4.3 AIR QUALITY

1. INTRODUCTION

This section evaluates the potential air quality impacts of the proposed CCAP Update. Government agencies and the public were provided an opportunity to comment on the project in response to a Notice of Preparation (NOP) of and EIR and an Initial Study that provided a preliminary summary of potential impacts that could result from the project. No comments related to air quality were received.

This section includes a description of the common air pollutants of concern and the existing air quality conditions in the vicinity of the CCAP area, a summary of relevant laws, regulations, policies and plans, and an air quality impact assessment for the proposed CCAP Update. This analysis was conducted following the guidance provided by the Yolo-Solano Air Quality Management District (YSAQMD).[1]

2. SETTING

a. Physical Environment

The CCAP area is located in the YSAQMD, which includes all of Yolo County and the northeast portion of Solano County. The YSAQMD is located in the southeast portion of the Sacramento Valley Air Basin (SVAB). Air quality in the SVAB is influenced by the regional climate, meteorology, topography, and the presence of existing air pollution sources and ambient conditions. The following discussion provides an overview of the physical and regulatory setting for air pollutants of concern in the SVAB. The information presented in this section is primarily from the YSAQMD's Handbook for Assessing and Mitigating Air Quality Impacts.[2]

(1) Climate Topography, and Meteorology

The SVAB encompasses all portions of eleven counties including all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo Counties, the westernmost portion of Placer County and the northeastern half of Solano County. The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The Project area is located in central Yolo County. The SVAB has a Mediterranean climate characterized by hot dry summers and mild rainy winters. During the year the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches, and the rainy season generally occurs from November through March. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells develop over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating due to lower temperatures during autumn and winter reduce the influx of outside air and allow air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap pollutants near the ground.

[1] YSAQMD, 2007. Handbook for Assessing and Mitigating Air Quality Impacts. 11 July.
[2] *Ibid.*

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing for the prevailing wind patterns to blow north carrying the pollutants out, the Schultz Eddy causes the wind pattern to circle back to the south. Essentially, this phenomenon causes the air pollutants to be blown south toward the YSAQMD. This phenomenon has the effect of exacerbating the pollution levels in the area and increases the likelihood of exceedance of federal or state air quality standards. The eddy normally dissipates around noon when the delta sea breeze arrives.

(2) Air Pollutants of Concern

The California Air Resources Board (CARB) and the United States Environmental Protection Agency (USEPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone, particulate matter (PM), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as the six "criteria air pollutants." As described further below, the primary pollutants of concern in the YSAQMD are ozone and PM.

Ozone. While ozone serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, it can be harmful to the human respiratory system, and to sensitive species of plants, when it reaches elevated concentrations in the lower atmosphere. Ozone is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between gaseous precursors, such as reactive organic gases (ROG) and oxides of nitrogen (NOx), in the presence of sunlight.

The primary sources of ROG are mobile sources (including automobiles), consumer products, petroleum distribution and use (e.g., gasoline dispensing), coatings and solvents, and agricultural related activities. NOx is a family of gaseous nitrogen compounds whose emissions result primarily from the combustion of fossil fuels under high temperature and pressure. Automobiles are the single largest source of ozone precursors in the SVAB. In 2005, on-road sources contributed about 28 percent of ROG and 61 percent of NOx emissions in the Sacramento Metropolitan Area.[3,4]

Short-term ozone exposure can result in injury and damage to the lungs, decreases in pulmonary function, and impairment of immune mechanisms. Chronic lung disease can occur as a result of longer-term exposure. Symptoms of ozone irritation include shortness of breath, chest pain when inhaling deeply, wheezing, and coughing. Children and persons with pre-existing respiratory disease (e.g., asthma, chronic bronchitis, and emphysema) are at greater risk. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

Particulate Matter. Particulate matter refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. There are two fractions of PM emissions that are regulated based on aerodynamic resistance diameters equal to or less than 10 microns (PM_{10}) and 2.5 microns ($PM_{2.5}$). Some sources of PM, like pollen, forest fires, and windblown dust, are naturally occurring. The primary manmade sources of PM in the Sacramento Metropolitan Area include fugitive dust from roads and construction activities,

[3] This area includes the southern part of the Sacramento Valley Air Basin as well as the western portion of El Dorado County and the western and central portions of Placer County.

[4] CARB, 2013. The California Almanac of Emissions and Air Quality - 2013 Edition.

particulates from residential fuel combustion (including wood), and waste burning.[5]

PM_{10} is of concern because it bypasses the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children.

Regional Ambient Air Quality. California and national ambient air quality standards (CAAQS and NAAQS, respectively) have been developed by the CARB and USEPA, respectively, for the six criteria air pollutants to assess regional air quality impacts. California has also established ambient air quality standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The CAAQS and NAAQS are intended to incorporate an adequate margin of safety to protect the public health and welfare, including people who are most susceptible to air pollutants, known as "sensitive receptors."

The CAAQS, which are based on meteorological conditions unique to California, are either equal to or more stringent than the NAAQS. Areas in California are classified as either in "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the NAAQS or CAAQS have been achieved. To assess the regional attainment status, the YSAQMD collects air quality data from two State and Local Air Monitoring Stations (SLAMS). Based on the monitoring data, the YSAQMD is currently designated a "non-attainment" area for the 1-hour state ozone standard, the 8-hour state and federal ozone standards, and the 24-hour and annual state PM_{10} standards. Yolo County is also designated a "partial non-attainment" area for the federal $PM_{2.5}$ standard. The YSAQMD is designated as an attainment or unclassified area for all other pollutants (Table 4.3-1).

Local Air Quality. The two SLAMS in the YSAQMD collectively monitor ozone, PM_{10}, and $PM_{2.5}$, which are the primary pollutants of concern that have resulted in a "non-attainment" air quality status. The nearest monitoring station to the Project area is the Woodland-Gibson Road station located approximate 5 miles southeast of the Project area. Since 2015, the highest annual concentrations of ozone, PM_{10}, and $PM_{2.5}$ reported from the Woodland air monitoring station are summarized in Table 4.3-2. The numbers of days that ozone, PM_{10}, and $PM_{2.5}$ exceed the CAAQS or NAAQS over this time period are also summarized in Table 4.3-2. Ozone and PM_{10} levels measured in the City of Woodland exceeded the CAAQS in 2015, 2016 and 2017. $PM_{2.5}$ levels exceeded the NAAQS in 2017.

[5] *Ibid.*

Table 4.3-1: Ambient Air Quality Standards and Attainment Status

Pollutant	Averaging Time	CAAQS		NAAQS	
		Concentration	Status	Concentration	Status
Ozone	1-Hour	0.09 ppm	N	---	---
	8-Hour	0.070 ppm	N	0.075 ppm	N
CO	1-Hour	20 ppm	A	35 ppm	U/A
	8-Hour	9.0 ppm	A	9 ppm	U/A
NO2	1-Hour	0.18 ppm	A	0.1 ppm	NR
	Annual	0.030 ppm	NR	0.053 ppm	A
SO2	1-Hour	0.25 ppm	A	0.075 ppm	NR
	24-Hour	0.04 ppm	A	0.14 ppm	A
	Annual	---	---	0.030 ppm	A
PM10	24-Hour	50 µg/m^3	N	150 µg/m^3	U
	Annual	20 µg/m^3	N	---	---
PM2.5	24-Hour	---	---	35 µg/m^3	Partial N
	Annual	12 µg/m^3	NR	12.0 µg/m^3	A
Sulfates	24-Hour	25 µg/m^3	A	---	---
Lead	30-Day	1.5 µg/m^3	A	---	---
	Calendar Quarter	---	---	1.5 µg/m^3	A
	3-Month Rolling	---	---	0.15 µg/m^3	NR
Hydrogen Sulfide	1-Hour	0.03 ppm	A	---	---
Vinyl Chloride	24-Hour	0.01 ppm	A	---	---
Visibility Reducing Particles	8-Hour	---	A	---	---

Sources: CARB website: https://www.arb.ca.gov/research/aaqs/aaqs2.pdf; YSAQMD website: https://www.ysaqmd.org/wp-content/uploads/2016/06/Attainment_Detailed.jpg
Notes: A = attainment; N = non-attainment; U = unclassified; NR = not reported; ppm = parts per million; µg/m^3 = micrograms per cubic meter; "---" = not applicable

Table 4.3-2: Local Air Pollutant Summary: Woodland-Gibson Road Monitoring Station

Pollutant	Standard	Highest Air Pollutant Concentrations			Days Exceeding Standard		
		2015	2016	2017	2015	2016	2017
Ozone	State 1-Hour	0.086	0.095	0.089	0	1	0
	State 8-Hour	0.072	0.076	0.074	4	4	2
	National 8-Hour	0.071	0.075	0.074	0	0	0
PM10	State 24-Hour	69.4	68.7	130.8	12.2	12.2	18.4
	State Annual	21.5	19.2	21.7	---	---	---
PM2.5	National 24-Hour	29.4	16.4	60.1	0	0	12.3

Source: CARB website: http://www.arb.ca.gov/adam/trends/trends1.php
Notes:
Hr = hour; "---" = not applicable
Shaded values exceed current ambient air quality standards.
Ozone concentrations reported in ppm and PM concentrations reported in µg/m^3.
PM concentrations reported in µg/m^3 from the Woodland-Gibson Road monitoring station.

b. Regulatory Environment

(1) Federal

The USEPA is responsible for implementing national air quality programs established under the 1977 federal Clean Air Act (CAA). The USEPA is involved with global, international, national, and interstate air pollution issues. Its primary role at the state level is one of oversight of state

air quality programs. The USEPA sets federal vehicle and stationary source emission standards and provides research and guidance on air pollution programs.

Under the CAA, the USEPA has established two types of NAAQS: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction. The primary NAAQS are summarized in Table 4.3-1 and are intended to protect, with an adequate margin of safety, those persons most susceptible to respiratory distress, such as people suffering from asthma or other illness, the elderly, very young children, or people engaged in strenuous work or exercise.

The CAA requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). States containing areas that exceed the NAAQS are required to revise their SIPs in order to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emission inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has responsibility to review all state SIPs to determine if they conform to the mandates of the CAA and will achieve air quality goals when implemented. If the USEPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan for the non-attainment area and may impose additional control measures. Failure to obtain an approved SIP or to implement the plan within mandated timeframes can result in limitations being applied to transportation funding and sanctions being placed on stationary air pollution sources in the air basin.

(2) State

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing its own air quality legislation, called the California Clean Air Act (CCAA), adopted in 1988. CARB has the primary responsibility in California for developing and implementing air pollution control plans designed to achieve and maintain the NAAQS established by the USEPA. Whereas CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. CARB combines its data with all local district data and submits the completed SIP to the USEPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by CARB, and attainment plans adopted by the air districts and approved by CARB.

States may establish their own standards, provided the state standards are at least as stringent as the NAAQS. California has established CAAQS pursuant to Health and Safety Code (H&SC) Section 39606(b) and its predecessor statutes. The CAAQS are summarized in Table 4.3-1. Under H&SC Section 39608, CARB is also required to “identify” and “classify” each air basin in the state on a pollutant-by-pollutant basis. Subsequently, CARB has designated areas in California as non-attainment based on violations of the CAAQS.

For all non-attainment categories except PM, attainment plans are required to demonstrate a five-percent-per-year reduction in non-attainment air pollutants or their precursors, averaged over consecutive three-year periods, unless an approved alternative measure of progress is developed. In addition, the air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that lays out a program to attain and maintain the CCAA requirements.

CARB has established and maintains, in conjunction with the air districts, the SLAMS network that monitors actual pollutant levels present in the ambient air. The data generated at a SLAMS can be used to determine both the state and federal attainment status of an air district and to evaluate the effectiveness of air quality rules and regulations.

CARB also sets emissions standards for new motor vehicles, consumer products, small utility engines, and off-road vehicles. In many cases, California standards are the toughest in the nation. State law recognizes that air pollution does not respect political boundaries and therefore requires the CARB to divide the state into separate air basins that have "similar geographical and meteorological conditions" while still making "considerations for political boundary lines whenever practicable".[6]

(3) Local

The YSAQMD was established in 1971 by a joint powers agreement between the Yolo and Solano County Boards of Supervisors. The YSAQMD is governed by a Board of Directors composed of representatives from both the county boards of supervisors and city council members from the cities within the YSAQMD. The YSAQMD has jurisdiction over all of Yolo County and the northeast portion of Solano County, from Vacaville on the west, to Rio Vista on the South.

The YSQAMD is tasked with achieving and maintaining healthful air quality for its residents. This is accomplished by establishing programs, plans, and regulations enforcing air pollution control rules in order to attain all state and federal ambient air quality standards and minimize public exposure to airborne toxins and nuisance odors. YSAQMD has adopted the following attainment plans to achieve state and federal air quality standards and comply with CAA and CCAA requirements:

- The 1992 Yolo-Solano Air Quality Attainment Plan (AQAP)
- The 1994 Sacramento Area Regional Ozone Attainment Plan;
- The 2013 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan;
- The 2010 PM_{10} Implementation/Maintenance Plan and Redesignation Request for Sacramento County; and
- The 2013 $PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request for Sacramento $PM_{2.5}$ Nonattainment Area.

In May 1992, the YSAQMD adopted the AQAP that identifies feasible emission control measures to reduce emissions of ozone and attain state ozone standards (the CCAA does not require attainment plans for PM). The AQAP control measures focus on emission sources under YSAQMD's authority, specifically, stationary emission sources and some area-wide sources. The AQAP is updated every three years based on an evaluation of existing emissions and projections of population, industry, and vehicle-related emissions growth. The AQAP was most recently updated in accordance with the 2016 *Triennial Assessment and Plan Update*.[7]

The 1994 *Sacramento Area Regional Ozone Attainment Plan* is the current federal ozone plan (SIP) for the YSAQMD, and sets out stationary source control programs and statewide mobile source control programs for attainment of the national 1-hour ozone standard. In 2005, the national 1-hour ozone standard was revoked by the USEPA; however, a court decision found that areas that were subject to certain planning requirements based on their 1-hour ozone non-attainment designation were still obligated to meet those requirements even though the standard had been revoked. The 2013 *Sacramento Regional 8-Hour Ozone Attainment and*

[6] H&SC Section 39606(1)
[7] YSAQMD, 2016. Triennial Assessment and Plan Update. July.

Reasonable Further Progress Plan continues the strategies found in the 1-hour ozone SIP. As of 16 November 2017, CARB was in the review process of the 2017 *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Further Reasonable Progress Plan*.

The 2010 *PM_{10} Implementation/Maintenance Plan* is the current PM_{10} SIP for the YSAQMD. The purpose of this plan is to demonstrate maintenance of the PM_{10} NAAQS in the jurisdiction and to request formal redesignation to attainment. Similarly, the 2013 $PM_{2.5}$ Implementation/Maintenance Plan serves the purpose for demonstrating that the region will remain below the $PM_{2.5}$ standard for 10 years.

YSAQMD continuously monitors its progress in implementing attainment plans and must periodically report to CARB and USEPA. The YSAQMD, in partnership with the five air districts in the Sacramento Metropolitan Area, CARB, and the Sacramento Area Council of Governments, periodically revises its attainment plans to reflect new conditions and requirements in accordance with schedules mandated by the CAA and CCAA.

In addition, the following rules adopted by the YSAQMD are applicable to the proposed Project:

Rule 2.5 Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.

Rule 2.11 Particulate Matter Concentration. A person shall not release or discharge into the atmosphere from any single source operation, dust, fumes, or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

2030 Countywide General Plan. The Conservation and Open Space Element of the 2030 Countywide General Plan describes the physical setting and regulatory framework of air quality in Yolo County and presents goals, policies, and actions intended to improve air quality. The following goals, policies, and actions of the General Plan related to air quality are relevant to the proposed CCAP Update:

Goal CI-4:	Environmental Impacts. Minimize environmental impacts caused by transportation.
Policy CI-4.2:	Support regional air quality and greenhouse gas objectives through effective management of the county's transportation system.
Goal CO-6:	Air Quality. Improve air quality to reduce the health impacts caused by harmful emissions.
Policy CO-6.2:	Support local and regional air quality improvement efforts.
Action CO-A94:	Implement the guidelines of the Transportation and Land Use Toolkit, developed by the YSAQMD.
Action CO-A97:	Implement the regulations and programs established by the YSAQMD to bring local air quality into attainment with State and federal standards.

CCAP Plans and Regulations. The existing ordinances related to mining activity and air pollutant emissions are presented below. The CCAP Update proposed minor changes to these ordinances (which are not shown here). Refer to Table 4.3-3 (at the end of this section) for the

proposed CCAP Update changes to these ordinances.

In-Channel Ordinance

Section 10-3.401. Access Roads

(a) All unpaved roads used during in-channel maintenance mining operations shall be adequately watered to keep soil moist at all times, in order to control fugitive dust.

(b) Upon cessation of use, operational areas and haul roads that are not required for future use of the site shall be ripped and prepared to prevent compaction and allow for revegetation.

Section 10-3.408. Hazards and Hazardous Materials (changed to 10-3.407 under CCAP Update; no change to part (f) in CCAP Update)

(f) All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturers specifications and properly maintained to minimize the leakage of oils and fuels. No vehicles and equipment shall be left idling for a period of longer than ten minutes.

Mining Ordinance

Section 10-4.407. Conveyor systems.

Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.

Section 10-4.414. Dust control.

The following measures shall be implemented in order to control fugitive dust:

(a) All stockpiled soils shall be enclosed, covered, or adequately watered to keep soil moist at all times. Inactive soil stockpiles should be vegetated or adequately watered to create an erosion-resistant outer crust.

(b) During operation hours, all disturbed soil and unpaved roads shall be adequately watered to keep soil moist.

(c) All disturbed but inactive portions of the site shall either be seeded or watered until vegetation is grown or shall be stabilized using methods such as chemical soil binders, jute netting, or other YSAQMD approved methods.

Section 10-4.415. Equipment maintenance.

All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturer’s specifications and properly maintained to minimize the leakage of oils and fuel. No vehicles or equipment shall be left idling for a period of longer than ten minutes.

Section 10-4.429. Setbacks. [excerpt]

All off-channel surface mining operations shall comply with the following setbacks:

(a) New processing plants and material stockpiles shall be located a minimum of 1,000 feet from public rights-of-way, public recreation areas, and/or off-site residences, unless alternate measures to reduce potential noise, dust, and aesthetic impacts are developed and implemented;

(b) Soil stockpiles shall be located a minimum of 500 feet from public rights-of-way, public recreation areas, and off-site residences, unless alternate measures to reduce potential dust and aesthetic impacts are developed and implemented.

(c) Off-channel excavations shall maintain a minimum 1,000 foot setback from public rights-of-way and adjacent property lines off-site residences, unless a landscaped buffer is provided or site-specific characteristics reduce potential aesthetic impacts.

3. IMPACTS AND MITIGATION MEASURES

a. Significance Criteria

The following significance criteria are based on the changes to CEQA, including Appendix G, that were adopted by the California Natural Resources Agency on December 28, 2018.[8] The following criteria are for the topics of air quality and have not changed substantially from the previously adopted CEQA criteria that were identified in the NOP/Initial Study released in May 2017 with one exception; per the adopted 2018 changes, the threshold "violate any air quality standard or contribute to an existing or projected air quality violation" has been eliminated in the newly adopted criteria. Impact AIR-2 below analyzes both this eliminated criterion and criterion "b)" below.

The proposed Project would result in a significant air quality impact if it would:

a) Conflict with or obstruct implementation of the applicable air quality plan.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

c) Expose sensitive receptors to substantial pollutant concentrations.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

(1) Thresholds of Significance

The YSAQMD's project-level thresholds are applicable to both construction and operational impacts, and are used in this CEQA analysis in conjunction with the YSAQMD's Handbook for Assessing and Mitigating Air Quality Impacts.[9] The project-level thresholds of significance are summarized in Table 4.3-4 below.

[8] http://resources.ca.gov/ceqa/ accessed January 9, 2019.
[9] YSAQMD, 2007. Handbook for Assessing and Mitigating Air Quality Impacts. 11 July.

Table 4.3-4: Yolo-Solano Air Quality Management District (YSAQMD) Project-Level Thresholds of Significance for Criteria Air Pollutants of Concern

Pollutant	Thresholds of Significance
ROG	10 tons/year
NOx	10 tons/year
PM10[1]	80 lbs/day
CO	Violation of a state ambient air quality standard for CO[2]

Source: YSAQMD, 2007
Notes:
[1] Includes both exhaust PM_{10} and dust PM_{10}.
[2] California Ambient Air Quality Standard is 20 parts per million for 1-hour average CO concentrations and 9 parts per million for 8-hour average CO concentrations.

b. Impacts Found Less than Significant in Initial Study

The Initial Study included a preliminary evaluation of the potential impacts of the proposed CCAP Update that would occur during implementation. In the Initial Study, the conclusion was reached that the CCAP Update could have potentially significant impacts related to all of the significance criteria considered in the Initial Study.

c. Approach

The proposed CCAP Update is comprised of a series of specific text changes to eight policy and regulatory County plans and ordinances that govern the County's activities along Lower Cache Creek. The proposed text changes that have the greatest potential to result in impacts related to air quality are identified in Table 4.3-3, located at the end of this section, and are discussed in the impact analysis below.

In order to evaluate potential impacts to air quality, it was necessary to estimate the types and intensity of emissions-generating activities (e.g., heavy equipment use, truck trips) that are expected to occur under the CCAP Update. Based on County experience with managing the CCAP program over the last 20 years, reasonable project scenarios were developed for in-channel and off-channel projects under the CCAP Update. The types of equipment and duration of use for In-channel activities were identified for a relatively large bar-skimming flood mitigation project (which included transport and processing of the sand and gravel). For off-channel activities, the primary new emissions that could occur under the CCAP Update would be related to establishing new off-channel mining operations. To calculate criteria pollutant emissions associated with the potential new off-channel operations, a recent air quality analysis (associated with project-level CEQA review and permitting), conducted for one of the current mining operations was used to estimate emissions associated with each ton of material mined. A unit emission rate for each criteria pollutant was calculated by dividing the project-level total emissions (in pounds) by annual mined quantity (in tons). Total emissions under the off-channel operation were extrapolated by multiplying the unit emission rates and the maximum allowable mined tonnage assumed for the new proposed off-channel operation. The resulting emissions estimates were compared to YSAQMD's thresholds.

d. Impacts Analysis

Impact AIR-1: The CCAP Update could conflict with or obstruct implementation of the applicable air quality plan. (S)

The CCAP Update would allow for continued implementation of in-channel creek maintenance and restoration activities and off-channel aggregate mining activities, both of which would use a

variety of off-road heavy equipment and on-road vehicles and contribute to the emissions of criteria air pollutants.

Proposed Revisions to In-Channel and Off-Channel Plans and Regulations

The CCAP Update would allow for increased removal of material from within the lower Cache Creek channel and the potential expansion of off-channel mining areas (the potential new off-channel mining areas would be located within [and constrained to] the "Future Proposed Mining" areas shown on Figure 3-4). As discussed under Impact 4.3-2, below, the CCAP Update would result in emissions that would exceed the thresholds of significance listed in Table 4.3-4.

Yolo County is currently in non-attainment for PM_{10} and ozone. Because the proposed CCAP Update would result in activities that emit criteria pollutants that would contribute to the regional emission burden of PM_{10} and ozone precursors, the proposed Project would contribute to difficulties implementing the applicable air quality plans which are: the 1992 Yolo-Solano Air Quality Attainment Plan and the Sacramento Area Regional Ozone Attainment Plan.[10]

As shown in Table 4.3-7, current emissions from the existing CCAP program (including the proposed CCAP Update) would result in lower emissions of criteria pollutants than projected for implementation of the 1996 CCAP because exhaust emissions of criteria pollutants from internal combustion engines have been decreasing over time as the on-road vehicles and off-road construction and processing equipment has become cleaner under more stringent Statewide emissions standards and requirements. In addition, operation under the proposed CCAP Update is required to comply with the local regulations and ordinances that would reduce emissions of criteria pollutants, including but not limited to: In-Channel Ordinance Section 10-3.401 and Mining Ordinance Section 10-4.414 for dust control on access roads and stockpiles; In-Channel Ordinance Section 10-3.408 and Mining Ordinance Section 10-4.415 for equipment tuning and limits on idling time; Mining Ordinance Section 10-4.407 for the use of electric conveyor systems rather than diesel when feasible; and YSAQMD rules on limiting the discharge of air contaminants and particulate matter.

Compliance with the relevant ordinances and regulations would reduce the impact of the proposed Project related to consistency with the applicable air quality plans. For example, the CCAP regulations address air quality emissions as follows:

> Section 10-3.401. Access Roads. Requires that unpaved roads used to support in-channel material removal are adequately water to limit generation of dust.
>
> Section 10-3.407. Hazards and Hazardous Materials, and Section 10-4.415. Equipment maintenance. Require that equipment and vehicle engines not be allowed to idle for more than ten minutes to reduce emissions.
>
> Section 10-4.414. Dust Control. Requires that stockpiled soils shall be enclosed, covered, or adequately watered or covered to reduce dust emissions, that all disturbed soil and unpaved roads shall be adequately watered to keep soil moist, and that all disturbed but inactive portions of the site shall either be seeded or watered until vegetation is grown or shall be stabilized using methods such as chemical soil binders, jute netting, or other YSAQMD approved methods.

[10] This includes the 2013 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan, the 2013 $PM_{2.5}$ Maintenance Plan and Redesignation Request, and the 2010 PM_{10} Implementation/Maintenance Plan and Redeisgnation Request for the Sacramento County.

However, because the practices required by the ordinances and regulations (described above) could not be shown to quantitatively reduce the Project's emissions of criteria pollutants to below the thresholds of significance, the impact related to the consistency with the air quality plans is conservatively considered as significant and unavoidable.

The CCAP Update includes all feasible requirements for minimizing impacts related to successful implementation of applicable air quality plans (e.g., Section 10-3.401, Section 10-3.407, and Section 10-4.414, listed above). Further, under existing State programs (i.e., the On-Road Heavy-Duty Diesel Vehicle (In-Use) Regulation, Tractor-Trailer Greenhouse Gas (GHG) Regulation), the California Air Resources Board requires that truck and equipment fleets reduce emissions over time by mandating the use of cleaner (i.e., reduced emissions) engines. Therefore, as time passes, the emissions associated with the CCAP Update will continue to decrease (as they have over the last 20 years). There are no other known measures applicable to the project that would further reduce impacts.

> **Mitigation Measure AIR-1**: None available.

Because the level of emission reduction associated with implementation of CCAP ordinances and other requirements cannot be relied on with certainty, this impact would remain significant and unavoidable. (SU)

Impact AIR-2: Under the CCAP Update, the CCAP Program could continue to result in violation of air quality standards and contribute to a cumulatively considerable net increase in an existing or projected air quality violation. (S)

This criterion from the updated CEQA Guidelines Appendix G:

> Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard is similar to the following Appendix G criteria considered in the Initial Study prepared for this project (the Initial Study found this impact to be potentially significant and indicated that it would be further evaluated in the EIR):
>
> Violate any air quality standard or contribute to an existing or projected air quality violation.

The following discussion addresses both of these criteria.

The CCAP Update would result in violation of air quality standards and/or contribute air quality violation if the construction or operational emissions of criteria air pollutants exceed the thresholds of significance in Table 4.3-4. The CCAP consists of two main activities that would result in criteria pollutant emissions, the in-channel activities associated with channel stabilization and restoration and the potential increase in off-channel mining operations, as described in more detail below.

Proposed Revisions to In-Channel Plans and Regulations

The proposed CCAP Update include the following change for in-channel activities that could affect the daily and annual emissions of criteria air pollutants:

- CCRMP (page 34) (Table 4.3-3, at the end of this section) Increase in-channel material removal limit from 210,000 tons to 690,800 tons (and up to an occasional annual maximum of 1,381,600 tons).

A description of the potential in-channel projects that would be allowed under the proposed CCAP Update is included in Chapter 3.0, Project Description. Generally, removal of material from the channel would not be allowed to exceed 690,800 tons per year, approximately the average annual amount of sediment material deposited in the channel (except in occasional exceptional years where major deposition occurs). For the purpose of this emissions analysis, it was assumed that up to 1,381,600 tons of in-channel materials would be removed in a year, under the anticipated maximum annual emissions scenario. In addition, based on Mitigation Measure TR-3 from Chapter 4.11, Transportation, the combined volume of aggregate material removed from in-channel and off-channel sources that is transported on the County roadway network in any given year shall not exceed the annual allocation (as specified in their conditional use permit) assigned to the applicable off-channel operator.

Emissions from in-channel operations were calculated based on a scenario where a material removal (bar-skimming) project would remove 690,800 tons of materials. The CCAP Update would allow up to 1,381,600 tons to be removed in exceptional cases where the previous year or years experienced well above average sedimentation, and this analysis uses this reasonable worst case scenario (1,381,600 tons) in the emissions calculations. Table 4.3-5 lists the diesel equipment needed to excavate 690,800 tons of material, approximate duration of the operation. The horsepower for each piece of off-road equipment was determined using either 1) published equipment specifications; or 2) the default horsepower consistent with the most recent version of the California Emissions Estimator Model (CalEEMod)[11]. Emission factors for off-road equipment were obtained from CalEEMod. The calculated daily and annual emissions from the bar-skimming project were then doubled to account for the maximum potential in-channel material removal (1,381,600 tons) and are summarized in Table 4.3-7. See Appendix C for additional information.

Table 4.3-5: Diesel Equipment Assumptions for In-Channel Material Removal

Category	Equipment[1]	Quantity of Equipment[2]
Off-Road	D-9 Dozer	2
	631 Scraper	8
	988 Wheel Loader	2
	Unloader	1
Processing Plant[3]	Front End Loader	2

Source: Baseline Environmental Consulting, 2018. Granite Esparto DEIR, 2009
Notes:
[1] Not including equipment powered by electricity.
[2] Quantity is estimated based on the assumed duration of 4 months (approximately 87 8-hour workdays) to remove 690,800 tons from the channel in a year.
[3] Processing Plant mainly consists of electric equipment, except for two front end loaders (Granite Esparto DEIR, 2009).

Proposed Revisions to Off-Channel Plans and Regulations

The proposed CCAP Update include the following change in off-channel activities that would affect the total emissions of criteria air pollutants:

- OCMP (page 15) (Table 4.3-4, at the end of this section) Rezoning of 1,188 new acres within the OCMP planning area (currently zoned as Agriculture Intensive, AI) to AI/SGRO which would allow additional mining in the future.

Under the 1996 CCAP, per the OCMP EIR, the reasonably foreseeable maximum annual tonnage for off-channel mining was 7,589,955 tons. For the purposes of this analysis, it was

[11] CalEEMod Version 2016.3.2. Available at: http://www.caleemod.com/.

assumed that one new mining operation would be established in the "Future Proposed Mining" areas shown on Figure 3-4. It was further assumed that his potential new mining operation would be limited (by use permit) to 1,200,000 tons sold (equivalent of approximately 1,380,000 tons mined).

The 1996 OCMP EIR estimated criteria pollutant emissions from the maximum allowable production for all existing and proposed off-channel mining operations. Since the emissions were estimated in 1996, the emissions from off-road equipment and on-road vehicles have generally decreased due to the more stringent emissions standards, and some diesel equipment used in the mining operations have been replaced by electric equipment. Therefore, the total emissions calculated for the off-channel mining operations in 1996 do not represent current conditions.

To revise the estimates for criteria pollutant emissions associated with the off-channel operations to be more up-to-date, a recent air quality analysis (associated with project-level CEQA review and permitting)[12,13] conducted for one of the current mining operations was used to estimate emissions associated with each ton of material mined. As shown in Table 4.3-6, a unit emission rate for each criteria pollutant was calculated by dividing the project-level total emissions (in pounds) by annual mined quantity (in tons). Total emissions under the off-channel operation were extrapolated by multiplying the unit emission rates and the maximum allowable mined tonnage, and are shown in Table 4.3-7.

Anticipated maximum emissions of criteria air pollutants are estimated for potential in-channel activities (a bar skimming project) and off-channel mining/associated operations are summarized in Table 4.3-7. Emissions from the 1996 CCRMP and OCMP, and the YSAQMD's thresholds of significance are also shown in Table 4.3-7 for comparison.

Table 4.3-6: Unit Emission Rates for Off-Channel Operation

Emission Sources	Emission Factor, lbs of pollutants per ton removal			
	ROG	NO_x	Exhaust PM_{10}[1]	Dust PM_{10}[2]
Off-Road	0.0047	0.037	0.0027	0.016
On-Road	0.00095	0.021	0.00064	0.0046
Total	0.0057	0.058	0.0033	0.020

Source: Granite Esparto DEIR, 2009

Notes:

[1] Exhaust PM_{10} unit emission rate for off-road sources was estimated based on the Granite Esparto project. Exhaust PM_{10} unit emission rate for on-road sources was estimated based on EMFAC 2017 emission factors for heavy-duty diesel trucks.

[2] Dust PM10 unit emission rate for off-road sources was estimated based on the Granite Esparto project. Dust PM_{10} unit emission rate for on-road sources was based on emissions per mile according to AP 42, Equation 1b (0.00264 lbs per mile).

[12] County of Yolo, 2009. Environmental Impact Report for the Granite Esparto Mining and Reclamation Project, Long-Term Mining Permit Application. Zone File Number: 2007-071. SCH Number: 2009022036. December.

[13] The Granite Esparto mining operation was considered reasonably representative all off-channel mining operations with the CCAP area because it includes dry and wet pit mining, on-site processing, trucking associated with product distribution, and reclamation.

Table 4.3-7: Anticipated Maximum Emissions of ROG, NOx and PM_{10} under the Proposed CCAP Update[1]

CCAP Operation	Component	Annual Maximum Permitted Tons Mined, Tons/Year	Annual 20% Exceedence Tons Mined, Tons/Year	ROG, Tons/Year	NO_x, Tons/Year	Total PM_{10}, Pounds/ Day[2]
Sub-Total Existing Conditions[3]		6,944,141	1,113,535	24	241	826
Assumed Future Conditions	Proposed Teichert Shifler	2,352,942	235,295	7.31	75.38	235
	SGRO (Existing + Proposed CCAP Update)	1,100,000	220,000	3.73	38.45	120
	Proposed In-Channel Maintenance Extraction	1,381,600[4]	NA	0.23	4.94	13
Sub-Total Assumed Future Conditions		2,281,600[5]	220,000	2	32	21
Total		9.225,741[6]	1,333,535	26	272	847
YSAQMD Thresholds of Significance				10	10	80

Source: YSAQMD, 2007 and Baseline, 2018. See Appendix C for additional information.
Notes:
[1] Annual tons mined are based on Table 3-1, Summary of CCAP Mining Tonnages (plus Proposed) in Chapter 3.0, Project Description.
[2] Daily emissions of PM_{10} are calculated based on the assumptions of an average 21.8 workdays per month.
[3] Sub-total existing conditions include the following operations: CEMEX, Granite Capay, Granite Esparto, Granite Woodland, Syar, Teichert Esparto, Teichert Woodland, Teichert Schwarzgruber, and the original in-channel maintenance extraction.
[4] Although the annual permitted tons mined for the proposed in-channel operation are 690,800 tons, it was anticipated that more deposition may need to be removed from the channels during some years. Therefore, it was conservatively assumed that twice the permitted tonnage, 1,381,600 tons, would be extracted from in-channel operation under the maximum emission scenario.
[5, 6] The annual total tonnages include 1,381,600 tons from the proposed in-channel maintenance extraction under the maximum emission scenario. Proposed Shifler operation would add no new truck trips as it is assumed to replace Teichert Schwarzgruber and Teichert Esparto tonnage.

The traffic generated under the proposed CCAP Update would have a negligible effect on the local carbon monoxide concentrations. According to the YSAQMD CEQA Handbook, a project may have the potential to create a violation of the carbon monoxide standards if it would reduce the level of service (LOS) at one or more locations in the project vicinity to unacceptable, or substantially worsen the LOS at one or more locations. Carbon monoxide violations tend to occur at urban intersections where the surrounding roadways tend to be congested during peak hour traffic, where many vehicles are concurrently idling and generating carbon monoxide hot spots. The CCAP area is located in a relatively rural setting with few signalized intersections. As described in Section 4.11, Transportation of the Draft EIR, all proposed activities under the CCAP Update would be required to maintain consistency with the General Plan Policy CI-3.1 regarding maintenance of LOS.

The proposed CCAP Update would not generate traffic on streets or at intersections that would result in substantially increased local carbon monoxide concentrations. Therefore, the proposed

Project would not result in carbon monoxide emissions that exceed the YSAQMD's threshold of significance.

As discussed under Impact 4.3-1, compliance with the relevant ordinances and regulations would reduce the emissions of ROG, NOx and PM_{10} in Table 4.3-7 to a level lower than the originally calculated cumulative emissions for the whole program; however, compared to existing conditions, emissions would increase. Because levels of criteria pollutants could increase as compared to existing conditions, criteria pollutant emissions under the current CCAP and the proposed CCAP Update are conservatively assumed to exceed YSAQMD's threshold of significance. This effect is a potentially significant impact. Compliance with CCAP regulations and implementation of Mitigation Measure AIR-2 will help mitigate this impact but not to a less-than-significant level.

> **Mitigation Measure AIR-2**: The following regulation shall be added as Sect. 10-4.414.1 to the Mining Ordinance:
>
> Wherever practical and feasible, aggregate facilities shall use clean electric energy from the grid or install alternative on-site electricity generation systems to replace diesel equipment and reduce criteria pollutant emissions. (SU)

Because the level of emission reduction associated with this measure and other requirements of the CCAP cannot be relied on with certainty, this impact would remain significant and unavoidable (SU).

Impact AIR-3: The CCAP Update would not expose sensitive receptors to substantial pollutant concentrations. (LTS)

The primary toxic air contaminant of concern from the current CCAP and the proposed CCAP Update is diesel particulate matter (DPM) emitted from the diesel equipment and trucks. DPM contains substances that are carcinogenic to humans, along with pulmonary irritants and hazardous compounds that may affect sensitive receptors such as young children, senior citizens, or those susceptible to respiratory disease. There could be potential unhealthful exposure to DPM when heavy diesel equipment activity occurs in proximity to sensitive receptors. For assessing community risks and hazards, a 1,000-foot radius is generally recommended around project property boundary.[14]

Sensitive receptors within and near the CCAP area include residential areas in the Dunnigan Hill's Reach, the Hungry Hollow Reach, and the Capay Reach, to the south of the Cache Creek. The nearest residential sensitive receptor is about 500 feet east of a future proposed mining area in the Dunnigan Hill's Reach. Other non-residential sensitive receptors outside of the CCAP area are hospitals located in the City of Woodland, and schools and day care centers located in the City of Wood and the communities of Esparto, Madison, and Capay. These non-residential sensitive receptors are located at least 4,000 feet away from the current and future mining areas, and therefore would not be exposed to unhealthful CCAP-related DPM emissions

Diesel equipment activities under the proposed CCAP Update include those for the in-channel maintenance and restoration, and those for the off-channel mining. The in-channel maintenance and restoration could include short-term activities that would occur at various locations along Cache Creek, generally more than 1,000 feet from any sensitive receptors. Due to the short-term nature of these projects (assumed generally to require less than four to six months), the impacts of DPM emissions from in-channel maintenance removal are less than significant.

[14] Bay Area Air Quality Management District, 2017. California Environmental Quality Act Air Quality Guidelines. May.

Under the proposed CCAP Update, some existing and future off-channel mining areas could be less than 1,000 feet from the nearest sensitive receptors. DPM emissions from heavy diesel equipment activities within these designated mining areas may potentially result in substantially elevated ambient DPM concentrations at the locations of the sensitive receptors listed above. Any mining operation under the proposed CCAP Update would be subject to the YSAQMD Rules 2.5 and 2.11 that restrict the discharge of particulate matters and other air contaminants that would cause injury to persons or to the public. Furthermore, future mining projects or modifications to existing mining operations within the CCAP area would be required to perform project-level environmental analysis that would require a screening health risk assessment (YSAQMD's CEQA Handbook, the district has significance thresholds regarding health risks and recommend conducting a health risk assessment for some projects). Therefore, the off-channel mining activities under the proposed CCAP Update would have a less-than-significant impact related to the exposure of sensitive receptors to substantial air pollutant concentrations (LTS).

Impact AIR-4: The CCAP Update would not result in substantial emissions (such as odors and dust) adversely affecting a substantial number of people. (LTS)

Odors are an important element of local air quality since they can be unpleasant, leading to distress among the public and generating citizen complaints to local governments and the YSAQMD. The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptor(s). Sources that generate objectionable odors must comply with applicable air quality regulations.

The proposed CCAP Update could include the establishment of new off-channel mining facilities. For the purposes of this analysis, it was assumed that one new mining operation would be established in the "Future Proposed Mining" areas shown on Figure 3-4. This new off-channel mining operation could include a concrete and asphalt batch plant. Asphalt plants are included on the list of common facility types that are known producers of odors, according to the YSAQMD CEQA Handbook. However, the future mining project that would be established in the OCMP area would be required to maintain a minimum 1,000 foot setback from the property lines of residences by the Mining Ordinance, Section 10-4.429, unless "alternate measures to reduce potential noise, dust, and aesthetic impacts" are utilized, thus ensuring that odors at local receptors would be acceptably controlled/reduced. Furthermore, compliance with the YSAQMD Rule 2.5 would ensure that existing and future mining operations not to generate odors that would cause nuisance or annoyance to nearby sensitive receptors.

In addition, any proposed new mining operation or new asphalt plant would be required to undergo project-specific CEQA review. The project-specific CEQA review would take into consideration specific site conditions and project details to evaluate potential odors impacts and evaluate whether the project would be in compliance with the ordinance standards. Therefore, the potential for off-channel OCMP activities to result in emissions (such as odors and dust) adversely affecting a substantial number of people is less than significant (LTS).

Table 4.3-3: Proposed CCAP Updates Related to Air Quality

AIR QUALITY	
	CCAP DOCUMENT CHANGE
Changes to Horizon Year of Plans	
CCRMP (page 14)) and OCMP (page 17)	Horizon Year The horizon year for this plan is 2068. Similar to the use of this term in other long-range planning efforts, this reflects how far into the future the plan guidance extends. It also defines the period for consideration of cumulative effects for purposes of environmental impact analysis.
Change in the Amount of Material that Can Be Removed from the Channel in a Given Year	
CCRMP (page 34)	Based on the analysis conducted for the 2017 Technical Studies, between 1996 and 2011, an average of approximately 690,800 tons per year of sediment was actually deposited in the CCRMP area, of which 156,400 tons is estimated to be sand and gravel and 534,400 is estimated to be fines. This estimate of deposition was calculated by comparing topographic maps of Cache Creek in 1996 and 2011. It differs significantly from the original estimate in that it appears much more fine sediment is depositing in Lower Cache Creek than originally predicted. ~~in-stream excavation of sand and gravel has averaged some two million tons, however, which has resulted in a cumulative deficit of nearly 80 million tons since mining intensified in the 1950s. At the natural rate of replacement it would take over 500 year to replenish the material removed~~. ~~In addition, gravel bar skimming disturbs the formation or armor materials and removes riparian vegetation that allow the channel to readjust, thus increasing the potential for erosion.~~ While it is unclear whether the current rate of deposition will continue into the future, it appears likely that at least some portions of Cache Creek are recovering faster than expected in 1996. Based on this information, the cap for in-channel extraction for maintenance purposes should be increased from 210,000 tons annually on average to 690,800 tons annually on average to reflect actual conditions. In addition, in recognition that the creek may in reality deposit no tonnage in a given year or double the tonnage in another (depending on flow conditions) the cap shall be based on the annual average deposition since the last prior year that extraction occurred, not to exceed 690,800 tons annually.
Increase in Potential Off-Channel Mining Area	
OCMP (page 15)	**Planning Area for OCMP and CCRMP~~The Cache Creek Resources Management Plan~~** The planning area for the OCMP is defined as the area contained within the Mineral Resource Zones (28,130 acres), minus the planning~~in-channel~~ area regulated under the CCRMP (2,266 acres), or a total of 25,864 acres (see Figure 4). Within the OCMP planning area, 1,900 acres are currently approved for excavation which is a subset of the 2,464-acre total for all approved mine sites (area zoned Sand and Gravel Overlay or SGO), 1,001 acres are zoned currently to allow for future mining (Sand and Gravel Reserve Overlay or SGRO), and another 1,188 acres are proposed to be rezoned for future mining, as described below. The planning area for the CCRMP is equal to the active in-channel area of the creek system, as defined by the delineated~~present~~ channel bank

	line or the 100-year flood elevation, ~~described in the Westside Tributaries Study prepared by the U.S. Army Corps of Engineers,~~ whichever is wider ~~(see Figure 3)~~ modified as described in the CCRMP . The in-channel area encompasses 5,109~~around 4,956~~ acres, including 2,266~~1,600~~ acres within the CCRMP~~present channel~~ boundary, plus several thousand acres located in the floodplain north of the City of Woodland (see Figure 3). ~~Subtracting this acreage from the 28,130 acres included in the State MRZs, leaves a total of approximately 23,174 acres within the planning area of the Off-Channel Mining Plan. As described in the following section, however, only 2,887 acres of the plan area are proposed to be rezoned to allow for off-channel mining over the next fifty years, or about 12 percent of the OCMP planning area.~~