7.7 AIR QUALITY (NEW)

7.7 AIR QUALITY (NEW)

7.7.1 INTRODUCTION

7.7.1.1 Contnet

The proposed project analyzed in the Monterey Plus EIR was the Monterey Amendment and the Settlement Agreement. The Monterey Plus EIR considered five "elements" of the Monterey Amendment as follows:

- *Changes in the procedures for allocation of Table A water and surplus water among the SWP contractors;*
- *Approval to permanent transfers of 130,000 acre feet and retirement of 45,000 acre-feet of SWP long-term water supply contracts' Table A amounts;*
- *Transfer of property known as the "Kern Fan Element property" in Kern County;*
- *Water supply management practices; and*
- *Restructured water rates.*

This REIR has changed the description of the Kern Fan Element property transfer to be:

- *Transfer of property known as the "Kern Fan Element property" in Kern County and its development and continued use and operation as a locally owned and operated groundwater banking and recovery project.*

There are no revisions to the other elements of the Monterey Amendment or of the Settlement Agreement, and no changes have been made relating to them in this REIR. (See discussion in Introduction/Executive Summary.)

This REIR does not supersede the analysis of the Monterey Plus EIR but supplements the Monterey Plus EIR. The Monterey Plus EIR focused on the transfer of the KFE property, which was fully analyzed in the Monterey Plus EIR. This REIR did not identify any new impacts or changes to impacts caused by the transfer of the KFE property. Therefore, this REIR focuses on the development and continued use and operation of the KWB as a locally owned and operated groundwater banking and recovery project ("KWB activities").

The Monterey Plus DEIR Section 7.7 identified potential impacts to air quality as a result of the transfer of the Kern Fan Element. Substantial new information is presented in this section that replaces text from DEIR Section 7.7 that discusses KWB activities. All other text in DEIR Section 7.7 remains unchanged. In addition to the impacts discussed below, to the extent they apply, indirect impacts as a result of population growth are presented in Chapter 8, Growth-Inducing Impacts, and indirect impacts from potential cropping changes are presented in Section 10.1, Cumulative Environmental Impacts.

Table 7.7-1A identifies the potentially affected environmental resources from impacts of KWB activities on air quality.

TABLE 7.7-1A

IMPACTS OF KWB ACTIVITIES ON AIR QUALITY

Proposed Project Element	Potentially Affected Environmental Resources	Impact Number
Transfer of Kern Fan Element lands, and KWB activities	Air emissions with construction and operation of percolation ponds and other KWB facilities, and transfer of KWB Lands	7.7-1; 7.7-2; 7.7-3; 7.7-4; 7.7-5

No comment letters related to air quality were received in response to the Notice of Preparation for the Monterey Plus DEIR circulated for the proposed project.

7.7.1.2 Analytical Method

Air quality impacts related to criteria air pollutant emissions and toxic air contaminants were evaluated qualitatively and quantitatively. Factors considered in the analysis included KWB operations and maintenance from 1996 to 2014 and ongoing future activities (2015–2030). Construction emissions associated with planned KWB infrastructure were also evaluated as part of the analysis.

For construction and typical maintenance activities that would include on-road vehicles and off-road heavy-duty construction equipment, the San Joaquin Valley Air Pollution Control District (SJVAPCD)–approved model, CalEEMod Version 2013.2.2, was used to quantify air quality emissions.[1] When possible, the most current California Air Resources Board (CARB) on-road emission inventory model, EMFAC2014, was used to quantify on-road emissions. Kern Water Bank Authority (KWBA) provided historical and current information regarding KWB operations and maintenance and projected construction activities for future infrastructure.

The annual emissions associated with historical operations and maintenance and proposed construction were compared to SJVAPCD thresholds of significance to determine the significance of impacts related to increased emissions. All emissions associated with construction and operations and maintenance (O&M) activities are associated with SJVAPCD's jurisdiction. It is possible that some construction workers or KWBA employees could come from different jurisdictions; however, for the purpose of this analysis, all emissions were conservatively assumed to occur in the SJVAPCD.

7.7.1.3 Standards of Significance

The following standards of significance are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For purposes of this REIR, impacts on air quality would be considered significant if KWB activities would:

- Substantially conflict with or obstruct implementation of applicable air quality plans;
- violate any air quality standards or contribute substantially to an existing or projected air quality violation;
- cause cumulatively considerable net increases of any criteria pollutant for which an affected region is in non-attainment under applicable federal or state ambient air quality standards;
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

As stated in Appendix G, the significance criteria established by the applicable air quality management district may be relied on to make the above determinations. Based on SJVAPCD's *Guide for Assessing*

and Mitigating Air Quality Impacts,[2] implementation of KWB activities would result in a significant air quality impact if any of the following scenarios would occur:

Criteria Air Pollutants or Precursors

- Short-term construction-related emissions of reactive organic gases (ROG) or nitrogen oxides (NO_X) would exceed 10 tons per year (tpy).
- Short-term construction-related emissions of respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM_{10}) or fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less ($PM_{2.5}$) would exceed 15 tpy, or SJVAPCD-required control measures in compliance with Regulation VIII, "Fugitive Dust Prohibition"; or other applicable SJVAPCD-recommended mitigation measures were not incorporated into the proposed construction plans.
- Long-term operational emissions of ROG or NO_X would exceed 10 tpy.
- Long-term operational emissions of PM_{10} or $PM_{2.5}$ would exceed 15 tpy.
- Long-term operational (local) emissions would violate any air quality standard or contribute substantially to an existing or projected air quality violation, or would expose sensitive receptors to substantial pollutant concentrations. Such a violation would occur if carbon monoxide (CO) emissions would exceed the 20 parts per million (ppm) (1-hour) or 9 ppm (8-hour) standard.

Toxic Air Contaminants

- Construction or operational emissions would expose sensitive receptors to toxic air contaminant (TAC) emissions that would exceed a 10 in a million excess cancer risk or a hazard index of 1 for non-cancer risk at the maximally exposed individual.

7.7.2 ENVIRONMENTAL SETTING

7.7.2.1 Physical Setting in 1995

Kern County is located in the San Joaquin Valley Air Basin (SJVAB), bordered on the east by the Sierra Nevada, on the west by the Coast Ranges, and to the south by the Tehachapi Mountains. Airflow in the SJVAB is influenced by marine air that entered through the Carquinez Straits where the Sacramento-San Joaquin Delta empties into the San Francisco Bay. The region's topographic features restrict air movement through and out of the basin. [3] As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Frequent transport of pollutants into the SJVAB from upwind sources also contributes to poor air quality.

Wind speed and direction play an important role in dispersion and transport of air pollutants. During summer, winds usually originate from the north end of the San Joaquin Valley and flow in a south-southeasterly direction through the valley, through the Tehachapi Pass, and into the neighboring Southeast Desert Air Basin. During winter, winds occasionally originate from the south end of the valley and flow in a north-northwesterly direction. Also, during winter, the valley experiences light, variable winds, less than 10 miles per hour (mph). Low wind speeds, combined with low inversion layers in winter, create a climate conducive to high concentrations of certain air pollutants.[4]

The SJVAB has an inland Mediterranean climate that is characterized by warm, dry summers and cool winters. Summer high temperatures often exceed 100 degrees Fahrenheit (°F), averaging from the low 90s in the northern part of the valley to the high 90s in the south. The daily summer temperature variation can be as high as 30 degrees °F. Winters are for the most part mild and humid. Average high

temperatures during winter are in the 50s, while average daily low temperatures are about 45 degrees °F.[5]

The vertical dispersion of air pollutants in the valley is limited by the presence of persistent temperature inversions. Air temperatures usually decrease with an increase in altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Air above and below an inversion does not mix because of differences in air density thereby restricting air pollutant dispersal.[6]

This air basin is in non-attainment of federal and state standards for both PM_{10} and ozone. The SJVAB also has areas where TACs are problematic. In 1995, the SJVAB was designated by the U.S. Environmental Protection Agency (EPA) as being in "serious" non-attainment for the federal one-hour ozone standard. No other federal ozone standard was in place at the time. This led to the preparation of the 1994 Ozone Attainment Plan, which was prepared by the local air agency and was adopted in 1994. The SJVAB was also in "serious" non-attainment of the federal PM_{10} standard and developed a plan to bring the basin into attainment of the standard.

In 1995, the State as a whole experienced health impacts from TACs, mostly from diesel particulate matter. At that time, Kern County had several areas where the estimated inhalation cancer risk was greater than 250 per million people.

7.7.2.2 Changes in Physical Setting between 1996 and 2014

By 2003, the air basin's attainment status had been changed to "severe" nonattainment for the federal ozone standard. The SJVAPCD was also readying to petition the EPA to reclassify the Basin to "extreme" for one-hour ozone standard to allow the Basin more time to attain the standard. The Basin remained a "serious" non-attainment area for the federal PM_{10} standard. The Basin also remained a non-attainment area for State ozone and PM_{10} standards. The SJVAPCD thresholds of significance in 2003 were 10 tons/year of ROG, 10 tons/year NO_X, and an excess cancer risk of 10 in one million from TACs. Risk from diesel particulate matter in the Basin had improved since 1995, but areas still existed where TAC risk was high. The current attainment status of the project region with respect to national and state standards is described below.

The SJVAPCD maintains a network of air quality monitoring stations located throughout the San Joaquin Valley. The monitoring stations record concentrations of various pollutants including: ozone; carbon monoxide; nitrogen dioxide (NO_2); sulfur dioxide (SO_2); PM_{10}; $PM_{2.5}$; lead (Pb); and sulfates (SO_4). Monitored ambient air pollutant concentrations reflect the number and strength of emissions sources and the influence of topographical and meteorological factors. The station closest to and most representative of air quality conditions at the KWB Lands is in Shafter (ozone only). This monitoring site is approximately 10 miles northeast of KWB Lands. The nearest monitoring stations for PM_{10} and $PM_{2.5}$ are located in Bakersfield, approximately 15 miles east of KWB Lands. As PM is a localized pollutant, data from the highly urbanized Bakersfield station would not be representative of concentrations in the rural KWB area, but it provides current ambient air quality concentrations near KWB Lands. Table 7.7-2 presents the most recent three-year summary of air pollutant (concentration) data collected at the nearest monitoring stations. As shown in Table 7.7-2, these measured air pollutant concentrations are compared with state and national ambient air quality standards.

TABLE 7.7-2

AIR QUALITY DATA SUMMARY FOR BAKERSFIELD AND SHAFTER, 2010-2012

Pollutant	2011	2012	2013
Ozone –Shafter			
Highest 1 Hour Average (ppm)[b]	**0.097**	**0.103**	**0.112**
Days over State Standard (0.09 ppm)[a]	1	5	1
Highest 8 Hour Average (ppm)[b]	**0.087**	**0.090**	**0.097**
Days over National Standard (0.075 ppm)[a]	18	30	6
Days over State Standard (0.07 ppm)[a]	43	64	21
Particulate Matter (PM_{10}) –Bakersfield			
Highest 24 Hour Average – State/National ($\mu g/m^3$)[a, c]	**154.0**/97.4	**125.8**/99.6	**116.9**/120.7
Days (Measured) over National Standard ($150 \mu g/m^3$)[a, c]	0	0	0
Days (Measured) over State Standard ($50 \mu/m^3$)[a, c]	113	55	16
State Annual Average (State Standard 20 $\mu g/m^3$)[a, c]	**44.2**	**41.4**	*
Particulate Matter ($PM_{2.5}$) –Bakersfield			
Highest 24 Hour Average ($\mu g/m^3$)[b] – National Measurement	**80.3**	**86.5**	**117.7**
Days (Measured) over National Standard ($35 \mu g/m^3$)[a, c]	30	22	44
State Annual Average ($12 \mu g/m^3$)[b]	**18.1**	**17.9**	*

Notes:

a Generally, state standards and national standards are not to be exceeded more than once per year.

b ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

c PM_{10} and $PM_{2.5}$ are not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

* Insufficient data available to determine value; NA = Not Available.

Values in **Bold** exceed the respective air quality standard.

Source: California Air Resources Board, 2015.

KWB Participants' Service Area

KWB activities may result in an indirect air quality impact as a result of providing more reliable water supply for KWB participants. A focused air quality analysis was prepared in 2015 to assess air quality impacts due to on-farm agricultural activities of the KWB participants' service area between 1995 and 2015.[7] The analysis is based on emissions calculations methodologies and guidelines established or provided by the SJVAPCD and CARB. These methodologies provide crop-specific uncontrolled PM_{10} emission factors on a per-acre basis. Table 7.7-3 presents the change in fugitive dust emissions from land preparation and harvesting and combustion emissions from diesel-fueled mobile equipment between 1995 and 2015.

As shown in Table 7.7-3, emissions of ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ decreased within the KWB participant's service area from 1995 to 2015. Fugitive PM_{10} and $PM_{2.5}$ emissions decreased due to land preparation and harvesting emissions decreased due to control measures required by SJVAPCD.[8] Overall, the Focused Air Quality Analysis determined that ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with KWB-supplied agricultural activities would decrease by approximately 41%, 46%, 8%, and 12%, respectively, from 1995 to 2015.[9] The ROG and NO_X reductions are a result of turnover in equipment fleets, introduction of new equipment, and increasingly stringent emissions standards. Emissions reductions for PM_{10} and $PM_{2.5}$ are a result of both changes in agricultural equipment mentioned above and SJVAPCD Rule 4550 (Conservation Management Practices), which limits fugitive dust emissions from agricultural operations. Exhaust-related PM_{10} and $PM_{2.5}$ emissions, which are primarily diesel particulate matter (diesel PM), decreased by approximately 34% from 1995 to 2015. The increase in harvest-related PM_{10} emissions is primarily driven by the change from cotton to

almonds. Almond crops generate significantly more fugitive dust than cotton during harvesting activities than during land preparation.[9] These indirect impacts of KWB activities are discussed in the Air Quality section of Section 10.1.5, Cumulative Impacts.

TABLE 7.7-3

1995 AND 2005 EMISSIONS FROM ON-FARM AGRICULTURAL ACTIVITIES IN KWB PARTICIPANTS' SERVICE AREAS

1995 (tons)						
Emission Sources	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Agricultural Land Preparation	**--**	**--**	**--**	**--**	**541.8**	**120.3**
Agricultural Harvest Operations	**--**	**--**	**--**	**--**	**529.2**	**117.5**
Agricultural Equipment	186.9	1,235.3	559.7	0.7	70.7	65.1
Total Emissions	**186.9**	**1,235.3**	**559.7**	**0.7**	**1,141.7**	**302.9**
2015						
Emission Sources	**ROG**	**NO_x**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Agricultural Land Preparation	**--**	**--**	**--**	**--**	**173.7**	**38.6**
Agricultural Harvest Operations	**--**	**--**	**--**	**--**	**834.9**	**185.3**
Agricultural Equipment	**109.4**	**65.1**	**396.4**	**0.1**	**46.4**	**42.7**
Total Emissions	**109.4**	**665.1**	**396.4**	**0.1**	**1,055.0**	**266.6**

Notes:
CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter less than 10 micrometers; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter less than 2.5 micrometers; ROG = reactive organic gases; SO_x = sulfur oxides.

Source: Insight Environmental Consultants. 2015 (October).

7.7.2.3 Regulatory Setting in 1995

Regulations related to air quality relevant to KWB activities are relatively unchanged between 1995 and the 1996 through 2014 period and are discussed below.

7.7.2.4 Changes in Regulatory Setting between 1996 – 2014

Federal

EPA is the federal agency responsible for setting and enforcing the federal ambient air quality standards for atmospheric pollutants. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives.

As part of its enforcement responsibilities, EPA requires each state with non-attainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs. With respect to the National Ambient Air Quality Standards, the air basin is designated as nonattainment for ozone and $PM_{2.5}$, and attainment or unclassified for the remaining pollutants (i.e., NO_2, PM_{10}, CO, SO_2, and lead).

State

CARB, a part of the California Environmental Protection Agency (Cal EPA), is responsible for the coordination and administration of both federal and State air pollution control programs within California. In this capacity, CARB conducts research, sets State ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The CARB also has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts. With respect to the California Ambient Air Quality Standards, the air basin is currently designated as nonattainment for ozone, PM_{10}, and $PM_{2.5}$, and attainment or unclassified for the remaining pollutants (i.e., NO_2, CO, SO_2, and lead). California also includes ambient air quality standards for sulfates, hydrogen sulfide, visibility reducing particles, and vinyl chloride, all for which the project area is also designated as attainment or unclassified.

Regional

Air Quality Districts

Numerous local agencies throughout California have jurisdiction over local air quality control. The agencies' boundaries normally follow political boundaries. These local agencies, called "air quality management districts" or "air pollution control districts," are responsible for permitting many sources of air emissions and developing rules to regulate activities and operations that contribute to the degradation of air quality. Because they are regularly commenting agencies or responsible agencies, many districts also have produced guidance to help project applicants comply with CEQA. These guidance documents normally contain thresholds of significance for criteria pollutants. Thresholds of significance can vary significantly between agencies, but most thresholds are correlated to an air district's attainment plans for the criteria pollutants. Projects that have the potential to generate criteria pollutants in excess of local thresholds are considered significant.

San Joaquin Valley Air Pollution Control District

The western portion of Kern County (including the KWB Lands), which is in the SJVAB, is regulated by the SJVAPCD. The SJVAPCD sets thresholds of significance for emissions from construction and operational activities for projects. For construction activities, the SJVAPCD specifies that thresholds would not normally be exceeded as long as a project is complying with specific PM_{10} control measures (SJVAPCD Regulation VIII). In 2015, SJVAPCD updated the *Guide for Assessing and Mitigating Air Quality Impacts* (2015 GAMAQI) with thresholds of significance for construction and operational emissions occurring within its jurisdiction. For construction-related emissions, SJVAPCD also established thresholds of significance for PM_{10} and $PM_{2.5}$ emissions, for which the region is nonattainment with respect to the California ambient air quality standards. For operational activities, the SJVAPCD specifies a threshold of 10 tpy of ROG, 10 tpy of NO_X, 15 tpy of PM_{10}, 15 tpy of $PM_{2.5}$, and a cancer risk from TACs of greater than 10 in one million. This analysis uses these thresholds from the 2015 GAMAQI to evaluate the KWB's construction and operational emissions.

The SJVAPCD also regulates burn permits and rules for open agricultural burning (Rule 4103)[10] and prescribed burning and hazard reduction burning (Rule 4106).[11] The SJVAPCD does not set the burn season, but only provides permitting. KWB Lands are located within Cal Fire Local Responsibility Area (LRA)(see Section 7.0.4.1.3).[12] The Kern County Fire Department is the LRA and sets the burn season (see Section 7.0.4.1.4).

Eastern Kern Air Pollution Control District

Air quality in the eastern portion of Kern County is regulated by the Eastern Kern Air Pollution Control District (EKAPCD). Similar to SJVAPCD, the EKAPCD seeks to improve air quality conditions in the Kern County portion of the MDAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. In 1999, the EKAPCD updated their previously adopted Guidelines for Implementation of California Environmental Quality Act (1999 CEQA Guidelines).[13] It is not anticipated that any of the direct construction or O&M activities associated with KWB activities would occur in EKAPCD's jurisdiction, but potential employee trips for construction or O&M could come from EKAPCD's jurisdiction. It should be noted that EKAPCD has adopted similar thresholds of significance as SVAPCD and therefore by including all emissions in a single jurisdiction (i.e., SJVAPCD), this analysis conservatively estimates the project's air quality emissions.

General Plans

The Kern County General Plans contains goals and policies to address air quality and pollutant emissions. Based on the impact analyses presented below, there are no aspects of the KWB activities that would be considered inconsistent with general plan policies pertaining to air quality.

7.7.3 IMPACTS AND MITIGATION MEASURES

7.7-1 Construction of KWB facilities could potentially generate emissions that would violate air quality standards or conflict with or obstruct implementation of the SJVAPCD air quality plan.

1996 — 2014

The KWB facilities currently include approximately 7,200 acres of recharge ponds, 85 recovery wells, an extensive network of monitoring wells, 36 miles of pipeline, and the 6-mile-long KWB Canal. The ponds consist of low earthen berms that pond water to depths of a few feet. Water flows between the ponds in small channels; KWBA operators control the flow with small weir boxes. The recovery wells average about 750 feet deep and produce as much as 5,000 gallons per minute of water. They are distributed throughout the KWB Lands and are spaced approximately one-third mile apart. The 16- to 20-inch-diameter wells are powered with electric motors. Small diameter (15- to 36-inch-diameter) PVC pipelines transport water recovered from wells to existing canals or, in some cases, to large diameter pipelines (> 36-inch-diameter). Approximately 31 miles of small-diameter and 5 miles of large-diameter pipeline have been constructed.

The KWB Canal was constructed to convey water both to the water bank ponds for recharge purposes and from the water bank wells for recovery purposes. The canal extends 6 miles from the Kern River on the east to the California Aqueduct on the west. Associated structures include headworks at the Kern River, a 100 cubic feet per second (cfs) pump station serving the Kern River area, a crossing under Enos Lane, a check structure, a 545 cfs pump station serving the eastern portions of the KWB, and diversion facilities at the California Aqueduct.

Construction of the recharge ponds, canal, and other facilities required the use of heavy-duty construction equipment. This equipment generated diesel particulate matter, which is a TAC, as well as emissions of ozone precursors such as ROG and NO_X. The disturbance of the soil associated with the various earthmoving activities also generated PM_{10}. Because KWBA would have been required to implement all of the SJVAPCD's suggested PM_{10} control measures, PM_{10} construction emissions would likely have been below SJVAPCD thresholds (see Section 7.0.4.1.3, Air Quality Standards).

Based on a conservative assumption of 800 acres per year of soil disturbance to construct the ponds, NO_x and ROG emissions would not have exceeded SJVAPCD thresholds. Further, the duration of construction-generated air pollutant emissions was temporary and limited to the construction periods only.

Thus, KWB construction activities in 1996–2014 did not generate annual emissions exceeding SJVAPCD thresholds of significance and would not result in a net increase in criteria air pollutants in a non-attainment area that would conflict with implementation of the adopted air quality plan for the region.

Therefore, the impact of KWB activities from 1996 to 2014 for construction of KWB facilities with regard to generating air pollutant emissions was ***less than significant***.

Mitigation Measures

None required.

2015 — 2030

Near-term future KWB activities include construction of approximately 190 acres of recharge ponds and three wells under the ongoing Integrated Regional Water Management (IRWM) program (Kern Water Bank Recharge and Recovery Project). Longer-term future construction of approximately 862 acres of additional recharge ponds and associated facilities is anticipated as part of full build-out. The IRWM program ponds have been sited. The locations of additional ponds are approximate but will be consistent with the KWB Habitat Conservation Plan/Natural Communities Conservation Plan (KWB HCP/NCCP) requirements; final locations and areas will be determined as these facilities are designed. KWBA has also issued a Notice of Preparation in 2012 for the proposed Kern Water Bank Conservation and Storage Project, which would use existing facilities to divert water from the Kern River to increase reliability and enhance the dry-year water supply of KWBA's participants through storage in the KWB. No new water conveyance facilities to convey KWB-recovered water are anticipated to be constructed by KWB participants; KWB participants already have facilities in place to convey and exchange recovered water.

As described above in Section 7.7.1.2, Analytical Method, construction emissions associated with future KWB activities were modeled using the SJVAPCD-approved CalEEMod and project-specific information provided by KWBA. Where project-specific information was not available, default assumptions contained in CalEEMod were used to model emissions. It should be noted that default CalEEMod assumptions are conservative to avoid underestimating construction emissions when project-specific information is not known.

The future IRWM program includes the construction of three wells and approximately 190 acres of recharge ponds that would be consistent with the KWB HCP/NCCP. To allow for a conservative analysis, all construction activities were assumed to occur in year 2016, the earliest possible year of construction. Emission rates in later years would be lower because of vehicle and equipment fleet turnover and improvements to emissions technology. Therefore, year 2016 emission rates are the maximum emission rates for construction activities. Table 7.7-4 presents the annual construction emissions associated with the future IRWM program.

The full build-out of the KWB includes the construction of approximately 862 acres of recharge ponds that would be consistent with the KWB HCP/NCCP. Similar to the IRWM program, all construction activities were assumed to occur in 2016 to allow for a conservative analysis. At the time of this analysis, project-specific information for the full build-out was not available. Therefore, project-specific

information was extrapolated using the recharge pond construction information for the IRWM program. Table 7.7-4 presents the annual construction emissions associated with the full build-out.

TABLE 7.7-4

FUTURE KERN WATER BANK CONSTRUCTION EMISSIONS

Construction Project	Pollutants (tons)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Integrated Resources Water Management Program [1]	0.26	2.87	0.16	0.13
Full KWB build-out [1]	0.51	6.11	0.33	0.25
Total Emissions [2]	**0.76**	**8.98**	**0.48**	**0.38**
SJVAPCD Thresholds (tpy)	10	10	15	15
Exceeds Thresholds? [2]	No	No	No	No

Notes:

NO_X = nitrogen oxides; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter less than 10 micrometers; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter less than 2.5 micrometers; ROG = reactive organic gases; SJVAPCD = San Joaquin Valley Air Pollution Control District; tpy = tons per year.

[1] Both the Integrated Resources Water Management Program and KWB Conservation and Storage projects plus full build-out were conservatively modeled assuming that all construction activities would occur in year 2016, the earliest year that construction activities could occur for both projects. Year 2016 would result in the maximum emission factors for construction equipment and vehicles.

[2] The sum of emissions associated with both proposed projects and full KWB build-out was compared with SJVAPCD thresholds of significance. Although the IRWM program and full KWB build-out are not likely to completely overlap in the same year, this analysis conservatively assumes this worst-case scenario to determine significance.

Source: Data compiled by AECOM in 2015

As shown in Table 7.7-4, construction emissions associated with the future KWB activities would not generate levels of PM_{10}, ROG, or NO_x in excess of SJVAPCD thresholds for these pollutants (see Section 7.0.4.1.3, Air Quality Standards). Therefore, the KWBA's proposed 2015–2030 construction activities are not anticipated to generate annual emissions exceeding SJVAPCD thresholds of significance and would not result in a net increase in criteria air pollutants in a non-attainment area that could conflict with implementation of the adopted air quality plan for the region. In addition, KWBA would still need to comply with all applicable SJVAPCD rules and regulations, including Regulation VIII (Fugitive Dust Prohibition, Rule 8011 (fugitive dust control measures) and Rule 9510 (indirect source review) regardless of the level of emissions. See Section 7.0.4.1.3, Air Quality Standards for additional detail. No additional mitigation measures would be required.

Therefore, the impact of KWB activities from 2015 to 2030 for construction of KWB facilities with regard to generating air pollutant emissions would be ***less than significant***.

Mitigation Measures

None required.

7.7-2 Operations and maintenance of existing and proposed KWB facilities could potentially generate air pollutant emissions that would violate air quality standards or conflict with or obstruct implementation of the SJVAPCD air quality plan.

1996 — 2014

From 1996 to 2014, KWB activities included various O&M activities that would generate air pollutant emissions. O&M activities include the use of heavy-duty construction equipment for earthmoving and infrastructure-related maintenance. On-road vehicles such as pick-up trucks and heavy-duty haul trucks are used by workers to inspect facilities and transport materials, respectively. In addition, O&M

activities include prescribed burns, whose air pollutant emissions are permitted by the SJVAPCD and therefore are not included in this analysis (see Impact 7.7-12 for impacts from burning). Greenhouse gas (GHG) emissions associated with prescribed burns are evaluated further in Chapter 12, Climate Change. Grazing of the KWB Lands by sheep and cattle does not generate emissions of air pollutants but does generate GHG emissions (see Chapter 12, Climate Change). Lastly, electricity is used to operate the KWB's conveyance, recharge, and recovery facilities. While electric pump use would have increased, this would not have increased air emissions in the KWB area, as electric pumps are not sources of direct air quality emissions. Air quality emissions from electricity generation would be evaluated and regulated as part of the power plants' permitting process and therefore are not evaluated in this analysis.

Table 7.7-5 presents the total and annual average air pollutant emissions associated with O&M activities for KWB activities for 1995-2014. As shown in Table 7.7-5, the total and annual average emissions associated with O&M activities from 1996 to 2014 did not exceed the SJVAPCD thresholds of significance and would not result in a net increase in criteria air pollutants in a non-attainment area that could conflict with implementation of the adopted air quality plan for the region (see Section 7.0.4.1.3, Air Quality Standards). However, KWBA would still need to comply with all applicable SJVAPCD rules and regulations, including but not limited to, Regulation VIII (Fugitive Dust Prohibition, Rule 8011 (fugitive dust control measures) during O&M activities that involve ground disturbance. Thus, it is not anticipated that 2015–2030 O&M activities associated with the KWB would generate annual emissions exceeding SJVAPCD thresholds of significance and would not result in a net increase in criteria air pollutants in a non-attainment area that could conflict with implementation of the adopted air quality plan for the region.

TABLE 7.7-5

KERN WATER BANK ELEMENT OPERATIONS AND MAINTENANCE EMISSIONS

Operations and Maintenance Activity	Pollutants (tons)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
On- and Off-Road Sources	0.85	3.32	0.40	0.34
Electricity Consumption [1]	—	—	—	—
Burns [2]	—	—	—	—
Grazing [3]	—	—	—	—
Total Emissions	**0.85**	**3.32**	**0.40**	**0.34**
Annual Average Emissions (tpy) [4]	0.04	0.17	0.02	0.02
SJVAPCD Thresholds (tpy)	10	10	15	15
Exceeds Thresholds?	No	No	No	No

Notes:
NO_X = nitrogen oxides; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter less than 10 micrometers; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter less than 2.5 micrometers; ROG = reactive organic gases; SJVAPCD = San Joaquin Valley Air Pollution Control District; tpy = tons per year.

[1] Electricity-related air pollutant emissions would be evaluated and controlled as part of the power plants' permitting process. These emissions are not evaluated again in this analysis. Greenhouse gas (GHG) emissions are evaluated further in Chapter 12, "Climate Change."

[2] Burn-related air pollutant emissions would be evaluated through SJVAPCD's permitting and fee process and therefore are not evaluated again in this analysis See Impact 7.7-12 on odors. GHG emissions are evaluated further in Chapter 12, "Climate Change."

[3] Grazing generates GHG emissions from enteric fermentation and manure management, which are evaluated further in Chapter 12, "Climate Change."

[4] Annual average emissions from 1996 to 2014 were used to determine impact significance. As shown above, even the total operations and maintenance emissions from 1996 to 2014 would not exceed the significance thresholds.

Source: Data compiled by AECOM in 2015

Therefore, the impact of KWB activities from 1995 to 2014 with regard to operations and maintenance of existing KWB facilities with regard to generating air pollutant emissions was ***less than significant***.

Mitigation Measures

None required.

2015 — 2030

The future O&M activities associated with the KWB are anticipated to be similar to those shown in Table 7.7-4. Even with the addition of proposed future KWB activities, O&M activities are not anticipated to increase substantially beyond the previous O&M levels. Furthermore, it is highly unlikely that any increase in O&M activities would cause the annual average O&M emissions shown in Table 7.7-4 to exceed SJVAPCD thresholds of significance (see Section 7.0.4.1.3, Air Quality Standards). In addition, it is anticipated that over time, turnover in the vehicle and equipment fleet and improvements to emissions technology would cause vehicle and equipment emission rates to decrease. Thus, it is not anticipated that 2015–2030 O&M activities associated with the KWB would generate annual emissions exceeding SJVAPCD thresholds of significance and would not result in a net increase in criteria air pollutants in a non-attainment area that could conflict with implementation of the adopted air quality plan for the region.

Therefore, the impact of KWB activities from 2015 to 2030 with regard to operations and maintenance of existing and proposed KWB facilities with regard to generating air pollutant emissions would be ***less than significant.***

Mitigation Measures

None required.

7.7-3 Construction, operations, and maintenance of existing and proposed KWB facilities could potentially generate cumulatively considerable air pollutant emissions.

As discussed in Impacts 7.7-1 and 7.7-2, the KWB's construction-related and operational activities would not result in emissions of any air pollutants exceeding SJVAPCD thresholds of significance. The SJVAB is designated as nonattainment for the state ozone, PM_{10}, and $PM_{2.5}$ standards. Although most projects would result in a net increase in air pollutant emissions, this impact evaluates whether that net increase in air quality emissions would be considered a cumulatively considerable contribution to a significant cumulative impact on air quality. According to SJVAPCD, projects that would generate air pollutant emissions exceeding applicable thresholds of significance would generate emissions above the allowable limit for the region to attain and maintain ambient air quality standards, and the contribution of such emissions would be cumulatively considerable.[14]

1996 — 2014

KWB construction emissions from 1996 through 2014 did not exceed SJVAPCD thresholds of significance. Therefore, the KWB's construction-related emissions during 1996–2014 did not result in a cumulatively considerable net increase in emissions.

As shown in Table 7.7-4, O&M activities associated with KWB activities during 1996–2014 did not exceed the SJVAPCD thresholds of significance. Thus, the KWB O&M emissions during 1996–2014 did not result in a cumulatively considerable net increase in emissions.

Therefore, KWB activities from 1996 to 2014 did not result in a cumulatively considerable incremental contribution to a significant cumulative impact on air quality. This cumulative impact was ***less than significant*.**

Mitigation Measures

None required.

2015 — 2030

As shown in Table 7.7-2, construction emissions from proposed future KWB activities would not exceed SJVAPCD thresholds of significance. Thus, the KWB's construction-related emissions during 2015–2030 would not result in a cumulatively considerable net increase in emissions.

As shown in Table 7.7-4, O&M activities associated with proposed future KWB activities during 1996–2014 did not exceed the SJVAPCD thresholds of significance. It is not anticipated that the 2015–2030 KWB O&M activities would substantially increase beyond the levels shown in Table 7.7-4. Thus, the KWB's O&M emissions during 2015–2030 would not result in a cumulatively considerable net increase in emissions.

Therefore, KWB activities from 2015 to 2030 are not likely to result in a cumulatively considerable incremental contribution to a significant cumulative impact on air quality. This cumulative impact would be ***less than significant*.**

Mitigation Measures

None required.

7.7-4 Construction, operations, and maintenance of existing and proposed KWB facilities could potentially expose sensitive receptors to substantial pollutant concentrations.

KWB construction and operational activities would generate varying levels of TAC emissions that could expose sensitive receptors such as hospitals, day-care centers, schools, and residential areas. Potential construction and operational TAC emissions are discussed separately below.

1996 — 2014

Construction

No sensitive receptors such as hospitals, day-care centers, schools, or residential areas were located within 1,000 feet of KWB Lands, such that they would have been affected. Furthermore, during 1996–2014, construction of KWB facilities was not known to expose sensitive receptors to substantial pollutant concentrations.

Operations and Maintenance

The KWB O&M activities during 1996–2014 occurred intermittently throughout the year and were distributed throughout KWB Lands. Therefore, considering the lack of sensitive receptors within 1,000 feet of KWB Lands, the relatively low intensity of O&M activities, the intermittent occurrence of O&M activities, and the fact that O&M activities were spread out across KWB Lands much farther away than 1,000 feet from sensitive receptors, O&M activities were not expected to have exposed sensitive receptors to substantial pollutant concentrations through TAC emissions or substantial contributions to potential CO hotspots (i.e., exceedance of CO ambient air quality standard).

Therefore, the impact of KWB construction and O&M activities from 1996 to 2014 with regard to potential exposure of sensitive receptors to substantial pollutant concentrations was ***less than significant***.

Mitigation Measures

None required.

2015 — 2030

Construction

Construction activities would generate short-term emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment for earth-disturbing activities and diesel-fueled truck trips. Diesel PM was identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts.[15]

Emissions from construction equipment throughout the United States will be reduced over time because a final rule promulgated by EPA in January 2001 reduces permitted emissions levels for heavy-duty diesel engines during 2007 and subsequent model years. These revised emissions standards were established to reduce NO_X emissions by 90%, non-methane hydrocarbon emissions by 72%, and PM emissions by 90% compared to the emissions standards for the 2004 model year. In December 2004, CARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to the standards finalized by EPA on May 11, 2004. Thus, since 2011, engine manufacturers have been required to meet after-treatment-based exhaust standards for NO_X and PM that are more than 90% lower than previous levels, putting emissions from off-road engines virtually on par with those from on-road heavy-duty diesel engines. With the ongoing turnover and retrofitting of construction equipment, construction-related emissions of diesel PM would continue to decrease over time.

With respect to health impacts, the dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). The dose is determined based on the concentration of the substances in the environment and the length of time the receptor was exposed to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

According to the California Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure period. Such assessments, however, should be limited to the period and duration of activities associated with the project being analyzed.

Construction activities for future KWB activities are anticipated to occur for approximately 6–8 months, or approximately 2% of the minimum exposure period required to complete a health risk assessment. The locations of future KWB activities, although preliminary in some cases, would not occur within 1,000 feet of sensitive receptors. Considering the intermittent and temporary construction emissions and the buffer distance from sensitive receptors, it is highly unlikely that KWB construction activities would expose sensitive receptors to substantial TAC concentrations. Therefore, future 2015–2030 construction-related TAC emissions would not expose sensitive receptors to substantial pollutant concentrations.

Furthermore, considering that construction activities would be intermittent and relatively low in intensity, and the relatively low population density near KWB Lands, it is highly unlikely that construction-related vehicle trips would contribute substantially to a potential CO hotspot.

Operations and Maintenance

As discussed in Impact 7.7-9, even with construction of future KWB infrastructure, it is not anticipated that the KWB's O&M activities from 2015 to 2030 would substantially increase beyond existing levels. Such activities would continue to occur intermittently across KWB Lands and would be of relatively low-intensity with respect to TAC emissions. Therefore, it is not anticipated that future KWB O&M activities would expose sensitive receptors, which are all located substantially greater than 1,000 feet away from KWB Lands, to substantial pollutant concentrations. Similar to construction-related activities, considering the relatively low intensity of O&M vehicle-related activities and the low population density near KWB Lands, it is highly unlikely that O&M activities would contribute substantially to a potential CO hotspot.

Therefore, the impact of KWB construction and O&M activities from 2015 to 2030 with regard to potential exposure of sensitive receptors to substantial pollutant concentrations would be ***less than significant***.

Mitigation Measures

None required.

7.7-5 Construction, operations, and maintenance of the existing and proposed KWB facilities could potentially generate objectionable odors affecting a substantial number of people.

The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and causing citizens to submit complaints to local governments and regulatory agencies. Projects with the potential to frequently expose individuals to objectionable odors may have a significant adverse environmental impact. Typical facilities that generate odors include wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, and food processing facilities. KWB activities include recharge and recovery water infrastructure facilities and O&M activities, which are not typically considered odor sources. Although construction activities are short-term and temporary, diesel-fueled construction equipment and heavy-duty trucks have the potential to expose nearby residents to objectionable odors. In addition, burning activities designed to reduce unwanted vegetation can also result in objectionable odors.

1996 — 2014

Construction and O&M using Diesel Fuel Equipment and Vehicles

Heavy-duty trucks and off-road construction equipment used during construction and maintenance activities would generate diesel PM exhaust, the odor of which could be considered offensive to some individuals. Given the lack of sensitive receptors on or near KWB Lands, the construction of KWB facilities would not expose a substantial number of receptors to objectionable odors. Therefore, construction of KWB facilities did not expose a substantial number of receptors to objectionable odor emissions.

Other O&M Activities

Emissions associated with grazing could have generated odorous emissions affecting a substantial number of receptors. Because sheep and cattle are allowed to move around specific areas when

grazing, manure from livestock is not consolidated in a single location which can cause a potential odor source. Rather, manure is naturally distributed throughout the grazing area, open to sunlight and air circulation to dry out manure, hence minimizing odor emissions.

Based on the magnitude of some burns, it is possible that some burns caused odor emissions beyond KWB Lands and immediately adjacent areas that could expose receptors to odorous emissions during the prescribed burns. With respect to burns, however, burns can only take place when approved by the SJVAPCD which regulates burns throughout its jurisdiction to ensure that burns do not affect overall air quality. Rules related to SJVAPCD's permitting, regulatory, and coordination requirements for open agricultural burning (Rule 4103)[16] and prescribed burning and hazard reduction burning (Rule 4106)[17] would minimize impacts on the public (see 7.0.4.1.4, Burning Permits).

Therefore, the impact of KWB construction and O&M activities for 1996 to 2014 with regard to objectionable odors was ***less than significant***.

Mitigation Measures

None required.

2015 — 2030

Construction and O&M using Diesel Fuel Equipment and Vehicles

Construction activities associated with future KWB activities would occur intermittently throughout their 6- to 8-month construction schedules. However, construction-related odor emissions would occur during the day and cease at night. Therefore, construction-related odors would not be constantly generated from the construction site. In addition, construction equipment would be used intermittently, and thus would not constantly generate emissions. Furthermore, it is anticipated that these planned projects would occur more than 1,000 feet from existing sensitive receptors. Given the intermittent nature of construction activities and the buffer distance, it is unlikely that project construction activities would expose a substantial number of receptors to odorous emissions.

Other O&M

Grazing activities would be similar to those described for 1996–2014 and would not be anticipated to generate substantial odor emissions. SJVAPCD would continue to regulate burns (i.e. enforcement and administering Rules 4103 and 4106) throughout its jurisdiction to ensure that burns do not affect overall air quality. KWB's O&M activities would be required to obtain permits from SJVAPCD for burns and comply with all applicable requirements, which would minimize potential odor impacts to surrounding receptors (see 7.0.4.1.4 Burn Permits).

Therefore, the impact of KWB construction and all O&M activities from 2015 to 2030 with regard to objectionable odors would be ***less than significant***.

Mitigation Measures

None required.

ENDNOTES

1. California Air Pollution Control Officers Association. 2016. CalEEMod. Available: http://www.caleemod.com. Accessed January 5, 2016.

2. San Joaquin Valley Air Pollution Control District. 2015 (March). *Guidance for Assessing and Mitigating Air Quality Impacts*. Available: http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Accessed January 4, 2016.

3. San Joaquin Valley Air Pollution Control District. 2002. *Guide for Assessing and Mitigating Air Quality Impacts.*

4. Rosedale–Rio Bravo Water Storage District and Irvine Ranch Water District. 2015 (April). *Stockdale Integrated Banking Project Draft Environmental Impact Report* (SCH # 2013091076). Available: http://www.rrbwsd.com/wp-content/uploads/2015/04/2015-04-Stockdale-DEIR-optimized.pdf.

5. Rosedale–Rio Bravo Water Storage District and Irvine Ranch Water District. 2015 (April). *Stockdale Integrated Banking Project Draft Environmental Impact Report* (SCH # 2013091076). Available: http://www.rrbwsd.com/wp-content/uploads/2015/04/2015-04-Stockdale-DEIR-optimized.pdf.

6. Rosedale–Rio Bravo Water Storage District and Irvine Ranch Water District. 2015 (April). *Stockdale Integrated Banking Project Draft Environmental Impact Report* (SCH # 2013091076). Available: http://www.rrbwsd.com/wp-content/uploads/2015/04/2015-04-Stockdale-DEIR-optimized.pdf.

7. Insight Environmental Consultants. 2015 (October). *Focused Air Quality Analysis Agricultural-Related Emissions within the Kern Water Bank Service Area.* Bakersfield, CA.

8. Insight Environmental Consultants. 2015 (October). *Focused Air Quality Analysis Agricultural-Related Emissions within the Kern Water Bank Service Area.* Bakersfield, CA.

9. Insight Environmental Consultants. 2015 (October). *Focused Air Quality Analysis Agricultural-Related Emissions within the Kern Water Bank Service Area.* Bakersfield, CA.

10. San Joaquin Valley Air Pollution Control District. 2010 (April). Rule 4013. Open Burning. Available: https://www.valleyair.org/rules/1ruleslist.htm. Accessed April 8, 2016.

11. San Joaquin Valley Air Pollution Control District. 2001. Rule 4106. Prescribed Burning and Hazard Reduction Burning. Available: https://www.valleyair.org/rules/1ruleslist.htm. Accessed April 8, 2016.

12. California Department of Forestry and Fire Protection. 2012 (August). State Responsibility Areas for Fire Protection: Kern County. Available: http://frap.fire.ca.gov/data/frapgismaps/sra11_2/sramap.15.pdf. Accessed April 8, 2016.

13. Eastern Kern Air Pollution Control District. 1999. Guidelines for Implementation of CEQA. Available: http://www.kernair.org/Documents/CEQA/CEQA_Guidelines%20&%20Charts.pdf. Accessed January 20, 2016.

14. San Joaquin Valley Air Pollution Control District. 2015 (March). *Guidance for Assessing and Mitigating Air Quality Impacts.* Available: http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Accessed December 27, 2015.

15. California Air Resources Board. 2003. HARP User Guide, Appendix K. Available: http://www.arb.ca.gov/toxics/harp/docs/userguide/appendixk.pdf. Accessed January 7, 2016.

16. San Joaquin Valley Air Pollution Control District. 2010 (April). Rule 4013. Open Burning. Available: https://www.valleyair.org/rules/1ruleslist.htm. Accessed April 8, 2016.

17. San Joaquin Valley Air Pollution Control District. 2001. Rule 4106. Prescribed Burning and Hazard Reduction Burning. Available: https://www.valleyair.org/rules/1ruleslist.htm. Accessed April 8, 2016.