality during construction because increased NO_X and PM10 emissions would exceed SMAQMD's mass emission thresholds. SMAQMD's thresholds were established to help prevent emissions from new projects in the SVAB from contributing to regional violations of the ambient air quality standards. Because construction emissions of NO_X and PM10 would exceed SMAQMD's thresholds, construction of the proposed project may conflict with the *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan* and *PM10 Implementation/Maintenance Plan and Redesignation Request*. Moreover, because NO_X is a precursor to ozone and PM, exceedances of SMAQMD's NO_X threshold could impact both regional ozone and PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and CAAQS.

Compared with the approved project, construction of the proposed project would generate fewer total annual and maximum daily emissions of all criteria pollutants except CO. The emissions changes are due to a combination of factors, including schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models.

As described in the Final EIR/EIS, DWR has identified several environmental commitments to reduce construction-related criteria pollutants in the SMAQMD (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*). These commitments include performance standards for newer and cleaner offroad equipment, marine vessels, locomotives, and haul trucks. Fugitive dust emissions would also be minimized through implementation of best management practices, such as watering unpaved surfaces, limiting vehicle travel speed, and suspending dust-generating activities during high wind events. These environmental commitments would reduce construction-related emissions; however, as shown in Table 22-5, NO_X and PM10 emissions would still exceed SMAQMD's thresholds. Therefore, this effect would be adverse. Mitigation Measures AQ-1a and AQ-1b have been adopted to reduce NO_X and PM10 emissions, and would thus address regional effects related to secondary ozone and PM formation. These measures, as written in the Final EIR/EIS, remain adequate without change for dealing with the impacts of the proposed project.

SMAQMD does not have mass emission thresholds for ROG, CO, or SO_2; impacts from these pollutants are evaluated based on the air dispersion modeling of ambient air concentrations. Impact AQ-6 discusses the conclusions of the modeled ambient air concentrations.

CEQA Conclusion: NO_X and PM10 emissions generated during construction of the proposed project would exceed SMAQMD CEQA thresholds.[6] Because NO_X is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_X threshold could affect both regional ozone and PM formation and worsen existing air quality conditions. SMAQMD's NO_X and PM10 thresholds have been adopted to help ensure projects do not hinder attainment of the CAAQS or NAAQS. Because construction emissions of NO_X and PM10 would exceed these thresholds, construction of the proposed project may conflict with the *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan* and *PM10 Implementation/Maintenance Plan and Redesignation Request*, which were adopted to achieve regional attainment with the ambient air quality standards. This would be a significant impact. Mitigation Measures AQ-1a and AQ-1b have been adopted to offset NO_X and PM10 emissions below SMAQMD CEQA thresholds.

[6] SMAQMD's PM10 threshold was not adopted at the time of the Final EIR/EIS. Had the threshold been adopted and used in the Final EIR/EIS, the approved project would have exceeded the threshold, similar to the proposed project.

Incremental Impact: The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the SMAQMD. The impact on air quality would, therefore, be the same as the impact of the approved project, significant, assuming no changes in project scheduling, refinements to design estimating, newer emissions models, or updated air district thresholds. As discussed above, the impact determination is based on emissions across the entire conveyance facility, inclusive of revisions to account for new models, guidance, and analysis requirements. As with the approved project, this impact would be less than significant with mitigation.

Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the Sacramento Federal Nonattainment Area (SFNA) to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-1a under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-1b under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Impact AQ-2: Generation of Criteria Pollutant Emissions in Excess of YSAQMD Thresholds and Potential Temporary Conflicts with Applicable Air Quality Plans as a Result of Constructing the Water Conveyance Facilities

Construction activities within the YSAQMD would be limited to equipment and material hauling. Changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not affect equipment or material hauling demand. However, the intensity and amount of hauling emissions has changed because of schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total construction emissions generated in the YSAQMD were quantified and compared to YSAQMD thresholds.

Table 22-6 summarizes resulting criteria pollutant emissions that would be generated in the YSAQMD in pounds per day and tons per year. The emissions estimate includes implementation of applicable air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Exceedances of air district thresholds are shown in underlined text.

Table 22-6. Criteria Pollutant Emissions from Construction of the Proposed Project in the Yolo-Solano Air Quality Management District (pounds/day and tons/year)

	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
				PM10			PM2.5							PM10			PM2.5			
Year	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	<1	4	1	<1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2023	<1	24	4	<1	7	7	<1	2	2	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
2024	1	87	14	<1	24	24	<1	6	7	<1	<1	4	1	<1	1	1	<1	<1	<1	<1
2025	1	83	14	<1	23	23	<1	6	6	<1	<1	7	1	<1	2	2	<1	<1	1	<1
2026	1	55	9	<1	14	14	<1	4	4	<1	<1	4	1	<1	1	1	<1	<1	<1	<1
2027	1	75	12	<1	19	19	<1	5	5	<1	<1	8	1	<1	2	2	<1	1	1	<1
2028	1	51	8	<1	13	13	<1	3	4	<1	<1	4	1	<1	1	1	<1	<1	<1	<1
2029	<1	24	4	<1	6	6	<1	2	2	<1	<1	3	<1	<1	1	1	<1	<1	<1	<1
2030	<1	35	6	<1	9	9	<1	2	2	<1	<1	3	<1	<1	1	1	<1	<1	<1	<1
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Threshold	–	–	–	–	–	*80*	–	–	–	–	*10*	*10*	–	–	–	–	–	–	–	–

Sources: Gillespie pers. comm.; Valles pers. comm.; U.S. Environmental Protection Agency 2006a, 2006b, 2006c, 2011; California Air Resources Board 2010; EMFAC2017; CalEEMod (version 2016.3.2).

ROG = reactive organic gases.
NO_X = nitrogen oxide.
CO = carbon monoxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
SO_2 = sulfur dioxide.

NEPA Effects: Material hauling emissions in the YSAQMD from construction of the proposed project would be similar to what was reported for the approved project. As shown in Table 22-6, construction of the proposed project would not exceed YSAQMD's thresholds. YSAQMD's thresholds were established to help prevent emissions from new projects in the Yolo County portion of the SVAB from contributing to regional violations of the ambient air quality standards or conflicting with adopted SIPs. Because emissions would not exceed YSAQMD thresholds, the proposed project would not worsen existing regional air quality or conflict with ambient air quality attainment plans for the SFNA. There would be no adverse effect.

YSAQMD does not have mass emission thresholds for CO, PM2.5, or SO_2; impacts from these pollutants are evaluated based on the air dispersion modeling of ambient air concentrations. Impact AQ-6 discusses the conclusions of the modeled ambient air concentrations.

CEQA Conclusion: Construction emission would not exceed YSAQMD's mass emission thresholds. Accordingly, as with the approved project, construction of the proposed project would not worsen existing regional air quality or conflict with ambient air quality attainment plans for the SFNA.

> ***Incremental Impact:*** The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the YSAQMD. The impact on air quality would, therefore, be the same as the impact of the approved project, assuming no changes in project scheduling, refinements to design estimating, newer emissions models, or updated air district thresholds. As discussed above, the impact determination is based on emissions across the entire conveyance facility, inclusive of revisions to account for new models, guidance, and analysis requirements. This impact would be less than significant. No mitigation is required.

Impact AQ-3: Generation of Criteria Pollutant Emissions in Excess of BAAQMD Thresholds and Potential Temporary Conflicts with Applicable Air Quality Plans as a Result of Constructing the Water Conveyance Facilities

The new Byron Tract Forebay and canal would affect construction activity (i.e., required equipment, operating hours) and resulting emissions within the BAAQMD. Assuming no changes to any modeling assumptions or methods from the Final EIR/EIS, the incremental change in emissions associated with the proposed project would therefore be limited to the Byron Tract Forebay. However, since other features of the project (e.g., tunnel reaches) would be constructed concurrent with the Byron Tract Forebay, the impact determination is based on emissions across all construction activity in the BAAQMD and considers emissions generated by elements previously evaluated in the Final EIR/EIS that have not change because of the footprint revision. This approach ensures total emissions and air quality impacts associated with the complete project are accurately assessed in accordance with air district guidance and thresholds.

The types of pollutants generated by construction activities within BAAQMD would be similar to those generated within the SMAQMD, as described under Impact AQ-1. Table 22-7 summarizes criteria pollutant emissions that would be generated in the BAAQMD in pounds per day and tons per year. The emissions estimate includes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Exceedances of air district thresholds are shown in underlined text.

Table 22-7. Criteria Pollutant Emissions from Construction of the Proposed Project in the Bay Area Air Quality Management District (pounds/day and tons/year)

	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
				PM10			PM2.5							PM10			PM2.5			
Year	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2
2018	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2019	<1	1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2020	<1	1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2021	67	838	990	17	224	236	16	39	56	4	3	43	60	1	16	17	1	3	3	<1
2022	133	1,474	1,912	36	244	280	35	48	83	6	10	102	181	2	26	28	2	5	7	1
2023	126	1,430	1,784	35	241	275	34	47	81	6	9	97	155	2	22	24	2	4	6	<1
2024	88	1,250	699	29	142	171	28	36	64	3	5	72	38	2	10	11	1	2	4	<1
2025	71	1,052	561	23	129	153	23	32	55	3	3	53	26	1	10	11	1	2	3	<1
2026	5	228	78	1	63	65	1	16	17	1	1	24	9	<1	7	7	<1	2	2	<1
2027	7	271	92	9	75	78	9	19	26	1	1	32	11	1	9	10	1	2	3	<1
2028	4	215	78	1	61	62	1	15	16	1	<1	22	9	<1	6	7	<1	2	2	<1
2029	4	226	93	1	63	65	1	16	17	1	<1	19	9	<1	5	6	<1	1	1	<1
2030	3	115	77	1	34	35	1	8	9	1	<1	13	5	<1	4	4	<1	1	1	<1
2031	1	45	9	<1	14	14	<1	3	4	<1	<1	4	1	<1	1	1	<1	<1	<1	<1
Threshold	*54*	*54*	–	*82*	*BMPs*[a]	–	*54*	*BMPs*[a]	–	–	–	–	–	–	–	–	–	–	–	–

Sources: Gillespie pers. comm.; Valles pers. comm.; U.S. Environmental Protection Agency 2006a, 2006b, 2006c, 2011; California Air Resources Board 2010; EMFAC2017; CalEEMod (version 2016.3.2).

ROG = reactive organic gases.
NO_X = nitrogen oxide.
CO = carbon monoxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
SO_2 = sulfur dioxide.

[a] BAAQMD requires all projects to implement best management practices (BMPs) for fugitive dust control.

NEPA Effects: Even with incorporation of environmental commitments, the proposed project would result in a temporary impact on regional air quality during construction because increased ROG and NO_X emissions would exceed the BAAQMD's mass emission thresholds. BAAQMD's thresholds were established to help prevent emissions from new projects in the SFBAAB from contributing to regional violations of the ambient air quality standards. Because ROG and NO_X construction emissions would exceed BAAQMD's thresholds, construction of the proposed project may conflict with the *2001 San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* or *2017 Clean Air Plan*. Moreover, because ROG and NO_X are precursors to ozone and NO_X is a precursor to PM, exceedances of BAAQMD's ROG and NO_X thresholds could impact both regional ozone and PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and CAAQS.

Similar to the emissions trends in SMAQMD, construction of the proposed project in the BAAQMD would generate fewer total annual and maximum daily emissions of all criteria pollutants except CO, relative to the approved project. The emissions changes are due to a combination of factors, including schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models.

DWR's environmental commitments described above and in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would reduce construction-related emissions. However, as shown in Table 22-7, ROG and NO_X emissions would still exceed BAAQMD's thresholds. Therefore this effect would be adverse. Mitigation Measures AQ-3a and AQ-3b have been adopted to reduce ROG and NO_X emissions, and would thus address regional effects related to secondary ozone and PM formation. These measures, as written in the Final EIR/EIS, remain adequate without change for dealing with the impacts of the proposed project.

BAAQMD does not have mass emission thresholds for CO, total PM, or SO_2; impacts from these pollutants are evaluated based on the air dispersion modeling of ambient air concentrations. Impact AQ-6 discusses the conclusions of the modeled ambient air concentrations.

CEQA Conclusion: Emissions of ROG and NO_X generated during construction would exceed BAAQMD CEQA thresholds. Because these emissions are precursors to ozone, and NO_X is a precursor to PM, exceedances of BAAQMD's ROG and NO_X thresholds could affect both regional ozone and PM formation and worsen existing air quality conditions. BAAQMD's ROG and NO_X thresholds have been adopted to help ensure projects do not hinder attainment of the CAAQS or NAAQS. Because construction emissions of ROG and NO_X would exceed these thresholds, construction of the proposed project may conflict with the *2001 San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* or *2017 Clean Air Plan*, which were adopted to achieve regional attainment with the ambient air quality standards. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b have been adopted to offset ROG and NO_X emissions below BAAQMD CEQA thresholds.

Incremental Impact: The proposed project would construct the Byron Tract Forebay instead of expand Clifton Court Forebay. This footprint change would require considerably less dredging and wet construction, and would reduce the number of siphon and shaft structures. These design revisions would reduce total marine and onsite vehicle miles traveled, relative to what was analyzed for the Clifton Court Forebay in the Final EIR/EIS. However, total offroad (e.g., cranes) equipment hours would increase. Holding all analysis methods (e.g., EMFAC2014), emission factors, and environmental commitments from the Final EIR/EIS constant (including a schedule start date of 2024), the design revisions would slightly increase total ROG and NOx

emissions, relative to emissions generated by construction of the Clifton Court Forebay under the approved project, and decrease total PM and SO_X emissions. The increase would be primarily due to the additional offroad equipment required to construct the Byron Tract Forebay. As discussed above, the significant impact determination is based on emissions across the entire conveyance facility, inclusive of the Byron Tract Forebay design change and revisions to account for new models, guidance, and analysis requirements. Accordingly, as with the approved project, this impact would be less than significant with mitigation.

Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-3a under Impact AQ-3 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-3b under Impact AQ-3 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Impact AQ-4: Generation of Criteria Pollutant Emissions in Excess of SJVAPCD Thresholds and Potential Temporary Conflicts with Applicable Air Quality Plans as a Result of Constructing the Water Conveyance Facilities

The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or types of activities required to construct the project within the SJVAPCD. However, the intensity and amount of anticipated construction emissions has changed because of schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total construction emissions generated in the SMAQMD were quantified and compared to SJVAPCD thresholds, which have also been revised since the Final EIR/EIS.

The types of pollutants generated by construction activities within SJVAPCD would be similar to those generated within the SMAQMD, as described under Impact AQ-1. Table 22-8 summarizes criteria pollutant emissions that would be generated in the SJVAPCD in pounds per day and tons per year. The emissions estimate includes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*). Exceedances of air district thresholds are shown in underlined text.

Table 22-8. Criteria Pollutant Emissions from Construction of the Proposed Project in the San Joaquin Valley Air Pollution Control District (pounds/day and tons/year)

	Average Daily Emissions (pounds/day)[a]										Annual Emissions (tons/year)									
				PM10			PM2.5							PM10			PM2.5			
Year	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2
2018	1	13	31	<1	4	4	<1	1	1	<1	<1	2	4	<1	1	1	<1	<1	<1	<1
2019	3	32	95	<1	13	14	<1	2	2	<1	<1	4	12	<1	2	2	<1	<1	<1	<1
2020	4	38	128	1	18	19	1	3	3	<1	1	5	16	<1	2	2	<1	<1	<1	<1
2021	13	108	206	2	91	93	2	19	20	1	2	14	26	<1	12	12	<1	2	3	<1
2022	43	315	799	6	244	250	6	44	50	2	5	40	101	1	31	32	1	6	6	<1
2023	43	321	823	6	252	258	6	46	52	2	5	41	104	1	32	33	1	6	7	<1
2024	64	408	1,378	8	290	298	8	50	58	3	8	52	174	1	37	38	1	6	7	<1
2025	82	375	1,954	8	253	261	8	42	49	4	10	47	247	1	32	33	1	5	6	<1
2026	82	311	2,058	7	231	238	6	37	44	4	10	39	260	1	29	30	1	5	6	<1
2027	80	297	2,045	6	200	206	6	34	40	4	10	38	258	1	25	26	1	4	5	<1
2028	69	261	1,752	5	180	185	5	30	36	3	9	33	221	1	23	23	1	4	5	<1
2029	51	205	1,339	4	138	142	4	26	30	2	6	26	169	1	17	18	1	3	4	<1
2030	29	139	766	2	120	123	2	24	27	2	4	18	97	<1	15	16	<1	3	3	<1
2031	5	31	114	<1	57	57	<1	13	13	<1	1	4	14	<1	7	7	<1	2	2	<1
Threshold[b]	*100*	*100*	*100*	–	–	*100*	–	–	*100*	*100*	*10*	*10*	*100*	–	–	*15*	–	–	*15*	*27*

Sources: Gillespie pers. comm.; Valles pers. comm.; U.S. Environmental Protection Agency 2006a, 2006b, 2006c, 2011; California Air Resources Board 2010; EDMS; EMFAC2017; CalEEMod.

ROG = reactive organic gases.
NO_X = nitrogen oxide.
CO = carbon monoxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
SO_2 = sulfur dioxide.

[a] Presents the average emissions estimate during a single day of construction in each year. Average emissions are presented in SJVAPCD (rather than maximum emissions), consistent with (San Joaquin Valley Air Pollution Control District 2015) guidance for correct application of its 100-pound-per-AAQA screening criteria.

[b] The 100-pound-per-day threshold is a screening-level threshold to help determine whether increased emissions from a project will cause or contribute to a violation of CAAQS or NAAQS. Projects with emissions below the threshold would not be in violation of CAAQS or NAAQS. Projects with emissions above the threshold would require an AAQA to confirm this conclusion (San Joaquin Valley Air Pollution Control District 2015).

NEPA Effects: Even with incorporation of environmental commitments, the proposed project would result in a temporary impact on regional air quality during construction because increased ROG, NO_X, CO, and PM10 emissions would exceed the SJVAPCD's mass emission thresholds. SJVAPCD's thresholds were established to help prevent emissions from new projects in the SJVAB from contributing to regional violations of the ambient air quality standards. Because construction emissions of ROG, NO_X, CO, and PM10 would exceed SJVAPCD's thresholds, construction of the proposed project may conflict with the *8-hour SJVAPCD 2007 Ozone Plan*, the *2016 Plan for the 2008 8-Hour Ozone Standard*, *2004 Revision to the California State Implementation Plan for Carbon Monoxide*, and the *2007 PM_{10} Maintenance Plan*. Moreover, because ROG and NO_X are a precursors to ozone and NO_X is a precursor PM, exceedances of SJVAPCD's ROG and NO_X thresholds could impact both regional ozone and PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and CAAQS.

Similar to the emissions trends in SMAQMD and BAAQMD, construction of the proposed project in the SJVAPCD would generate fewer total annual and daily emissions of all criteria pollutants except CO, relative to the approved project. The emissions changes are due to a combination of factors, including schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models.

DWR's environmental commitments describe above and in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would reduce construction-related emissions. However, as shown in Table 22-8, ROG, NO_X, CO, and PM10 emissions would still exceed SJVAPCD's thresholds. Mitigation Measures AQ-4a and AQ-4b have been adopted to reduce ROG, NO_X, and PM10 emissions, and would thus address regional effects related to secondary ozone and PM formation. These measures, as written in the Final EIR/EIS, remain adequate without change for dealing with the impacts of the proposed project.

As shown in Table 22-8, construction emissions would also exceed SJVAPCD's daily AAQA screening trigger for NO_X, CO, and PM10. Localized impacts from these pollutants are evaluated based on the air dispersion modeling of ambient air concentrations. Impact AQ-6 discusses the conclusions of the modeled ambient air concentrations.

CEQA Conclusion: Emissions of ROG, NO_X, CO, and PM10 generated during construction would exceed SJVAPCD's CEQA thresholds.[7] Because ROG and NO_X are precursors to ozone and NO_X is a precursor to PM, exceedances of SJVAPCD's ROG and NO_X thresholds could affect both regional ozone and PM formation, which could worsen existing air quality conditions. SJVAPCD's ROG, NO_X, CO, and PM10 thresholds have been adopted to help ensure projects do not hinder attainment of the CAAQS or NAAQS. Because construction emissions of ROG, NO_X, CO, and PM10 would exceed these thresholds, construction of the proposed project may conflict with the *8-hour SJVAPCD 2007 Ozone Plan*, the *2016 Plan for the 2008 8-Hour Ozone Standard*, *2004 Revision to the California State Implementation Plan for Carbon Monoxide*, and the *2007 PM_{10} Maintenance Plan*, which were adopted to achieve regional attainment with the ambient air quality standards. This would be a significant impact. Mitigation Measures AQ-4a and AQ-4b have been adopted to offset ROG, NO_X, and PM10 emissions below SJVAPCD CEQA thresholds.

[7] SJVAPCD's CO threshold was not adopted at the time of the Final EIR/EIS. Had the threshold been adopted and used in the Final EIR/EIS, the approved project would have exceeded the threshold, similar to the proposed project.

Pursuant to SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI), emissions offsets procured through Mitigation Measures AQ-4a and AQ-4b could not be used to mitigate CO impacts. Therefore, the impact of generating CO emissions would be significant and unavoidable.

Incremental Impact: The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the SJVAPCD. The impact on air quality would, therefore, be the same as the impact of the approved project, assuming no changes in project scheduling, refinements to design estimating, newer emissions models, or updated air district thresholds. As discussed above, the impact determination is based on emissions across the entire conveyance facility, inclusive of revisions to account for new models, guidance, and analysis requirements. Accordingly, as with the approved project, the impact of generating ROG, NOx, and PM10 emissions would be less than significant with mitigation. The impact of generating CO emissions would be significant and unavoidable.

Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-4a under Impact AQ-4 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-4b under Impact AQ-4 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Impact AQ-5: Generation of Criteria Pollutants in the Excess of Federal *De Minimis* Thresholds as a Result of Constructing the Water Conveyance Facilities

The Plan Area is in federally classified nonattainment and/or maintenance areas for ozone, PM10, and PM2.5. EPA enacted the federal General Conformity regulation (40 Code of Federal Regulations [CFR] Parts 5, 51, and 93) to ensure that federal actions do not generate emissions that interfere with state and local agencies' SIPs and emission-reduction strategies to attain the NAAQS. A conformity determination to confirm the proposed project would not conflict with these goals is required if ROG, NOx, PM10, or PM2.5 emissions (or their precursors) exceed the *de minimis* levels established in the General Conformity regulation.

Criteria pollutant emissions resulting from construction of the proposed project in federally classified nonattainment and maintenance areas within the SFNA, SJVAB, and SFBAAB are presented in Table 22-9. Exceedances of the federal *de minimis* thresholds are shown in underlined text. As discussed above, the emission estimates presented below consider project changes at the Byron Tract Forebay, as well as schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models that have occurred since the Final EIR/EIS.

Table 22-9. Criteria Pollutant Emissions from Construction of the Proposed Project in Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)[a]

	Sacramento Federal Nonattainment Area					San Joaquin Valley Air Basin					San Francisco Bay Area Air Basin			
Year	ROG	NO_X	PM10	PM2.5	SO_2[b]	ROG	NO_X	PM10	PM2.5	SO_2[b]	ROG	NO_X	PM2.5	SO_2[b]
2018	<1	1	<1	<1	<1	<1	2	1	<1	<1	<1	<1	<1	<1
2019	<1	2	1	<1	<1	<1	4	2	<1	<1	<1	<1	<1	<1
2020	<1	2	2	<1	<1	1	5	2	<1	<1	<1	<1	<1	<1
2021	1	13	7	1	<1	2	14	12	3	<1	3	43	3	<1
2022	2	26	14	3	<1	5	40	32	6	<1	10	102	7	1
2023	3	31	19	3	<1	5	41	33	7	<1	9	97	6	<1
2024	5	52	31	5	<1	8	52	38	7	<1	5	72	4	<1
2025	8	66	34	6	1	10	47	33	6	<1	3	53	3	<1
2026	7	44	23	4	<1	10	39	30	6	<1	1	24	2	<1
2027	8	68	26	5	1	10	38	26	5	<1	1	32	3	<1
2028	6	36	16	3	<1	9	33	23	5	<1	<1	22	2	<1
2029	5	23	11	2	<1	6	26	18	4	<1	<1	19	1	<1
2030	1	15	11	2	<1	4	18	16	3	<1	<1	13	1	<1
2031	<1	3	4	1	<1	1	4	7	2	<1	<1	4	<1	<1
Threshold	*25*	*25*	*100*	*100*	*100*	*10*	*10*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

Sources: Gillespie pers. comm.; Valles pers. comm.; U.S. Environmental Protection Agency 2006a, 2006b, 2006c, 2011; California Air Resources Board 2010; EDMS; EMFAC2017; CalEEMod.

ROG = reactive organic gases.
NO_X = nitrogen oxide.
CO = carbon monoxide.
PM10 = particulate matter that is 10 microns in diameter and smaller.
PM2.5 = particulate matter that is 2.5 microns in diameter and smaller.
SO_2 = sulfur dioxide.

[a] The General Conformity *de minimis* thresholds for criteria pollutants are based on the federal attainment status of the project area in the SFNA, SJVAB, and SFBAAB.

[b] Although the project area is in attainment for SO_2, because SO_2 is a precursor for PM2.5, the PM2.5 General Conformity *de minimis* thresholds are used.

NEPA Effects: Construction of the proposed project would exceed the federal NOx *de minimis* thresholds within the SFNA, SJVAB, and SFBAAB. The federal ROG *de minimis* threshold would also be exceeded in the SJVAB. Because project construction emissions would exceed the federal ROG and NOx *de minimis* thresholds, a general conformity determination must be made to demonstrate that total direct and indirect ROG (SJVAB only) and NOx emissions would conform to the appropriate air basin SIPs for each year of construction in which the *de minimis* threshold is exceeded.

A general conformity determination has been prepared for the proposed project and is included in Appendix 22C, *General Conformity Determination.* As shown in Appendix 22C, the federal lead agency (Reclamation) demonstrates that project emissions would not result in an increase in regional ROG (SJVAB only) and NOx emissions in the SFNA, SJVAB, and SFBAAB, as these emissions would be fully offset, as appropriate, to zero through implementation of Mitigation Measures AQ-1a/b, AQ-3a/b, and AQ-4a/b. Compared with the approved project, the amount of required offsets is less under the proposed project because total emissions in excess of the *de minimis* thresholds would be lower. Mitigation Measures AQ-1a/b, AQ-3a/b, and AQ-4a/b would ensure the requirements of the mitigation and offset program are implemented and conformity requirements for ROG (SJVAB only) and NOx are met. These measures, as written in the Final EIR/EIS, remain adequate without change for dealing with the impacts of the proposed project.

CEQA Conclusion: SFNA, SJVAB, and SFBAAB are classified as nonattainment areas with regard to the ozone NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since construction emissions in the SFNA, SJVAB, and SFBAAB would exceed the *de minimis* thresholds for ROG (SJVAB only) and NO_X, this impact would be significant. Mitigation Measures AQ-1a, AQ-1b, AQ-3a, AQ-3b, AQ-4a, and AQ-4b would ensure project emissions would not result in an increase in regional ROG (SJVAB only) or NO_X emissions in the SFNA, SJVAB, and SFBAAB. These measures would therefore ensure total direct and indirect ROG (SJVAB only) and NO_X emissions generated by the project would conform to the appropriate air basin SIPs by offsetting the action's emissions in the same or nearby area to net zero.

Incremental Impact: The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the SFNA or SJVAB. The proposed project would construct the Byron Tract Forebay instead of expand Clifton Court Forebay, which would slightly increase ROG and NO_X emissions, relative to the approved project, holding all analysis methods (e.g., EMFAC2014), emission factors, and environmental commitments from the Final EIR/EIS constant (including a schedule start date of 2024). The increase would be primarily due to the additional offroad equipment required to construct the Byron Tract Forebay. As discussed above, the impact determination in the SFBAAB is based on emissions across the entire conveyance facility, inclusive of the Byron Tract Forebay design change and revisions to account for new models, guidance, and analysis requirements. Accordingly, as with the approved project, this impact would be less than significant with mitigation.

Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the Sacramento Federal Nonattainment Area (SFNA) to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-1a under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-1b under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-3a under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-3b under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-4a under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants

Please refer to Mitigation Measure AQ-4b under Impact AQ-1 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

Impact AQ-6: Generation of Localized Criteria Pollutant Concentrations in Excess of Ambient Air Quality Standards as a Result of Constructing the Water Conveyance Facilities

Construction of the proposed project has the potential to cause elevated criteria pollutant concentrations. These elevated concentrations may cause or contribute to exceedances of the short- and long-term NAAQS and CAAQS and affect local air quality and human health. The pollutants of concern with established long-term standards are NO_2, PM10, and PM2.5. The pollutants of concern with established short-term standards are CO (1 hour and 8 hours), PM10 and PM2.5 (24 hours), NO_2 (1 hour), and SO_2 (1 hour and 24 hours).

Tables 22-10 and 22-11 present the estimated maximum short-term (< 24 hours) concentrations relative to the CAAQS and NAAQS, respectively. Table 22-12 presents the estimated maximum long-term (annual) concentrations. The tables present both the incremental project and total pollutant concentration; only the total pollutant concentration, which reflects the incremental project contribution plus the background concentration, is compared with the CAAQS and NAAQS to determine if construction would cause an ambient air quality violation.

As discussed in Section 22.4.2, *Determination of Effects*, background concentrations of PM2.5 and PM10 in several areas of the Plan Area exceed short-term and long-term PM2.5 and PM10 ambient air quality standards. Table 22-13 compares the incremental project increase in PM concentrations within these areas with the applicable EPA SIL to analyze the potential for the project to worsen existing PM2.5 and PM10 violations.

The modeled concentrations presented in Tables 22-10 through 22-13 assume implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs)*. Criteria pollutant concentrations are estimated for major construction component (e.g., intakes) based on representative local meteorological conditions. Only the modeled maximum pollutant concentration is reported. Exceedances of the CAAQS, NAAQS, or SIL are shown as underlined text.

NEPA Effects: With the incorporation of environmental commitments, construction of the proposed project would have the potential to violate the 24-hour PM incremental SILs. This effect would be adverse. No other violations of the ambient air quality standards would result during project construction. Exceedances of the SILs are generally limited to within a few hundred feet offsite of the construction area and are primarily associated with fugitive dust from re-entrained road dust and concrete batching. Mitigation Measures AQ-6a and AQ-6b are available to address these effects.

CEQA Conclusion: With the incorporation of environmental commitments, similar to the approved project, the construction of the proposed project would have the potential to violate the SILs for 24-hour PM. This would be a significant impact. No other violations of the ambient air quality standards would result during project construction. Exceedances of the SILs are generally limited to within a few hundred feet offsite of the construction area and are primarily associated with fugitive dust from re-entrained road dust and concrete batching. Implementation of Mitigation Measures AQ-6a and AQ-6b would reduce fugitive dust emissions to below the appropriate SIL (see Table 22-14). Accordingly, the project would not contribute to existing violations of the PM ambient air quality standards and the impact would be less than significant.

Incremental Impact: The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the SFNA or SJVAB. The proposed project would construct the Byron Tract Forebay instead of expand Clifton Court Forebay, which would slightly increase ROG and NO_X emissions and associated offsite concentrations, relative to the approved project, holding all analysis methods (e.g., EMFAC2014), emission factors, and environmental commitments from the Final EIR/EIS constant (including a schedule start date of 2024). The increase would be primarily due to the additional offroad equipment required to construct the Byron Tract Forebay. As discussed above, the impact determination in the SFBAAB is based on concentrations across the entire conveyance facility, inclusive of the Byron Tract Forebay design change and revisions to account for new models, guidance, and analysis requirements.

Mitigation Measure AQ-6a: Implement Measures to Reduce Re-Entrained Road Dust and Localized PM Concentrations

DWR shall reduce re-entrained road dust and associated PM concentrations by applying dust suppressants (Pennzsuppress) on all unpaved surfaces within the construction right-of-way.

Mitigation Measure AQ-6b: Establish Restricted Access Zones to Avoid Public Exposure to Localized PM Concentrations in Excess of Established SILs

DWR shall establish a 520-meter restriction zone prohibiting access of the public to the area immediately north of the reusable tunnel material area at the Byron Tract Forebay.

Table 22-10. Maximum Short-Term CAAQS Criteria Pollutant Concentration Impacts from Construction of the Proposed Project (µg/m³)

	CO				NO_2		PM10		SO_2			
Construction Area	Max 1-Hour[a]	Total 1-Hour[b]	Max 8-Hour[a]	Total 8-Hour[c]	Max 1-Hour[a]	Total 1-Hour[d]	Max 24-Hour[a]	Total 24-Hour[e]	Max 1-Hour[a]	Total 1-Hour[f]	Max 24-Hour[a]	Total 24-Hour[g]
SMAQMD												
Concentration[h]	730	3,594	284	2,690	120	242	Incremental concentration		1	26	<1	24
CAAQS	–	23,000	–	10,000	–	339	assessed in Table 22-13.[i]		–	655	–	105
YSAQMD												
Concentration[h]	8	2,872	3	2,409	33	155	Incremental concentration		<1	26	<1	23
CAAQS	–	23,000	–	10,000	–	339	assessed in Table 22-13.[i]		–	655	–	105
SJVAPCD												
Concentration[h]	2,080	5,403	276	2,682	148	274	Incremental concentration		3	13	<1	24
CAAQS	–	23,000	–	10,000	–	339	assessed in Table 22-13.[i]		–	655	–	105
BAAQMD												
Concentration[h]	3,666	5,957	581	2,070	197	287	Incremental concentration		6	17	<1	24
CAAQS	–	23,000	–	10,000	–	339	assessed in Table 22-13.[i]		–	655	–	105

Sources: AERMOD (2016) version 16216r; Tables 22-5 through 22-8.

CAAQS = California Ambient Air Quality Standards.
CO = carbon monoxide.
NO_2 = nitrogen dioxide.
PM10 = particulate matter 10 microns or less in diameter.
SO_2 = sulfur dioxide.
µg/m³ = micrograms per cubic meter of air.

[a] Represents the maximum incremental offsite concentration from project construction.

[b] A background 1-hour CO concentration in the form of the (CAAQS) standard of 2864, 3322 and 2291 µg/m³ for (SMAQMD and YSAQMD) – T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[c] A background 8-hour CO concentration in the form of the (CAAQS) standard of 2406, 2406, and 1489 µg/m³ for (SMAQMD and YSAQMD) – T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[d] A background 1-hour NO_2 concentration in the form of the (CAAQS) standard of 122, 126, and 90.2 µg/m³ for (SMAQMD and YSAQMD) – T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[e] A background 24-hour PM10 concentration in the form of the (CAAQS) standard of 106, 69.4, 94.0, and 61.3 µg/m³ for SMAQMD - T Street, YSAQMD – Woodland-Gibson Rd SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[f] A background 1-hour SO_2 concentration in the form of the (CAAQS) standard of 25.4 and 10.5 µg/m³ for (SMAQMD and YSAQMD) – Sacramento – Del Paso Manor, (SJVAPCD and BAAQMD) – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[g] A background 24-hour SO_2 concentration in the form of the (CAAQS) standard of 23.3 and 25.6 µg/m³ for (SMAQMD and YSAQMD) – Sacramento – Del Paso Manor, (SJVAPCD and BAAQMD) – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution[9] "Combined" conservatively estimates the sum of worst-case concentrations from all features that can occur concurrently at one receptor location.

[h] Only the highest modeled concentration is presented for each pollutant.

[i] Background concentration exceeds the AAQS.

Table 22-11. Maximum Short-Term NAAQS Criteria Pollutant Concentration Impacts from Construction of the Proposed Project (µg/m³)

	CO				NO_2		PM2.5		PM10		SO_2	
Construction Area	Max 1-Hour[a]	Total 1-Hour[b]	Max 8-Hour[a]	Total 8-Hour[c]	Max 1-Hour[a]	Total 1-Hour[d]	Max 24-Hour[a]	Total 24-Hour[e]	Max 24-Hour[a]	Total 24-Hour[f]	Max 1-Hour[a]	Total 1-Hour[g]
SMAQMD												
Concentration[h]	582	3,446	209	2,614	58	149	2	27	12	74	<1	21
CAAQS	–	40,000	–	10,000	–	188	–	35	–	150	–	196
YSAQMD												
Concentration[h]	7	2,871	3	2,409	20	111	<1	16	2	51	<1	21
CAAQS	–	40,000	–	10,000	–	188	–	35	–	150	–	196
SJVAPCD												
Concentration[h]	1,601	4,236	209	2,080	70	162	Incremental concentration		24	82	3	11
CAAQS	–	40,000	–	10,000	–	188	assessed in Table 22-13.[i]		–	150	–	196
BAAQMD												
Concentration[h]	3,442	5,275	506	1,803	124	185	3	25	32	61	1	9
CAAQS	–	40,000	–	10,000	–	188	–	35	–	150	–	196

Sources: AERMOD (2016) version 16216r; Tables 22-5 through 22-8.

CO = carbon monoxide.
NAAQS = California Ambient Air Quality Standards.
NO_2 = nitrogen dioxide.
PM2.5 = particulate matter 2.5 microns or less in diameter.
PM10 = particulate matter 10 microns or less in diameter.
SO_2 = sulfur dioxide.
µg/m³ = micrograms per cubic meter of air.

[a] Represents the maximum incremental offsite concentration from project construction.

[b] A background 1-hour CO concentration in the form of the (NAAQS) standard of 2864, 3635 and 1833 µg/m³ for (SMAQMD and YSAQMD) – T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[c] A background 8-hour CO concentration in the form of the (NAAQS) standard of 2406, 1871, and 1298 µg/m³ for (SMAQMD and YSAQMD) – T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[d] A background 1-hour NO_2 concentration in the form of the (NAAQS) standard of 90.9, 92.1, and 61.4 µg/m³ for (SMAQMD and YSAQMD) – T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[e] A background 24-hour PM2.5 concentration in the form of the (NAAQS) standard of 25.8, 15.8, 38.7, and 21.6 µg/m³ for SMAQMD - T Street, YSAQMD – Woodland-Gibson Rd, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[f] A background 24-hour PM10 concentration in the form of the (NAAQS) standard of 62.0, 49.3, 57.9 and 29.1 µg/m³ for SMAQMD - T Street, YSAQMD – Woodland-Gibson Rd, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[g] A background 1-hour SO_2 concentration in the form of the (NAAQS) standard of 20.6 and 7.9 µg/m³ for (SMAQMD and YSAQMD) – Sacramento – Del Paso Manor, (SJVAPCD and BAAQMD) – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[h] Only the highest modeled concentration is presented for each pollutant.

[i] Background concentration exceeds the AAQS.

Table 22-12. Maximum Long-Term CAAQS and NAAQS Criteria Pollutant Concentration Impacts from Construction of the Proposed Project (µg/m³)

	NO_2 (CAAQS)		NO_2 (NAAQS)		PM2.5 (CAAQS)		PM2.5 (NAAQS)		PM10 (CAAQS)	
Construction Within	Max Annual[a]	Total Annual[b]	Max Annual[a]	Total Annual[c]	Max Annual[a]	Total Annual[d]	Max Annual[a]	Total Annual[e]	Max Annual[a]	Total Annual[f]
SMAQMD										
Concentration[g]	2.3	23	2.3	22	0.3	10	0.3	9	Incremental concentration	
CAAQS/NAAQS	–	57	–	100	–	12	–	12	assessed in Table 22-13.[h]	
YSAQMD										
Concentration[g]	0.1	21	0.1	21	<0.1	8	<0.1	7	Incremental concentration	
CAAQS/NAAQS	–	57	–	100	–	12	–	12	assessed in Table 22-13.[h]	
SJVAPCD										
Concentration[g]	0.9	25	0.9	24	Incremental concentration		Incremental concentration		Incremental concentration	
CAAQS/NAAQS	–	57	–	100	assessed in Table 22-13.[h]		assessed in Table 22-13.[h]		assessed in Table 22-13.[h]	
BAAQMD										
Concentration[g]	1.1	16	1.1	14	0.2	7	0.2	7	1.0	18
CAAQS/NAAQS	–	57	–	100	–	12	–	12	–	20

Sources: AERMOD (2016) version 16216r; Tables 22-5 through 22-8.

CAAQS = California Ambient Air Quality Standards.
NAAQS = National Ambient Air Quality Standards.
NO_2 = nitrogen dioxide.
PM2.5 = particulate matter 2.5 microns or less in diameter.
PM10 = particulate matter 10 microns or less in diameter.
SIL = significant impact level.
µg/m³ = micrograms per cubic meter of air.

[a] Represents the maximum incremental offsite concentration in the form of the standard from project construction.

[b] A background annual NO_2 concentration in the form of the (CAAQS) standard of 20.7, 24.4 and 15.0 µg/m³ (for SMAQMD and YSAQMD T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively was added to the maximum increment offsite project contribution.

[c] A background annual NO_2 concentration in the form of the (NAAQS) standard of 20.7, 23.2 and 13.2 µg/m³ (for SMAQMD and YSAQMD T Street, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively) was added to the maximum increment offsite project contribution.

[d] A background annual PM2.5 concentration in the form of the (CAAQS) standard of 9.6, 7.6, 12.3, and 6.7) µg/m³ (for SMAQMD T Street, YSAQMD – Woodland- Gibson Rd, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively) was added to the maximum increment offsite project contribution.

[e] A background annual PM2.5 concentration in the form of the (NAAQS) standard of 8.4, 6.6, 12.1 and 7.2 µg/m³ (for SMAQMD T Street, YSAQMD – Woodland- Gibson Rd, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively) was added to the maximum increment offsite project contribution.

[f] A background annual PM_{10} concentration in the form of the (CAAQS) standard off 19.6,19.6, 26.3 and 16.6 µg/m³ (for SMAQMD T Street, YSAQMD – Woodland-Gibson Rd, SJVAPCD – Stockton, BAAQMD – Concord – Bethel Island, respectively) was added to the maximum increment offsite project contribution.

[g] Only the highest modeled concentration in the form of the applicable standard is presented for each pollutant.

[h] Background concentration exceeds the AAQS.

Table 22-13. Maximum Incremental Unmitigated PM10 and PM2.5 Concentrations from Construction of the Proposed Project in Areas with Background Concentrations in Excess of the AAQS (µg/m³)

Construction Within	24-Hour PM10 Maximum[a]	24-Hour PM2.5 Maximum[a]	Annual PM2.5 Maximum[a]	Annual PM10 Maximum[a]
SMAQMD				
Concentration[b]	12.1	NA	NA	1.90
SIL	10.4	NA	NA	2.08
YSAQMD				
Concentration[b]	2.2	NA	NA	<0.1
SIL	10.4	NA	NA	2.08
BAAQMD				
Concentration[b]	31.9	NA	NA	NA
SIL	10.4	NA	NA	NA
SJVAPCD				
Concentration[b]	24.5	1.6	0.13	0.91
SIL	10.4	1.2	0.20	2.08

Sources: AERMOD (2016) version 16216r; Tables 22-5 through 22-8.

PM2.5 = particulate matter 2.5 microns or less in diameter.
PM10 = particulate matter 10 microns or less in diameter.
SIL = significant impact level.
µg/m³ = micrograms per cubic meter of air.

[a] Represents the maximum incremental offsite concentration in the form of the standard from project construction.

[b] Only the highest modeled concentration in the form of the applicable standard is presented for each pollutant.

Table 22-14. Maximum Incremental Mitigated PM10 and PM2.5 Concentrations from Construction of the Proposed Project in Areas with Background Concentrations in Excess of the AAQS (µg/m³)

Construction Within	24-Hour PM10 Maximum[a]	24-Hour PM2.5 Maximum[a]	Annual PM2.5 Maximum[a]	Annual PM10 Maximum[a]
SMAQMD				
Concentration[b]	10.3	NA	NA	1.70
SIL	10.4	NA	NA	2.08
YSAQMD				
Concentration[b]	2.2	NA	NA	<0.1
SIL	10.4	NA	NA	2.08
BAAQMD				
Concentration[b]	10.3	NA	NA	NA
SIL	10.4	NA	NA	NA
SJVAPCD				
Concentration[b]	9.1	0.8	0.08	0.37
SIL	10.4	1.2	0.20	2.08

Sources: AERMOD (2016) version 16216r; Tables 22-5 through 22-8.

PM2.5 = particulate matter 2.5 microns or less in diameter.
PM10 = particulate matter 10 microns or less in diameter.
SIL = significant impact level.
µg/m³ = micrograms per cubic meter of air.

[a] Represents the maximum incremental offsite concentration in the form of the standard from project construction.

[b] Only the highest modeled concentration in the form of the applicable standard is presented for each pollutant.

Impact AQ-7: Potential Temporary Exposure of Sensitive Receptors to Diesel Particulate Matter Health Hazards in SMAQMD as a Result of Constructing the Water Conveyance Facilities

Inhalation of DPM from construction of the proposed project has the potential to create health risks, which may exceed air district significance thresholds for increased cancer and noncancer health hazards at receptor locations adjacent to the project. Construction would result in DPM emissions primarily from diesel-fueled offroad equipment and heavy-duty trucks, as well as emissions from concrete batch plants. Cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other air toxic from construction of the project.

The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or types of activities required to construct the project within the SMAQMD. However, the intensity and amount of anticipated construction emissions and associated health risk has changed because of schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total health risk in the SMAQMD were quantified and compared to SMAQMD thresholds.

Table 22-15 presents estimated construction-related health risks in the SMAQMD. The presented health risks represent the highest modeled offsite risk, which typically occurs adjacent to or within a few hundred yards of the construction site. The table assumes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs)*.

Table 22-15. Excess Cancer and Noncancer Health Risks as a Result of Construction of the Proposed Project in the Sacramento Metropolitan Air Quality Management District

Parameter	Cancer (per million)[a]	Chronic HI[b]	Acute HI[b]
Risk[c]	7.8	<0.1	0.3
Threshold	10.0	1.0	1.0

Sources: AERMOD (2016) version 16216r; Office of Environmental Health Hazard Assessment (2015); HARP 2 (2017) version 17052.

[a] Cancer risk represents the incremental increase in the number of cancers in a population of one million. Risks are cumulative of inhalation, dermal, soil, mother's milk, and crop pathways.

[b] Hazard Index (HI) is conservatively shown as the total across all organ systems. All NO_2 risks assume an 80% ambient ratio to NO_X concentrations.

[c] Only the highest modeled offsite risk is presented for each subsection. The reported risk includes effects from combined construction of all features from the proposed project.

NEPA Effects: As shown in Table 22-15, estimated cancer risk would not exceed SMAQMD's threshold. Therefore, similar to the approved project, the effect of exposure of sensitive receptors to DPM emissions and their health hazards during construction would not be adverse.

CEQA Conclusion: DPM generated during construction poses inhalation-related chronic noncancer hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged durations. The DPM generated during construction of the proposed project would not exceed SMAQMD's chronic noncancer or cancer thresholds, and thus would not expose sensitive receptors to substantial pollutant concentrations.

> ***Incremental Impact:*** The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the SMAQMD. The impact on sensitive receptors would, therefore, be the same as the impact of the approved project, assuming no changes in project scheduling, refinements to design estimating, newer emissions models, or updated air district thresholds. As discussed above, the impact determination is based on emissions and associated health risk across the entire conveyance facility, inclusive of revisions to account for new models, guidance, and analysis requirements. Therefore, as with the approved project, this impact would be less than significant. No mitigation is required.

Impact AQ-8: Potential Temporary Exposure of Sensitive Receptors to Diesel Particulate Matter Health Hazards in YSAQMD as a Result of Constructing the Water Conveyance Facilities

Construction activities and associated health risks within the YSAQMD would be limited to equipment and material hauling. Changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not affect equipment or material hauling demand. However, the intensity and amount of hauling emissions and associated health risks has changed because of schedule modifications, refinements to the overall construction activity inventory and

environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total construction emissions generated in the YSAQMD were quantified and compared to YSAQMD thresholds.

Table 22-16 presents estimated construction-related health risks in the YSAQMD. The presented health risks represent the highest modeled offsite risk, which typically occurs adjacent to or within a few hundred yards of the construction site or transport from material hauling. The tables assume implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs)*.

Table 22-16. Excess Cancer and Noncancer Health Risks as a Result of Construction of the Proposed Project in the Yolo-Solano Air Quality Management District

Parameter	Cancer (per million)[a]	Chronic HI[b]	Acute HI[b]
Risk[c]	3.0	<0.1	0.1
Threshold	10.0	1.0	1.0

Sources: AERMOD (2016) version 16216r; Office of Environmental Health Hazard Assessment (2015); HARP 2 (2017) version 17052.

[a] Cancer risk represents the incremental increase in the number of cancers in a population of one million. Risks are cumulative of inhalation, dermal, soil, mother's milk, and crop pathways.

[b] Hazard Index (HI) is conservatively shown as the total across all organ systems. All NO_2 risks assume an 80% ambient ratio to NO_X concentrations.

[c] Only the highest modeled offsite risk is presented for each subsection. The reported risk includes effects from combined construction of all features in the air district.

NEPA Effects: As shown in Table 22-16, construction of the proposed project would not exceed YSAQMD's health risk thresholds. Therefore, similar to the approved project, the effect of exposure of sensitive receptors to DPM emissions and their health hazards during construction would not be adverse.

CEQA Conclusion: DPM generated during construction poses inhalation-related chronic noncancer hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged durations. The DPM generated during construction of the proposed project would not exceed YSAQMD's chronic noncancer or cancer thresholds, and thus would not expose sensitive receptors to substantial pollutant concentrations.

Incremental Impact: The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the YSAQMD. The impact on sensitive receptors would, therefore, be the same as the impact of the approved project, assuming no changes in project scheduling, refinements to design estimating, newer emissions models, or updated air district thresholds. As discussed above, the impact determination is based on emissions and associated health risk across the entire conveyance facility, inclusive of revisions to account for new models, guidance, and analysis requirements. Therefore, as with the approved project, this impact would be less than significant. No mitigation is required.

Impact AQ-9: Potential Temporary Exposure of Sensitive Receptors to Diesel and Particulate Matter Exhaust Health Hazards in BAAQMD as a Result of Constructing the Water Conveyance Facilities

The new Byron Tract Forebay and canal would affect construction activity (i.e., required equipment, operating hours) and resulting receptor exposure to pollutants generated within the BAAQMD. However, since other features of the project (e.g., tunnel reaches) would be constructed concurrent with the Byron Tract Forebay, the impact determination is based on emissions across all construction activity in the BAAQMD and considers the combined health risk generated by elements previously evaluated in the Final EIR/EIS that have not change because of the footprint revision. This approach ensures health risk impacts associated with the complete project are accurately assessed in accordance with air district guidance and thresholds.

The types of health risks generated by construction activities within BAAQMD would be similar to those generated within the SMAQMD, as described under Impact AQ-7. Table 22-17 presents estimated construction-related health risks in the BAAQMD. The table also presents maximum PM2.5 exhaust concentrations, consistent with air district guidance (Bay Area Air Quality Management District 2017). The presented health risks represent the highest modeled offsite risk, which typically occurs adjacent to or within a few hundred yards of the construction site. The table assumes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs)*.

Table 22-17. Excess Cancer, Noncancer, and PM2.5 Concentration Health Risks as a Result of Construction of the Proposed Project in the Bay Area Air Quality Management District

Parameter	Cancer (per million)[a]	Chronic HI[b]	Acute HI[b]	PM2.5 ($\mu g/m^3$)
Risk[c]	2.6	<0.1	0.4	<0.1
Threshold	10.0	1.0	1.0	0.3

Sources: AERMOD (2016) version 16216r; Office of Environmental Health Hazard Assessment (2015); HARP 2 (2017) version 17052.

PM2.5 = particulate matter 2.5 microns or less in diameter.

$\mu g/m^3$ = micrograms per cubic meter of air.

[a] Cancer risk represents the incremental increase in the number of cancers in a population of one million. Risks are cumulative of inhalation, dermal, soil, mother's milk, and crop pathways.

[b] Hazard Index (HI) is conservatively shown as the total across all organ systems. All NO_2 risks assume an 80% ambient ratio to NO_X concentrations.

[c] Only the highest modeled offsite risk is presented for each subsection. The reported risk includes effects from combined construction of all features in the air district.

NEPA Effects: As shown in Table 22-17, construction of the proposed project would not exceed the BAAQMD's health risk thresholds. Therefore, similar to the approved project, the effect of exposure of sensitive receptors to DPM emissions and their health hazards during construction would not be adverse.

CEQA Conclusion: DPM generated during construction poses inhalation-related chronic noncancer hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged durations. The DPM generated during construction of the proposed project would not exceed the BAAQMD's chronic noncancer or cancer thresholds, and thus would not expose sensitive receptors

to substantial pollutant concentrations. In addition, the maximum PM2.5 exhaust concentrations would be well below the air districts risk threshold.

Incremental Impact: The proposed project would construct the Byron Tract Forebay instead of expand Clifton Court Forebay. Associated design revisions would reduce total marine and onsite vehicle miles traveled, relative to what was analyzed for the Clifton Court Forebay in the Final EIR/EIS. However, total offroad (e.g., cranes) equipment hours would increase. Holding all analysis methods (e.g., EMFAC2014), emission factors, and environmental commitments from the Final EIR/EIS constant (including a schedule start date of 2024), the design revisions would slightly increase PM2.5 exhaust emissions. The increase would be primarily due to the additional offroad equipment required to construct the Byron Tract Forebay. As discussed above, the impact determination is based on emissions and risk across the entire conveyance facility, inclusive of the Byron Tract Forebay design change and revisions to account for new models, guidance, and analysis requirements. Therefore, as with the approved project, this impact would be less than significant. No mitigation is required.

Impact AQ-10: Potential Temporary Exposure of Sensitive Receptors to Diesel Particulate Matter Health Hazards in SJVAPCD as a Result of Constructing the Water Conveyance Facilities

The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or types of activities required to construct the project within the SJVAPCD. However, the intensity and amount of anticipated construction emissions and associated health risk has changed because of schedule modifications, refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total health risk in the SJVAPCD were quantified and compared to SJVAPCD thresholds, which have also been revised since the Final EIR/EIS.

The types of health risks generated by construction activities within SJVAPCD would be similar to those generated within the SMAQMD, as described under Impact AQ-7. Table 22-18 presents estimated construction-related health risks in the SJVAPCD. The presented health risks represent the highest modeled offsite risk, which typically occurs adjacent to or within a few hundred yards of the construction site. The table assumes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs)*.

Table 22-18. Excess Cancer and Noncancer Health Risks as a Result of Construction of the Proposed Project in the San Joaquin Valley Air Pollution Control District

Parameter	Cancer (per million)[b]	Chronic HI[c]	Acute HI[c]
Risk[a]	1.6	<0.1	0.3
Threshold	20.0	1.0	1.0

Sources: AERMOD (2016) version 16216r; Office of Environmental Health Hazard Assessment (2015); HARP 2 (2017) version 17052.

[a] Only the highest modeled offsite risk is presented for each subsection. The reported risk includes effects from combined construction of all features in the air district.

[b] Cancer risk represents the incremental increase in the number of cancers in a population of one million. Risks are cumulative of inhalation, dermal, soil, mother's milk, and crop pathways.

[c] Hazard Index (HI) are conservatively shown as the total across all organ systems. All NO_2 risks assume an 80% ambient ratio to NO_X concentrations.

NEPA Effects: As shown in Table 22-18, construction of the proposed project would not exceed SJVAPCD's health risk thresholds. Therefore, similar to the approved project, the effect of exposure of sensitive receptors to DPM emissions and their health hazards during construction would not be adverse.

CEQA Conclusion: DPM generated during construction poses inhalation-related chronic noncancer hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged durations. The DPM generated during construction of the proposed project would not exceed SJVAPCD's chronic noncancer or cancer thresholds, and thus would not expose sensitive receptors to substantial pollutant concentrations.

> ***Incremental Impact:*** The construction activity changes associated with the proposed project at the RTM storage areas and other appurtenant facilities would not change the approach or intensity of construction within the SJVAPCD. The impact on sensitive receptors would, therefore, be the same as the impact of the approved project, assuming no changes in project scheduling, refinements to design estimating, newer emissions models, or updated air district thresholds. As discussed above, the impact determination is based on emissions and associated health risk across the entire conveyance facility, inclusive of revisions to account for new models, guidance, and analysis requirements. Therefore, as with the approved project, this impact would be less than significant. No mitigation is required.

Impact AQ-11: Potential Temporary Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever) as a Result of Constructing the Water Conveyance Facilities

Disturbance of soil containing *C. immitis* could expose the receptors adjacent to the construction site to spores known to cause Valley Fever. Although there are many factors that influence receptor exposure and development of Valley Fever, earthmoving activities during construction could release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions are conducive to spore development.

NEPA Effects: The potential for the proposed project to expose receptors to *C. immitis* would be similar to the approved project, if not slightly reduced due to the fewer number of acres graded under the proposed project. Like the approved project, implementation of advanced air-district recommended fugitive dust controls outlined in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would avoid dusty conditions and reduce the risk of contracting Valley Fever through routine watering and other controls. Therefore, the proposed project's effect of exposure of sensitive receptors to increased Valley Fever risk during construction would not be adverse.

CEQA Conclusion: Construction of the water conveyance facility would involve earthmoving activities that could release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions are conducive to spore development. The potential for the proposed project to expose receptors to *C. immitis* would be similar to the approved project, if not slightly reduced due to the fewer number of acres disturbed under the proposed project. Implementation of air-district recommended fugitive dust controls outlined in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, would avoid dusty conditions and reduce the risk of contracting Valley Fever through routine watering and other controls. Therefore, as with the approved project, this impact would be less than significant. No mitigation is required.

Incremental Impact: Although the modifications to the configuration and location of some construction activity would occur, the potential for the proposed project to expose receptors to *C. immitis* would be similar to the potential under the approved project, if not slightly reduced due to the fewer number of acres disturbed under the proposed project. This impact would be less than significant. No mitigation is required.

Impact AQ-12: Potential Temporary Exposure of Sensitive Receptors to Asbestos and Odors as a Result of Constructing the Water Conveyance Facilities

NOA could become airborne because of excavating through ultramafic and metavolcanic bedrock. Demolition of existing structures may disperse asbestos-containing materials (ACM), which was commonly used as fireproofing and insulating agents prior the 1970s. Sources of odor during construction include diesel exhaust from construction equipment, asphalt paving, and excavated organic matter from the removal of RTM and sediment.

NEPA Effects: The potential for the proposed project to expose receptors to asbestos and odors would be similar to the approved project. As discussed in the Final EIR/EIS, no ultramafic or metavolcanic bedrock is mapped in the Plan Area. Likewise, organic constituents and VOC in Plan Area soil are below the method detection limits, indicating that organic decay of exposed RTM and sediment would be relatively low (URS 2014). As with the approved project, construction activities under the proposed project would be subject to EPA's asbestos NESHAP and air district rules that limit the amount of ROG emissions from cutback asphalt. Accordingly, it is not anticipated that construction of the proposed project would create objectionable odors.

CEQA Conclusion: Soil movement and demolition under the proposed project would have limited potential to disturb or expose receptors to NOA or structural asbestos. Similar to the approved project, the proposed project would result in temporary odors from equipment and vehicle operation, but these would quickly dissipate and cease once construction is completed. Likewise, potential odors generated during asphalt paving would be addressed through mandatory compliance with air district rules and regulations. Excavation of RTM may also result in temporary odors, but geotechnical tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying and stockpiling of the removed muck will occur under aerobic conditions, which will further limit any potential decomposition and associated malodorous products. Accordingly, as with the approved project, the impact of exposure of sensitive receptors to potential odors would be less than significant. No mitigation is required

Incremental Impact: Although the modifications to the configuration and location of some construction activity would occur, the potential for the proposed project to expose receptors to asbestos and odors would be similar to that of the approved project. This impact would be less than significant. No mitigation is required.

Greenhouse Gases

Impact AQ-13: Generation of Cumulative Greenhouse Gas Emissions as a Result of Constructing the Water Conveyance Facilities

As discussed above under Impacts AQ-1 through AQ-4, only the new Byron Tract Forebay and conveyance facilities would affect construction activity (i.e., required equipment, operating hours) and resulting emissions. However, the intensity and amount of anticipated total emissions from construction of the entire water conveyance facility has changed because of schedule modifications,

refinements to the overall construction activity inventory and environmental commitments, and release of newer emissions models. Accordingly, as discussed above, total construction emissions generated were quantified and compared to net zero threshold.

Construction-related GHG emissions would be generated by equipment, vehicles, concrete batching, and electricity consumption. Table 22-19 summarizes annual and total estimated CO_2e emissions associated with construction of the proposed project. The emissions estimate includes implementation of air quality environmental commitments (see Appendix 3B, *Environmental Commitments, AMMs, and CMs*).

Table 22-19. CO_2e Emissions from Construction of the Proposed Project[a]

Year	Metric Tons CO_2e
2018	1,203
2019	4,241
2020	6,032
2021	201,706
2022	489,850
2023	528,690
2024	555,274
2025	367,942
2026	207,588
2027	230,425
2028	152,444
2029	118,036
2030	77,940
2031	23,624
Total	2,964,995

Sources: Gillespie pers. comm.; Valles pers. comm.; U.S. Environmental Protection Agency 2006a, 2006b, 2006c, 2011; California Air Resources Board 2010; EDMS; EMFAC2017; CalEEMod.

[a] Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel would be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work would be covered with top soil to reduce oxidation when needed.

NEPA Effects: Construction of the proposed project would generate approximately 3.0 million metric tons of CO_2e. Compared with the approved project, construction of the proposed project would generate slightly fewer GHG emissions for the same reasons discussed above under Impacts AQ-1 through AQ-4. As discussed in Section 22.4.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the proposed project would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, has been adopted to address this effect. This measure, as written in the Final EIR/EIS, remain adequate without change for dealing with the impacts of the proposed project. Refer to Appendix 22A, *Air Quality Analysis Methodology*, for an estimate of potential GHG reductions associated with each strategy.

CEQA Conclusion: Construction of the proposed project would generate a total of 3.0 million metric tons of GHG emissions. As discussed in Section 22.4.2, any increase in emissions above net zero associated with construction of the project water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero.

Incremental Impact: The proposed project would construct the Byron Tract Forebay instead of expand Clifton Court Forebay. This footprint change would require considerably less dredging and wet construction, and would reduce the number of siphon and shaft structures. These design revisions would reduce total marine and onsite vehicle miles traveled, relative to what was analyzed for the Clifton Court Forebay in the Final EIR/EIS. However, total offroad (e.g., cranes) equipment hours would increase. Holding all analysis methods (e.g., EMFAC2014), emission factors, and environmental commitments from the Final EIR/EIS constant (including a schedule start date of 2024), the design revisions would slightly decrease total GHG emissions, relative to emissions generated by construction of the Clifton Court Forebay under the approved project. The decrease would be primarily due to the reduced marine and vehicle activity required to construct the Byron Tract Forebay. As discussed above, the impact determination is based on emissions across the entire conveyance facility, inclusive of the Byron Tract Forebay design change and revisions to account for new models, guidance, and analysis requirements. Accordingly, as with the approved project, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)

Please refer to Mitigation Measure AQ-21 under Impact AQ-21 in Chapter 22, *Air Quality and Greenhouse Gases*, in the Final EIR/EIS.

22.4.4 Cumulative Analysis

Air Quality Resources

The Final EIR/EIS found that there was a potential for construction of the approved project to have a cumulative effect on air quality. As with the approved project, construction of the proposed project would generate criteria pollutant emissions in excess of local air district thresholds. Emissions of ROG, NO_X, and PM in excess of local or federal thresholds would be offset to below air district thresholds through implementation of Mitigation Measures AQ-1a/1b, AQ-3a/3b, and AQ-4a/4b, thereby avoiding adverse effects on regional air quality from ROG, NO_X, and PM during construction of the water conveyance facilities. Pursuant to SJVAPCD's GAMAQI, emissions offsets procured through Mitigation Measures AQ-4a and AQ-4b could not be used to mitigate CO impacts in the SJVAB. Therefore, the impact of generating CO emissions during construction of the proposed project would be adverse and cumulatively considerable.

Concentrations of PM1from construction of the water conveyance facilities have the potential to violate the incremental SILs. Mitigation Measures AQ-6a and AQ-6b are available to reduce fugitive dust emissions to below the appropriate SIL (see Table 22-14). Accordingly, the proposed project would not contribute to existing violations of the PM ambient air quality standards and the impact would be less than cumulatively considerable.

Greenhouse Gases

As discussed in the Final EIR/EIS, GHG emissions are inherently cumulative due to their long atmospheric lifetimes. The Final EIR/EIS found that there was a potential for construction of the approved project to have a cumulative effect on GHG emissions. Mitigation Measure AQ-21 would offset construction-related emissions to net zero through implementation of a GHG Mitigation Program. Accordingly, as with the approved project, construction of the proposed project would not contribute to cumulative GHG concentrations or global climate change impacts because emissions would be offset to net zero.

22.5 References Cited

22.5.1 Printed References

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